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Insight Report

The Global Information Technology Report 2014

Rewards and Risks of Big Data

Beñat Bilbao-Osorio, Soumitra Dutta, and Bruno Lanvin, Editors



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Beñat Bilbao-Osorio, World Economic Forum

Soumitra Dutta, Cornell University

Bruno Lanvin, INSEAD

Editors

The Global Information Technology Report 2014 is a special project within the framework of the World Economic Forum's Global Competitiveness and Benchmarking Network and the Industry Partnership Programme for Information and Communication Technologies. It is the result of collaboration between the World Economic Forum and INSEAD.

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The terms *country* and *nation* as used in this report do not in all cases refer to a territorial entity that is a state as understood by international law and practice. The terms cover well-defined, geographically self-contained economic areas that may not be states but for which statistical data are maintained on a separate and independent basis.

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Preface

JENNIFER BLANKE and ALAN MARCUS

World Economic Forum

The 13th edition of *The Global Information Technology Report* is released at a time when economies need to solidify the recovery of the past year and leave the worst financial and economic crisis of the past 80 years behind. Developed economies need to sustain their incipient economic recovery and find new areas of growth and employment creation; emerging and developing economies need to build their resilience against turbulence in the markets and foster their innovation potential in order to sustain the rapid economic growth they experienced in the past decade.

Against this backdrop, information and communication technologies (ICTs)—in their role as key enablers of innovation and new employment opportunities—are drawing more attention than ever before. As the benefits of ICTs increasingly materialize into tangible assets, building and strengthening digital ecosystems becomes increasingly important.

The GITR series has been published by the World Economic Forum in partnership with INSEAD since 2002. The *Report* has accompanied and monitored ICT progress for more than a decade and raised awareness of the importance of ICTs for long-term competitiveness and well-being. Through the lens of the Networked Readiness Index (NRI), the driving factors and impacts of networked readiness and ICT leveraging have been identified, highlighting the joint responsibility of all social actors—individuals, businesses, and governments.

The Global Information Technology Report 2014 features the latest results of the NRI, offering an overview of the current state of ICT readiness in the world. This year's coverage includes a record number of 148 economies, accounting for over 98 percent of global GDP. In addition, it features a number of essays that inquire into the rewards and risks accruing from big data, an unprecedented phenomenon in terms of the volume, velocity, and variety of sources of the creation of new data. These essays also advise on the changes that organizations, both public and private, will need to adopt in order to manage, make sense of, and obtain economic and social value from this vast quantity of newly generated data. In addition, the *Report* presents a wealth of data, including detailed profiles for each economy covered and data tables with global rankings for the NRI's 54 indicators.

We would like to convey our sincere gratitude to the industry and academic organizations' experts who

contributed outstanding chapters. We also wish to thank the editors of the *Report*—Soumitra Dutta at the Samuel Curtis Johnson Graduate School of Management at Cornell University, Bruno Lanvin at INSEAD, and Beñat Bilbao-Osorio at the World Economic Forum—for their leadership in this project, together with the other members of the GITR team: Roberto Crotti, Danil Kerimi, and Elena Kvochko. Appreciation also goes to members of the Global Competitiveness and Benchmarking Network team: Ciara Browne, Gemma Corrigan, Attilio di Batista, Gaëlle Dreyer, Margareta Drzeniek-Hanouz, Thierry Geiger, Tania Gutknecht, Caroline Ko, and Cecilia Serin. Last but not least, we would like to express our gratitude to our network of over 160 Partner Institutes around the world and to all the business executives who participated in our Executive Opinion Survey. Without their valuable input, the production of this *Report* would not be possible.

Foreword

JOHN CHAMBERS

Chairman and Chief Executive Officer, Cisco Systems

I never cease to be amazed by the speed of innovation. Change is the only true constant, and each year the pace of change only accelerates. Transitions that once took place over three or five years now happen in 12 to 18 months.

I believe we are currently experiencing the biggest fundamental change the world has seen since the initial development of the Internet as people, processes, data, and things become increasingly connected. We call this the Internet of Everything (IoE), and it is having a profound impact on individuals, businesses, communities, and countries. According to analysis conducted by Cisco, the Internet of Everything represents a US\$19 trillion global opportunity to create value over the next decade through greater profits for businesses as well as improved citizen services, cost efficiencies, and increased revenues for governments and other public-sector organizations.

Several major transitions in technology—each important in its own right—are combining to make the Internet of Everything possible. These include the emergence of cloud and mobile computing, the growth of big data and analytics, and the explosive development of the Internet of Things (IoT). These transitions are changing the role of information technology (IT), with Internet protocol (IP) networks playing an increasingly central part by seamlessly connecting disparate IT environments. Cisco's contribution to this edition of *The Global Information Technology Report* focuses on the how IP networks facilitate new information flows through the interaction between two of these transitions: IoT and data analytics.

The explosive expansion of IoT, or connections between context-aware machines and other physical objects, is changing how we utilize devices to improve our daily lives. And the shift in data and analytics—from being centralized, structured, and static to being distributed, mixed structured and unstructured, and real-time—is leading to a new era of real-time processing and decision-making.

More industries are moving their systems and processes to IP networks, and the rapid growth of IP-connected devices is driving exponential increases in data traffic. The migration to IP networks and the ability to turn “big data” into valuable, actionable information have demonstrable benefits—both economic and social—as well as positive financial impacts for firms.

In our 30-year history, our success has been based on our ability to see around corners, identify market transitions, and make big bets on what is next—such as the emergence of the Internet of Everything. We have seen this before, in the transitions from bridged networks to routed networks, shared networks to switched ones, circuit switching to packet switching, fixed connectivity to mobile connectivity, dedicated resources to virtual ones, data traffic to voice and video traffic, PC connections to any-device connections, and physical data centers to the cloud.

We see the network as the critical accelerator and enabler in all of these transitions, transforming processes to increase efficiency and decrease costs. In data centers, for example, the network is the common element for intelligence, scale, and flexibility. Data centers have evolved as more intelligence has been built into the network—from networking virtual machines and developing a platform optimizing computing to scaling applications and decoupling them from the server or data center in which they live.

The network also facilitates the growth of applications, a key driver of the Internet of Everything. Applications already provide an integral way that consumers experience the Internet of Everything, with the number of applications growing from 10 billion downloads in 2010 to 77 billion by 2014.

As this trend continues, we expect the Internet of Everything to drive massive gains in efficiency, business growth, and quality of life, helped along by thousands of new IoT applications. These applications will require building new end-to-end IoT infrastructures, which will enable the deployment of even more IoT applications.

We are pleased to collaborate again with the World Economic Forum and INSEAD to produce *The Global Information Technology Report* and the Networked Readiness Index (NRI). The NRI provides policymakers, business leaders, and concerned citizens with valuable insights into current market conditions and the state of connectivity across the world, and helps to identify where more can be done to accelerate the Internet of Everything's positive impact on the world in which we live.

Foreword

CESARE MAINARDI

Chief Executive Officer, Booz & Company

The report in your hands is a compilation of wisdom about the relationship between digitization and corporate strategy. This is a relationship of enormous promise, because digitization—the mass adoption of connected digital services by consumers, enterprises, and governments—provides dramatic power and reach to the companies that understand it.

But there is also enormous tension in the relationship between digitization and strategy. Digital media and technologies are inherently subject to change. A company's strategy, its way of winning in the market, is most effective when it is tied to its identity. And corporate identities—and the capabilities and cultures that go with them—are by nature slow to change. It takes years to develop the kind of proficiency that no other company can easily master.

We have found in our research on capable companies that the most consistently successful are those that master this tension. They base their strategies on their distinctive capabilities: the things they do better than any other company. These are consistent throughout their lifetimes. Apple competes on its unique approach to design, which no other company can match; IKEA on its unparalleled prowess in making and selling low-priced but appealing home furnishings; and Haier on its remarkable ability to translate its customers' needs into innovative new appliances. These successful companies then learn to adapt to new challenges and opportunities within the context of their constant identity. They become rapid innovators, able to shift to new products, markets, and geographies, but they adapt only when their existing capabilities can give them the right to win.

For most companies, digitization is a great enabler. But it is also a great disruptor. It enables competitors as well, including competitors from other sectors who might enter your business arena. This can present a threat that can often turn a company's advantage into a weakness.

Digitization is also distracting: it can present a bewildering array of potential opportunities, all of which look compelling. But pursuing them all is both financially unfeasible and strategically distracting. It leads to incoherence, which can lead an enterprise into decline.

How then do capable companies handle the opportunities and challenges of digitization? They are rigorously and prudently selective. They invest in those areas that are in line with their chosen way to play in the

market—the distinctive way they create value for their customers.

Consider, for example, the threats, distractions, and benefits of one current element of digitization: big data. This is comprised of large datasets often gathered in unstructured forms from the behavior of people and groups. For example, as individuals search online, shop, express their opinions, communicate with each other, and move from one place to another, their aggregate behavior can be tracked and inferences drawn from it. New technologies, such as analytic engines and cloud-based storage, have made it possible to gather these data in unprecedented amounts and interpret them in novel ways. Insights from old forms of market research, such as asking customers what they liked or did not like in a commercial transaction, now become part of a larger pattern of awareness, with both the scale and granularity to give business people a much clearer view of their market.

In capable companies, big data is aligned with their strategies. They invest only in the data gathering that gives them privileged access to the customers they care about, or that contributes to the capabilities that make them distinctive. Without that discipline, companies can be overwhelmed by big data. They can collect a huge volume of information without any predetermined purpose, and then struggle to make sense of it. In short, the prevalence of massive amounts of new information has only highlighted the importance of the old strategic verity: to change successfully, you must stay true to your identity and seek the customers who you can serve well.

The next few years will see many companies struggling to resolve the tension between change and identity. Those who master the new digital technologies in a disciplined way, in the service of their focused strategies, will become more successful in the market—and the economies around them will thrive accordingly.

Executive Summary

BEÑAT BILBAO-OSORIO, World Economic Forum

SOUMITRA DUTTA, Cornell University

BRUNO LANVIN, INSEAD

When *The Global Information Technology Report* (GITR) and the Networked Readiness Index (NRI) were created more than 13 years ago, the attention of decision makers was focused on how to develop strategies that would allow them to benefit from what *Time Magazine* had described as “the new economy”: a new way of organizing and managing economic activity based on the new opportunities that the Internet provided for businesses.¹ At present, the world is slowly emerging from one of the worst financial and economic crises in decades, and policymakers, business leaders, and civil society are looking into new opportunities that can consolidate growth, generate new employment, and create business opportunities. Information and communication technologies (ICTs) continue to rank high on the list as one of the key sources of new opportunities to foster innovation and boost economic and social prosperity, for both advanced and emerging economies.

For more than 13 years, the NRI has provided decision makers with a useful conceptual framework to evaluate the impact of ICTs at a global level and to benchmark the ICT readiness and usage of their economies.

EXTRACTING VALUE FROM BIG DATA

Data have always had strategic value, but with the magnitude of data available today—and our capability to process them—they have become a new form of asset class. In a very real sense, data are now the equivalent of oil or gold. And today we are seeing a data boom rivaling the Texas oil boom of the 20th century and the San Francisco gold rush of the 1800s. It has spawned an entire support industry and has attracted a great deal of business press in recent years.

This new asset class of big data is commonly described by what we call the “three Vs.” Big data is high volume, high velocity, and includes a high variety of sources of information. Next to those traditional three Vs we could add a fourth: value. This is what everyone is looking for, and this is why big data today gets so much attention. In the quest for value, the challenge facing us is how to reduce the complexity and unwieldiness of big data so that it becomes truly valuable.

Big data can take the form of structured data such as financial transactions or unstructured data such as photographs or blog posts. It can be crowd-sourced or obtained from proprietary data sources. Big data has

been fueled by both technological advances (such as the spread of radio-frequency identification, or RFID, chips) and social trends (such as the widespread adoption of social media). Our collective discussions, comments, likes, dislikes, and networks of social connections are now all data, and their scale is massive. What did we search for? What did we read? Where did we go? With whom do we associate? What do we eat? What do we purchase? In short, almost any imaginable human interaction can be captured and studied within the realm of big data.

Big data has arrived. It is changing our lives and changing the way we do business. But succeeding with big data requires more than just data. Data-based value creation requires the identification of patterns from which predictions can be inferred and decisions made. Businesses need to decide which data to use. The data each business owns might be as different as the businesses themselves; these data range from log files and GPS data to customer- or machine-to-machine data. Each business will need to select the data source it will use to create value. Moreover, creating this value will require the right way of dissecting and then analyzing those data with the right analytics. It will require knowing how to separate valuable information from hype.

This world of big data has also become a source of concern. The consequences of big data for issues of privacy and other areas of society are not yet fully understood. Some prominent critics, such as Jaron Lanier,² call on us to be cautious about readily believing any result created by the “wisdom of the crowd.” Moreover, applications of big data in military intelligence have created a growing concern for privacy around the world.

Indeed, we are now living in a world where anything and everything can be measured. “Data” could become a new ideology. We are just at the beginning of a long journey where, with the proper principles and guidelines, we should be able to collect, measure, and analyze more and more information about everyone and everything in order to make better decisions, individually and collectively.

PART 1: THE CURRENT NETWORKED READINESS LANDSCAPE

Part 1 of this *Report* presents the latest findings of the NRI, offering a comprehensive assessment of the present state of networked readiness in the world. Furthermore, a number of expert contributions inquiring into the role of big data and how to extract value from it are also included. These contributions relate to (1) how the network unleashes the benefits of big data; (2) how and why policymakers and business executives need to develop action plans to extract value from big data; (3) balancing the risks and rewards of big data from a public policy perspective; (4) managing these risks and rewards; (5) rebalancing socioeconomic asymmetry in a data-driven economy; (6) the role of regulation and trust building in unlocking the value of big data; (7) turning the potential of big data into socioeconomic results; and (8) defining organizational change to take full advantage of big data.

Insights from the NRI 2014 on the world's networked readiness

Chapter 1.1 provides an overview of the networked readiness landscape of the world as assessed by the NRI 2014. It presents the results of the top 10 performers and selected countries by region, in the following order: Europe and the Commonwealth of Independent States, Asia and the Pacific, Latin America and the Caribbean, sub-Saharan Africa, and the Middle East and North Africa.

Tables 1 through 5 report the 2014 rankings for the overall NRI, its four subindexes, and its 10 pillars. In addition, the Country/Economy Profile and Data Tables sections at the end of the *Report* present the detailed results for the 148 economies covered by the study and the 54 indicators composing the NRI. To complement the analysis of the results, Box 1 presents a classification of countries based on their NRI 2014 scores and the change rate of this Index over a two-year period; Box 2 assesses the nature of the digital divide in Europe; and Box 3 discusses the challenges large emerging economies must overcome if they are to keep moving forward in integrating ICTs into more robust innovation ecosystems that could help them transition from what appears to be a mid-life crisis toward a knowledge-based society. Finally, Appendix A of Chapter 1.1 details the structure of the NRI and describes the method of calculation.

Top 10

The top 10 spots continue to be dominated by Northern European economies, the Asian Tigers, and some of the most advanced Western economies. Three **Nordic economies**—Finland, Sweden, and Norway—lead the rankings and are positioned among the top 5. Denmark and Iceland, the remaining two Nordic economies, also perform strongly, and despite small slips this

year they feature among the top 20. Overall, their performance in terms of ICT readiness, with excellent digital infrastructures and robust innovation systems, allows them to score very highly both in ICT use—with almost universal Internet use, for example—and in innovation performances. The **Asian Tigers**—composed of Singapore, Hong Kong SAR, the Republic of Korea, and Taiwan (China)—also perform very strongly, all of them positioned at the forefront of the NRI and with Singapore, Hong Kong SAR, and Korea featuring among the top 10. All these economies continue to boast outstanding business and innovation environments that are consistently ranked among the most conducive to entrepreneurship in the world. Finally, the top 10 includes some of the **most advanced Western economies**—the Netherlands, Switzerland, the United States, and the United Kingdom—that have recognized the potential of ICTs to embark in a new economic and social revolution, and thus have substantially invested in developing their digital potential.

In evolutionary terms, this year the rankings remain very stable, with no movement in the top 6 and negligible changes in the rest, with the exception of the significant improvement by six positions of Hong Kong SAR, which climbs to 8th place.

For a second consecutive year, **Finland** tops the rankings with a strong performance across the board. It ranks 1st in the readiness subindex thanks to an outstanding digital ICT infrastructure—the best in the world—and 2nd in both the usage and impact subindexes, with more than 90 percent of its population using the Internet and high levels of technological and non-technological innovation. The country also comes in 3rd in the environment subindex, with a very robust innovation system. **Singapore** continues to follow closely in the rankings, remaining in 2nd place. With the best pro-business and pro-innovation environment worldwide, the city-state continues to obtain the top rank in terms of ICT impacts, notably on the social dimension. Supported by a government with a clear digital strategy that offers the best online services in the world, an ICT infrastructure that is relentlessly being improved over time (16th), and one of the highest quality educational systems in the world (3rd), notably in terms of math and science (1st), Singapore has become one of the most knowledge-intensive economies globally (2nd) and is an ICT-generation powerhouse. **Sweden** (3rd) maintains its position this year despite a slight improvement in its overall score, unable to regain the top position it held two editions ago. Overall, the very strong performance of Sweden reflects its world-class, affordable (11th) ICT infrastructure (3rd) and a stable and pro-business and innovation environment (15th), despite its high tax rate (123rd). These strengths result in outstanding uptake and use of ICTs by individuals (1st), businesses (3rd), and government (7th) and one of the highest technological and non-technological innovation performances in the

world (2nd), making Sweden a truly knowledge-based society.

The **United States** moves up two positions to 7th place, thanks to slight improvements in many areas of the Index. These include the country's already good business and innovation environment (7th) and improvements in its ICT infrastructure (4th), notably in terms of wider access to international Internet bandwidth per user. Overall, the country exhibits a robust uptake of ICTs by all major stakeholders—businesses (9th), government (11th), and individuals (18th)—who manage to leverage well one of the best and more affordable (20th) ICT infrastructures (4th). Coupled with a pro-business and pro-innovation environment (7th), these result in a strong innovation capacity (5th) and significant ICT-related economic impacts (9th). The ranking of the United States, the largest economy in the world, in the top 10 shows that fully leveraging ICTs is not dependent on small or medium-sized economies, but instead depends on undertaking the right investments and creating the right condition for it. Despite a drop of two places, the **United Kingdom** continues to exhibit a very strong performance in 9th position. As a service-based economy, the country early recognized the importance of ICTs to support its innovation and competitiveness performance. As a result, it has managed to build a well-developed ICT infrastructure (15th), exhibiting one of the highest population uptakes (8th) and a well-developed e-commerce (1st), which, coupled with a strong pro-business environment, has resulted in solid economic (14th) and social (9th) impacts.

Regional results

Europe has been at the forefront of developing a digital ecosystem as a key ingredient that fosters innovation and competitiveness. As a result, several European countries lead the NRI rankings, with six European economies—Finland, Sweden, the Netherlands, Norway, Switzerland, and the United Kingdom—in the top 10. In addition, in order to maximize the positive impacts of ICTs throughout the European Union and create synergies and positive spillover effects, the European Commission has developed its Digital Agenda as one of seven flagship initiatives under its growth strategy Europe 2020. Despite these efforts, important differences remain across European economies, with Southern and Central and Eastern European economies continuing to lag behind. A deeper analysis of the root causes of these differences shows that, in general, ICT infrastructure and individual uptake is more homogeneous across EU Member States. However, less favorable conditions for innovation and entrepreneurship across European countries result in starker disparities in terms of the economic impacts—for example, innovation performance—accruing from their use, which illustrates the changing nature of the digital divide in Europe and in the rest of the world. The digital divide should not be

regarded only in terms of access to ICT infrastructure, but also in terms of the impacts that using ICTs can provide for the economy and society in general. Within the **Commonwealth of Independent States**, several countries improve their performances, reflecting the key importance and hopes they have placed on ICTs to diversify their economies and lead them toward more knowledge-intensive activities.

With three economies from the region in the top 10 of the NRI rankings and several countries showing improvement, **Asia and the Pacific** is very dynamic and active in developing its ICT agenda. Yet a significant digital divide persists between the most advanced economies—such as the Asian Tigers and Japan—and emerging economies and other trailing countries. Regardless of their position on the development ladder, however, all Asian economies have much to gain from increased networked readiness. It will allow populations of the least advanced among them to gain access to much-needed basic services, to improve government transparency and efficiency, and—for the most advanced—it will contribute to boosting their innovation capacity and allow them to attain higher levels of competitiveness.

Improving the connectivity of **Latin America and the Caribbean** continues to represent one of the region's main challenges despite the recent efforts of many countries to develop and update their ICT infrastructures. Countries such as Chile, Panama, Uruguay, and Colombia have made significant progress in developing and ensuring more and better access to ICT infrastructure, ensuring higher ICT usage across stakeholders. However, persistent weaknesses in the broader innovation system hinder the overall capacity of the region to fully leverage ICTs to foster its competitiveness potential, highlighting the rise of the new digital divide—that is, the divide between countries that are achieving positive economic and social impacts related to the use of ICTs and those that are not.

Sub-Saharan Africa slowly continues to develop its ICT infrastructure, especially by expanding the share of the population covered by, and having access to, mobile telephony and by expanding the number of Internet users, which in some countries—such as South Africa—has almost doubled. These improvements have led to many important innovations that provide more and better services that were previously unavailable, such as financial services. Notwithstanding this progress, the region overall continues to suffer from a relatively poor ICT infrastructure, which remains costly to access, although some notable exceptions exist. More importantly, severe weaknesses persist in the region's business and innovation ecosystems, which result in very low positive economic and social impacts. Addressing these weaknesses, not only by developing a more solid ICT infrastructure but also by improving the framework conditions for innovation and entrepreneurship, will be

crucial to avoid the emergence of a new digital divide that will be evident in a disparity of the economic and social impacts associated with what has been called the digital revolution.

As in previous years, the **Middle East and North Africa** depicts a highly diversified outlook in terms of the capacity of countries to leverage ICTs to boost competitiveness and well-being. On the one hand, Israel and several Gulf Cooperation Council states have continued their efforts to improve ICT uptake and integrate ICTs better in more robust innovation ecosystems in order to obtain higher returns. On the other hand, many countries in North Africa continue to lag behind and suffer from important weaknesses in their framework conditions and overall innovation capacity that prevent them from fully leveraging ICTs and obtaining higher returns.

The Internet of Everything: How the Network Unleashes the Benefits of Big Data

Chapter 1.2, contributed by Robert Pepper and John Garrity from Cisco Systems, details how Internet protocol (IP) networks underpin the concept of the Internet of Everything (IoE) and explores how IP networks accelerate big data's transformational impact on individuals, businesses, and governments around the world.

As exabytes of new data are created daily, a rising share of this data growth is flowing over IP networks as more people, places, and things connect to the IoE. Proprietary networks are increasingly migrating to IP, facilitating the growth of big data, and networks are fast becoming the key link among data generation, analysis, processing, and utilization.

The authors highlight four major trends driving data growth over IP networks and detail how networks are central to maximizing analytical value from the data deluge. The chapter identifies critical technology and public policy challenges that could accelerate, or encumber, the full impact of big data and the IoE including standards and interoperability, privacy and security, spectrum and bandwidth constraints, cross-border data traffic, legacy regulatory models, reliability, scaling, and electrical power.

Big Data Maturity: An Action Plan for Policymakers and Executives

In Chapter 1.3, Bahjat El-Darwiche, Volkmar Koch, David Meer, Ramez T. Shehadi, and Walid Tohme of Booz & Company argue that big data has the potential to improve or transform existing business operations and reshape entire economic sectors. Big data can pave the way for disruptive, entrepreneurial companies and allow new industries to emerge. The technological aspect is important, but technology alone is insufficient to allow big data to show its full potential and to prevent companies from feeling swamped by this information.

What matters is to reshape internal decision-making culture so that executives base their judgments on data rather than hunches. Research already indicates that companies that have managed this are more likely to be productive and profitable than their competition.

Organizations need to understand where they are in terms of big data maturity, an approach that allows them to assess progress and identify necessary initiatives. Judging maturity requires looking at environment readiness, determining how far governments have provided the necessary legal and regulatory frameworks and ICT infrastructure; considering an organization's internal capabilities and how ready it is to implement big data initiatives; and looking also at the many and more complicated methods for using big data, which can mean simple efficiency gains or revamping a business model. The ultimate maturity level involves transforming the business model to become data-driven, which requires significant investment over many years.

Policymakers should pay particular attention to environment readiness. They should present citizens with a compelling case for the benefits of big data. This means addressing privacy concerns and seeking to harmonize regulations around data privacy globally. Policymakers should establish an environment that facilitates the business viability of the big data sector (such as data, service, or IT system providers), and they should take educational measures to address the shortage of big data specialists. As big data becomes ubiquitous in public and private organizations, its use will become a source of national and corporate competitive advantage.

Balancing the Risks and Rewards of Data-Driven Public Policy

Alex "Sandy" Pentland from the Massachusetts Institute of Technology (MIT) highlights in Chapter 1.4 that we are entering a big data world, where governance is far more driven by data than it has been in the past. Basic to the success of a data-driven society is the protection of personal privacy and freedom. Discussions at the World Economic Forum have made substantial contributions to altering the privacy and data ownership standards around the world in order to give individuals unprecedented control over data that are about them, while at the same time providing for increased transparency and engagement in both the public and private spheres.

We still face the challenge that large organizations, and in particular governments, may be tempted to abuse the power of the data that they hold. To address this concern we need to establish best practices that are in the interests of both large organizations and individuals. This chapter suggests one path by which potential abuses of power can be limited, while at the same time providing greater security for organizations that use

big data. The key policy recommendations for all large organizations, commercial or government, are that:

1. Large data systems should store data in a distributed manner, separated by type (e.g., financial vs. health) and real-world categories (e.g., individual vs. corporate), managed by a department whose function is focused on those data, and with sharing permissions set and monitored by personnel from that department. Best practice would have the custodians of data be regional and use heterogeneous computer systems. With such safeguards in place, it is difficult to attack many different types of data at once, and it is more difficult to combine data types without authentic authorization.
2. Data sharing should always maintain provenance and permissions associated with data and support automatic, tamper-proof auditing. Best practice would share only answers to questions about the data (e.g., by use of pre-programmed SQL queries known as “Database Views”) rather than the data themselves, whenever possible. This allows improved internal compliance and auditing, and helps minimize the risk of unauthorized information leakage.
3. Systems controlled by partner organizations, and not just a company’s own systems, should be secure. External data sharing should occur only between data systems that have similar local control, permissions, provenance, and auditing, and should include the use of standardized legal agreements such as those employed in trust networks. Otherwise data can be siphoned off at either the data source or the end consumer, without the need for attacking central system directly.
4. The need for a secure data ecosystem extends to the private data of individuals and the proprietary data of partner companies. As a consequence, best practice for data flows to and from individual citizens and businesses is to require them to have secure personal data stores and be enrolled in a trust network data sharing agreement.
5. All entities should employ secure identity credentials at all times. Best practice is to base these credentials on biometric signatures.
6. Create an “open” data commons that is available to partners under a lightweight legal agreement, such as the trust network agreements. Open data can generate great value by allowing third parties to improve services.

Although these recommendations might at first glance seem cumbersome, they are for the most part easily implemented with the standard protocols found within modern computer databases and networks. In

many cases, the use of distributed data stores and management are already part of current practice, and so the entire system will be simpler and cheaper to implement than a centralized solution: all that is really new is the careful use of provenance, permissions, and auditing within a legal or regulatory framework such as a trust network. Most importantly, these recommendations will result in a data ecosystem that is more secure and resilient, allowing us to safely reap the advantages of using big data to help set and monitor public policy.

Managing the Risks and Rewards of Big Data

In Chapter 1.5., Matt Quinn and Chris Taylor from TIBCO argue that expert handling of big data brings the reward of being able to react to world-changing events, both big and small, at an unprecedented rate and scope. Epidemics can be tracked and miracle drugs developed, for example, but at the same time, big data brings risks that require balancing those benefits against privacy concerns raised by the potentially unsettling correlation of personal information.

Organizations are awakening to the reality that an overwhelming amount of high-volume, wide-variety, and high-velocity data creates three key trends:

- Big data leverages previously untapped data sources to liberate information from places where it was previously hidden.
- Big data management requires automation wherever possible, because volume and complexity eliminate the ability of humans to intervene and reprogram processes in real time.
- Big data forces us to create adaptable, less fragile data systems because the sheer variety of structured and unstructured data breaks the old computational and transactional ways of writing logic.

These trends create two main challenges:

- Big data holds unseen patterns, which need to be visualized using analytics tools and techniques. Insights gained must be used at the right time, in the right context, and with the right approach.
- The challenge of systematically discovering, capturing, governing, and securing ever-larger amounts of data is much more complicated than the relatively simple problem of marshaling storage and computational resources.

These elements are the driving forces behind making use of big data in increasingly sophisticated ways. The chapter cites examples in healthcare, logistics, and retail where big data is being tackled with a systems approach that takes into consideration information streaming constantly as well as what is found in historical databases that cut through the mystique of

big data and get to the core of understanding big data's risks and rewards.

Rebalancing Socioeconomic Asymmetry in a Data-Driven Economy

Chapter 1.6, contributed by Peter Haynes of the Atlantic Council and M-H. Carolyn Nguyen at Microsoft, explains that an increasing amount of data is being generated by individuals who are handing potentially valuable information to commercial enterprises in exchange for “free” services. Moreover, they are doing this without realizing—or being recompensed for—their data's monetary value, and with little or no control over its immediate or future use. These socioeconomic asymmetries in the broad data ecosystem are a potential threat to the emerging data-driven economy, since they may reduce overall output as more and more economic activity is predicated on the use, exchange, and analytics of data. The authors argue the need for a data ecosystem based on fair value exchange and the ability of users to control the use of data related to them. The chapter also considers potential technology and policy approaches by which this might be achieved, and present the need for significant additional research and new thinking, in both technology and policy, to enable a sustainable data-driven economy.

Building Trust: The Role of Regulation in Unlocking the Value of Big Data

In Chapter 1.7, Scott Beardsley, Luís Enríquez, Ferry Grijpink, Sergio Sandoval, Steven Spittaels, and Malin Strandell-Jansson from McKinsey & Company highlight the expectation that big data will create great benefit for society, companies, and individuals in the coming years. For this to fully materialize, however, a number of factors must be in place. There must be robust high-speed Internet networks, an educated workforce, and consumer trust in the services, especially regarding the protection of personal data and privacy.

The increasing importance of protecting personal data and privacy is being recognized by countries and organizations across the world. There are, however, a range of diverging views about how to tackle the issue. These range from the light-touch approach of the United States, which leaves the issue mainly to the industry to solve, to the strict *ex ante* regulatory framework as advocated by the European Union.

No matter which approach is taken, a few issues remain unclear across the frameworks. These issues might hamper public trust in big data applications and companies and hinder the development of big data to its full potential. The issues of concern include how to define personal data, how to treat anonymous data, whether to allow the right to be forgotten, and the need to clarify the relevant jurisdictions and liabilities between parties.

The chapter outlines a few suggestions for regulators and companies about how to tackle these issues, and suggests that regulators should work closely with industry stakeholders and across regions to achieve technology-neutral high-level regulatory principles that last and promote industry self-regulation.

Companies should, after an initial assessment, implement necessary changes into their organization and cooperate with the regulators and industry stakeholders. Key, however, is to empower the customer. With clear and transparent privacy policies outlining practices, enabled services, and trade-offs, consumers are empowered to make their own choices while the trust of the industry is preserved.

From Big Data to Big Social and Economic Opportunities: Which Policies Will Lead to Leveraging Data-Driven Innovation's Potential?

Chapter 1.8, contributed by Pedro Less Andrade, Jess Hemerly, Gabriel Recalde, and Patrick Ryan at Google, focuses on the social and economic value of data, but from the point of view of use and purpose rather than volume. As it has become axiomatic that more data are produced every year, commentators have been driven to call this revolution the “age of big data.” However, what is commonly known as “big data” is not a new concept: the use of data to build successful products and services, optimize business processes, and make more efficient data-based decisions already has an established history. Moreover, the term *big data* is ambiguous: the main features of big data (quantity, speed, variety) are technical properties that depend not on the data themselves but on the evolution of computing, storage, and processing technologies. What is important about big data is not its volume but how it may contribute to innovation and therefore be used to create value. This is why this chapter uses data-driven innovation to frame the discussion.

High-value solutions that may not have quantifiable economic value are being developed using data, and many sectors, from businesses to governments, benefit from data-driven innovation. Apart from producing and using data for better policymaking processes, the public sector can also play its part in promoting and fostering data-driven innovation and growth throughout economies by (1) making public data accessible through open data formats, (2) promoting balanced legislation, and (3) supporting education that focuses on data science skills.

Making Big Data Something More than the “Next Big Thing”

In Chapter 1.9., Anant Gupta, Chief Executive Officer at HCL Technologies Ltd, argues that big data analytics is not a passing fad. It will be a central means of creating value for the organization of tomorrow—almost literally, tomorrow. It represents a major change in the way that

businesses and other organizations will operate, and using it successfully will require a new mind-set and new capabilities. Given that, many organizations are struggling to even know where to start in becoming big-data competent. A step-by-step approach can make the transition seem less daunting and minimize the stumbles that are bound to occur along the way.

PARTS 2 AND 3: COUNTRY/ECONOMY PROFILES AND DATA PRESENTATION

Parts 2 and 3 of the *Report* feature comprehensive profiles for each of the 148 economies covered this year as well as data tables for each of the 54 variables composing the NRI, with global rankings. Each part begins with a description of how to interpret the data provided.

Technical notes and sources, included at the end of Part 3, provide additional insight and information on the definitions and sources of specific quantitative non-Survey data variables included in the NRI computation this year.

NOTES

- 1 Alexander 1983.
- 2 See Lanier 2010; see also Kakutani 2010.

REFERENCES

Alexander, C. P. 1983. "The New Economy." *Time Magazine*, May 30. Available at <http://content.time.com/time/magazine/article/0,9171,926013,00.html>.

Kakutani, M. 2010. "A Rebel in Cyberspace, Fighting Collectivism." *Books of the Times*, January 14. *The New York Times*. Available at http://www.nytimes.com/2010/01/15/books/15book.html?_r=0.

Lanier, J. 2010. *You Are Not a Gadget*. New York: Vintage Books, Random House.

The Networked Readiness Index Rankings

The Networked Readiness Index 2014

Rank	Country/Economy	Value	2013 rank (out of 144)	Rank	Country/Economy	Value	2013 rank (out of 144)
1	Finland	6.04	1	75	Romania	3.95	75
2	Singapore	5.97	2	76	Sri Lanka	3.94	69
3	Sweden	5.93	3	77	Moldova	3.89	77
4	Netherlands	5.79	4	78	Philippines	3.89	86
5	Norway	5.70	5	79	Mexico	3.89	63
6	Switzerland	5.62	6	80	Serbia	3.88	87
7	United States	5.61	9	81	Ukraine	3.87	73
8	Hong Kong SAR	5.60	14	82	Ecuador	3.85	91
9	United Kingdom	5.54	7	83	India	3.85	68
10	Korea, Rep.	5.54	11	84	Vietnam	3.84	84
11	Luxembourg	5.53	16	85	Rwanda	3.78	88
12	Germany	5.50	13	86	Jamaica	3.77	85
13	Denmark	5.50	8	87	Tunisia	3.77	n/a
14	Taiwan, China	5.47	10	88	Guyana	3.77	100
15	Israel	5.42	15	89	Cape Verde	3.73	81
16	Japan	5.41	21	90	Peru	3.73	103
17	Canada	5.41	12	91	Egypt	3.71	80
18	Australia	5.40	18	92	Kenya	3.71	92
19	Iceland	5.30	17	93	Dominican Republic	3.69	90
20	New Zealand	5.27	20	94	Bhutan	3.68	n/a
21	Estonia	5.27	22	95	Albania	3.66	83
22	Austria	5.26	19	96	Ghana	3.65	95
23	Qatar	5.22	23	97	Lebanon	3.64	94
24	United Arab Emirates	5.20	25	98	El Salvador	3.63	93
25	France	5.09	26	99	Morocco	3.61	89
26	Ireland	5.07	27	100	Argentina	3.53	99
27	Belgium	5.06	24	101	Guatemala	3.52	102
28	Malta	4.96	28	102	Paraguay	3.47	104
29	Bahrain	4.86	29	103	Botswana	3.43	96
30	Malaysia	4.83	30	104	Iran, Islamic Rep.	3.42	101
31	Lithuania	4.78	32	105	Namibia	3.41	111
32	Saudi Arabia	4.78	31	106	Venezuela	3.39	108
33	Portugal	4.73	33	107	Gambia, The	3.38	98
34	Spain	4.69	38	108	Cambodia	3.36	106
35	Chile	4.61	34	109	Lao PDR	3.34	n/a
36	Slovenia	4.60	37	110	Zambia	3.34	115
37	Cyprus	4.60	35	111	Pakistan	3.33	105
38	Kazakhstan	4.58	43	112	Nigeria	3.31	113
39	Latvia	4.58	41	113	Suriname	3.30	117
40	Oman	4.56	40	114	Senegal	3.30	107
41	Puerto Rico	4.54	36	115	Uganda	3.25	110
42	Czech Republic	4.49	42	116	Honduras	3.24	109
43	Panama	4.36	46	117	Zimbabwe	3.24	116
44	Jordan	4.36	47	118	Kyrgyz Republic	3.22	118
45	Brunei Darussalam	4.34	57	119	Bangladesh	3.21	114
46	Croatia	4.34	51	120	Bolivia	3.21	119
47	Hungary	4.32	44	121	Liberia	3.19	97
48	Mauritius	4.31	55	122	Côte d'Ivoire	3.14	120
49	Azerbaijan	4.31	56	123	Nepal	3.09	126
50	Russian Federation	4.30	54	124	Nicaragua	3.08	125
51	Turkey	4.30	45	125	Tanzania	3.04	127
52	Montenegro	4.27	48	126	Swaziland	3.00	136
53	Costa Rica	4.25	53	127	Mali	3.00	122
54	Poland	4.24	49	128	Gabon	2.98	121
55	Barbados	4.22	39	129	Algeria	2.98	131
56	Uruguay	4.22	52	130	Ethiopia	2.95	128
57	Macedonia, FYR	4.19	67	131	Cameroon	2.94	124
58	Italy	4.18	50	132	Malawi	2.90	129
59	Slovak Republic	4.12	61	133	Lesotho	2.88	138
60	Georgia	4.09	65	134	Sierra Leone	2.85	143
61	Mongolia	4.07	59	135	Benin	2.82	123
62	China	4.05	58	136	Burkina Faso	2.78	130
63	Colombia	4.05	66	137	Mozambique	2.77	133
64	Indonesia	4.04	76	138	Libya	2.75	132
65	Armenia	4.03	82	139	Madagascar	2.74	137
66	Seychelles	4.02	79	140	Yemen	2.73	139
67	Thailand	4.01	74	141	Timor-Leste	2.69	134
68	Bosnia and Herzegovina	3.99	78	142	Mauritania	2.61	135
69	Brazil	3.98	60	143	Haiti	2.52	141
70	South Africa	3.98	70	144	Angola	2.52	n/a
71	Trinidad and Tobago	3.97	72	145	Guinea	2.48	140
72	Kuwait	3.96	62	146	Myanmar	2.35	n/a
73	Bulgaria	3.96	71	147	Burundi	2.31	144
74	Greece	3.95	64	148	Chad	2.22	142

Part 1

The Current Networked Readiness Landscape and Rewards and Risks of Big Data

The Networked Readiness Index 2014: Benchmarking ICT Uptake in a World of Big Data

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When *The Global Information Technology Report* (GITR) and the Networked Readiness Index (NRI) were created more than 13 years ago, the attention of decision makers was focused on how to develop strategies that would allow them to benefit from what *Time Magazine* had described as “the new economy”: a new way of organizing and managing economic activity based on the new opportunities that the Internet provided for businesses.¹ At present, the world is slowly emerging from one of the worst financial and economic crises in decades, and policymakers, business leaders, and civil society are looking into new opportunities that can consolidate growth, generate new employment, and create business opportunities. Information and communication technologies (ICTs) continue to rank high on the list as one of the key sources of new opportunities to foster innovation and boost economic and social prosperity, for both advanced and emerging economies.

For more than 13 years, the NRI has provided decision makers with a useful conceptual framework to evaluate the impact of ICTs at a global level and to benchmark the ICT readiness and usage of their economies.

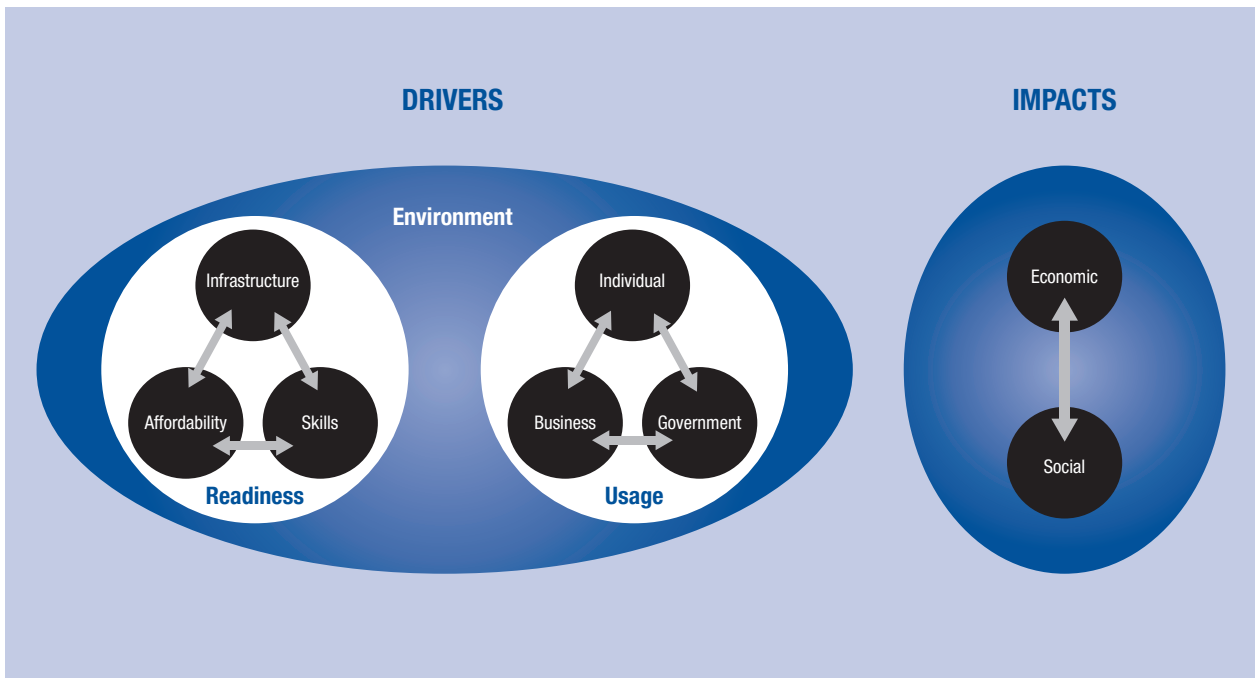
EXTRACTING VALUE FROM BIG DATA

Data have always had strategic value, but with the magnitude of data available today—and our capability to process them—they have become a new form of asset class. In a very real sense, data are now the equivalent of oil or gold. And today we are seeing a data boom rivaling the Texas oil boom of the 20th century and the San Francisco gold rush of the 1800s. It has spawned an entire support industry and has attracted a great deal of business press in recent years.

As explained in more detail in Chapter 1.3, this new asset class of big data is commonly described by what we call the “three Vs.” Big data is high volume, high velocity, and includes a high variety of sources of information. Next to those three Vs we could add a fourth: value. This is what everyone is looking for, and this is why big data today gets so much attention. In the quest for value, the challenge facing us is how to reduce the complexity and unwieldiness of big data so that it becomes truly valuable.

Big data can take the form of structured data such as financial transactions or unstructured data such as photographs or blog posts. It can be crowd-sourced or obtained from proprietary data sources. Big data has been fueled by both technological advances (such as the spread of radio-frequency identification, or RFID, chips) and social trends (such as the widespread adoption of social media). Our collective discussions, comments, likes, dislikes, and networks of social connections are now all data, and their scale is massive. What did we search for? What did we read? Where did we go? With whom do we associate? What do we eat? What do

Figure 1: The Networked Readiness Index framework



we purchase? In short, almost any imaginable human interaction can be captured and studied within the realm of big data.

Big data has arrived. It is changing our lives and changing the way we do business. Some examples include the following:

- Google uses big data to predict the next wave of influenza.²
- IBM uses data to optimize traffic flow in the city of Stockholm,³ and to get the best possible air quality.
- Dr. Jeffrey Brenner, a physician in New Jersey, uses medical billing data to map out hot spots where you can find his city's most complex and costly healthcare cases as part of a program to lower healthcare costs.⁴
- The National Center for Academic Transformation is using data mining to help understand which college students are more likely to succeed in which courses.⁵

But succeeding with big data requires more than just data. Data-based value creation requires the identification of patterns from which predictions can be inferred and decisions made. Businesses need to decide which data to use. The data each business owns might be as different as the businesses themselves; these data range from log files and GPS data to customer- or machine-to-machine data. Each business will need to select the data source it will use to create value.

Moreover, creating this value will require the right way of dissecting and then analyzing those data with the right analytics. It will require knowing how to separate valuable information from hype. Chapter 1.7 provides guidelines for businesses to make this transition. To a large extent, mastering big data can also be compared to irrigation. It is not enough to "bring water" to where it can create fertility and value. Flooding can destroy crops and even drive precious nutrients away. Mastering water resources requires the delicate management of how much is needed and when, and often requires complex and interconnected systems of channels, levees, and regulation. Success with these resources is what made ancient Egypt a brilliant civilization and turned China into a unified country. The stakes are not dissimilar when applied to big data, but this is a resource that could benefit the entire planet instead of just one country.

For many, "data-driven" has become the new management philosophy. The Economist Intelligence Unit released survey data showing that approximately two-thirds of executives feel that big data will help find new market opportunities and make better decisions.⁶ Nearly half of the surveyed respondents feel big data will increase competitiveness, and more than a third believe it will boost financial performance.

This world of big data has also become a source of concern. The consequences of big data for issues of privacy and other areas of society are not yet fully understood. Some prominent critics, such as Jaron Lanier,⁷ call on us to be cautious about readily believing any result created by the "wisdom of the crowd."

Moreover, applications of big data in military intelligence have created a growing concern for privacy around the world.

Indeed, we are now living in a world where anything and everything can be measured. “Data” could become a new ideology. We are just at the beginning of a long journey where, with the proper principles and guidelines, we should be able to collect, measure, and analyze more and more information about everyone and everything in order to make better decisions, individually and collectively.

THE NETWORKED READINESS FRAMEWORK: A HOLISTIC APPROACH TO MEASURE ICT ACCESS AND IMPACTS

Because of the potential high returns that ICTs can provide in transforming a nation’s economy and increasing its citizens’ well-being, assessing ICT developments has been the object of much academic and policy attention over the past decade. Several organizations have exerted significant effort toward measuring and benchmarking ICT deployment and uptake, but few have tried as hard to assess the returns that ICTs can actually provide to both the economy and society. Although data are still scarce in terms of ICT impacts, policy interest in measuring ICTs has shifted from measuring ICT access to measuring ICT impacts.

In 2012, after two years of research and consultations with ICT practitioners, policy and industry experts, and academia, the Networked Readiness Index (NRI) introduced a new subindex on ICT impacts that aimed at holistically assessing the way that countries go about leveraging ICTs and benefiting from them in terms of enhanced competitiveness and well-being. This evolution ensures that the NRI framework remains at the forefront of ICT measurement. As one of the most authoritative assessments of its kind, it has been adopted by several governments as a valuable tool for informing their competitiveness and policy agendas.

The design of the framework for the calculation of the NRI (Figure 1) has been guided by five principles:

1. **Measuring the economic and social impacts of ICTs is crucial.** The NRI must include aspects of the way ICTs are transforming both the economy and society. In several economies, the ICT industry has become increasingly important and now accounts for a significant share of value-added and employment. In addition, ICTs interact closely with many other sectors, thus enabling innovations to accrue and affecting productivity. Moreover, the impacts of ICTs are also evident in the development of new skills that are important in knowledge-based, information-rich societies and that are crucial for employment. In society, ICTs allow citizens to participate more actively and steadily in social and political debates and make the government more accountable. They improve access to better and
2. **An enabling environment determines the capacity of an economy and society to benefit from the use of ICTs.** The success of a country in leveraging ICTs and achieving the desired economic and social benefits will depend on its overall environment—including market conditions, the regulatory framework, and innovation-prone conditions—to boost innovation and entrepreneurship.
3. **ICT readiness and usage remain key drivers and preconditions for obtaining any impacts.** Despite the increasing availability of ICTs, the question of access and usage remains important especially for developing countries, given their need to narrow the digital divide. Even within developed nations, the need to provide high-speed broadband to all segments of the population has acquired greater importance in recent years. Some features of the NRI are related to access and usage; these cover not only affordable ICT infrastructure but also digital resources, including software and skills. Moreover, ICT impacts can arise only if ICTs are widely used by all key actors—individuals, businesses, and governments. It is a society-wide effort. Those actors demonstrating better preparedness and greater interest are likely to use ICTs more and more effectively, contributing to a greater impact on competitiveness and development.
4. **All factors interact and co-evolve within an ICT ecosystem.** Those societies that can count on better-prepared actors and an enabling environment are more likely to benefit from higher rates of ICT use and more extensive impacts. At the same time, those societies that benefit from higher rates of ICT use and positive impacts will, in turn, be more likely to benefit from a push on the part of the different stakeholders to be better prepared and keep improving the framework conditions that will allow for more and stronger benefits to accrue. As a result, a virtuous circle starts, where improvements in one area affect and drive improvements in other areas. Conversely, lags in one particular factor also affect the evolution of the other factors.
5. **The framework should provide clear policy orientations and identify opportunities for public-private collaboration.** The NRI facilitates the identification of areas where policy intervention—through investment including public-private partnerships, smart regulation, or the provision of incentives—could boost the impacts of ICTs. This is important because the development and general uptake of ICTs depend on the capacity of a country to provide an institutional framework

with reliable and efficient rules and regulations; favorable business conditions for the founding and growth of new (social and commercial) enterprises; an innovation-prone environment, capable of developing and absorbing new knowledge; and an ICT-friendly government policy.

ELEMENTS OF THE NETWORKED READINESS INDEX

The networked readiness framework translates into the NRI, comprising four subindexes: these measure the environment for ICTs; the readiness of a society to use ICTs; the actual usage of all main stakeholders; and, finally, the impacts that ICTs generate in the economy and in society. The three first subindexes can be regarded as the drivers that establish the conditions for the results of the fourth subindex, ICT impacts. These four subindexes are divided into 10 pillars composed of 54 individual indicators in total, according to the following structure (see also Figure 2):

A. Environment subindex

1. Political and regulatory environment
2. Business and innovation environment

B. Readiness subindex

3. Infrastructure and digital content
4. Affordability
5. Skills

C. Usage subindex

6. Individual usage
7. Business usage
8. Government usage

D. Impact subindex

9. Economic impacts
10. Social impacts

The final NRI score is a simple average of the four composing subindex scores, while each subindex's score is a simple average of those of the composing pillars. In doing this, we assume that all NRI subindexes make a similar contribution to networked readiness. Appendix A includes detailed information on the composition and computation of the NRI 2014, while we briefly describe the different subindexes below.

Environment subindex

The environment subindex gauges the friendliness of a country's market and regulatory framework in supporting high levels of ICT uptake and the emergence of entrepreneurship and innovation-prone conditions. A supportive environment is necessary to maximize the potential impacts of ICTs in boosting competitiveness and well-being. It includes a total of 18 variables distributed into two pillars.

The *political and regulatory environment pillar* (composed of nine variables) assesses the extent

to which the national legal framework facilitates ICT penetration and the safe development of business activities, taking into account general features of the regulatory environment (including the protection afforded to property rights, the independence of the judiciary, and the efficiency of the law-making process) as well as more ICT-specific dimensions (the passing of laws related to ICTs and software piracy rates).

The *business and innovation environment pillar* (nine variables) gauges the capacity of the business framework's conditions to boost entrepreneurship, taking into account dimensions related to the ease of doing business (including the presence of red tape and excessive fiscal charges). This pillar also measures the presence of conditions that allow innovation to flourish by including variables on the overall availability of technology, the demand conditions for innovative products (as proxied by the development of government procurement of advanced technology products), the availability of venture capital for financing innovation-related projects, and the presence of a skilled labor force.

Readiness subindex

The readiness subindex, with a total of 12 variables, measures the degree to which a society is prepared to make good use of an affordable ICT infrastructure and digital content.

The *infrastructure and digital content pillar* (five variables) captures the development of ICT infrastructure (including mobile network coverage, international Internet bandwidth, secure Internet servers, and electricity production) as well as the accessibility of digital content.

The *affordability pillar* (three variables) assesses the cost of accessing ICTs, either via mobile telephony or fixed broadband Internet, as well as the level of competition in the Internet and telephony sectors that determine this cost.

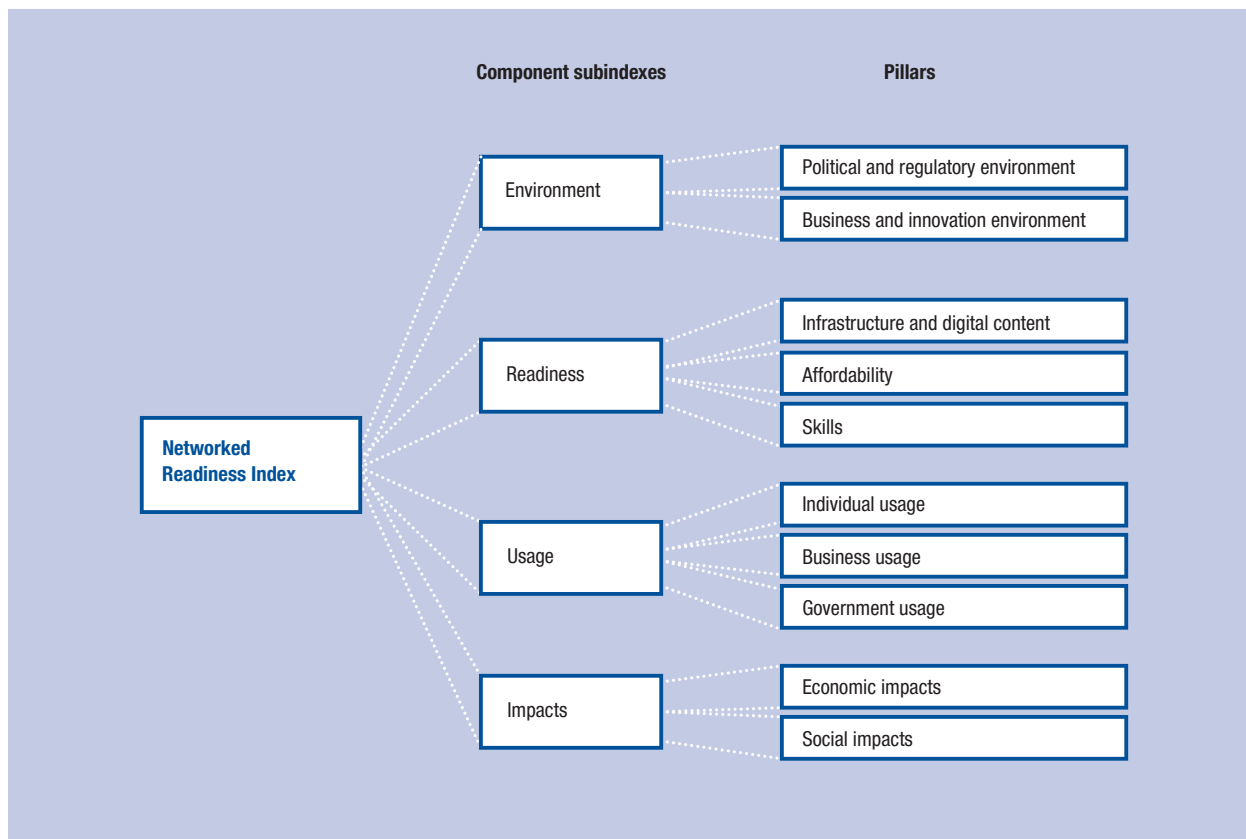
The *skills pillar* (four variables) gauges the ability of a society to make effective use of ICTs thanks to the existence of basic educational skills captured by the quality of the educational system, the level of adult literacy, and the rate of secondary education enrollment.

Usage subindex

The usage subindex assesses the individual efforts of the main social agents—that is, individuals, business, and government—to increase their capacity to use ICTs as well as their actual use in their day-to-day activities with other agents. It includes 16 variables.

The *individual usage pillar* (seven variables) measures ICT penetration and diffusion at the individual level, using indicators such as the number of mobile phone subscriptions, individuals using the Internet, households with a personal computer (PC), households with Internet access, both fixed and mobile broadband subscriptions, and the use of social networks.

Figure 2: The Networked Readiness Index structure



The *business usage pillar* (six variables) captures the extent of business Internet use as well as the efforts of the firms in an economy to integrate ICTs into an internal, technology-savvy, innovation-conducive environment that generates productivity gains. Consequently, this pillar measures the firm's technology absorption capacity as well as its overall capacity to innovate and the production of technology novelties measured by the number of Patent Cooperation Treaty (PCT) patent applications. It also measures the extent of staff training available, which indicates the extent to which management and employees are more capable of identifying and developing business innovations. As we did last year, we split the e-commerce variable to distinguish the business-to-business dimension from the business-to-consumer one, because some noticeable differences between the two dimensions exist in several countries.

The *government usage pillar* (three variables) provides insights into the importance that governments place on carrying out ICT policies for competitiveness and to enhance the well-being of their citizens, the effort they make to implement their visions for ICT development, and the number of government services they provide online.

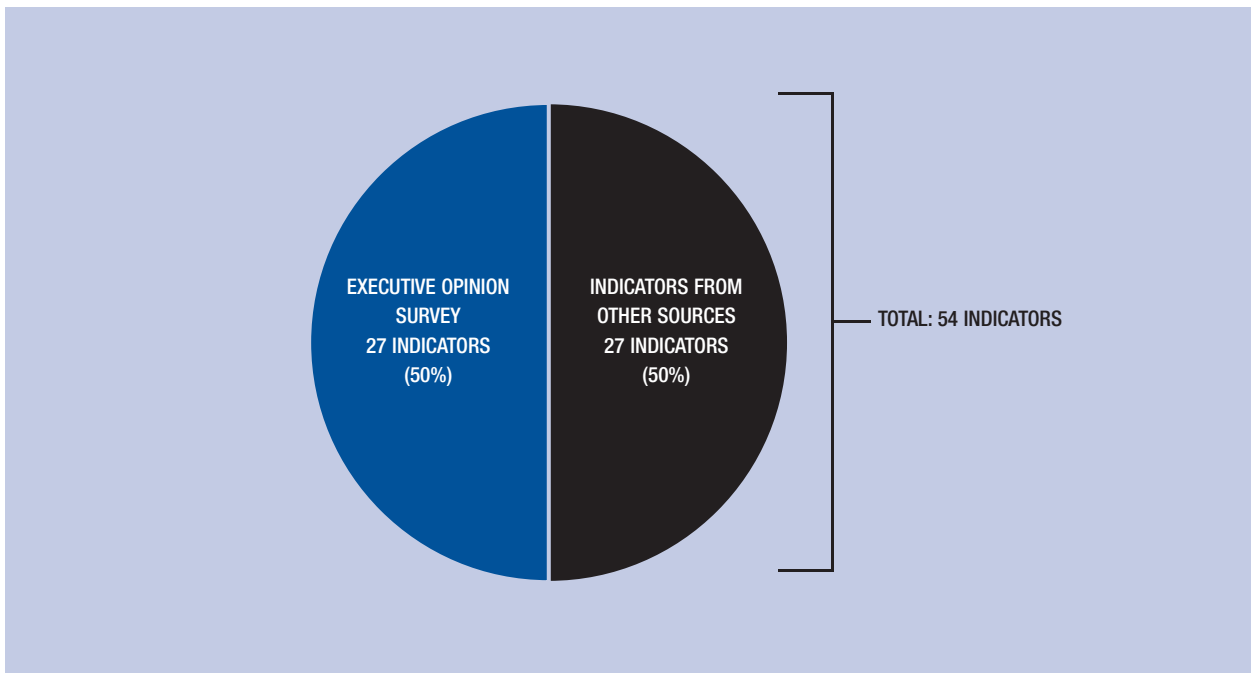
Impact subindex

The impact subindex gauges the broad economic and social impacts accruing from ICTs to boost competitiveness and well-being and that reflect the transformation toward an ICT- and technology-savvy economy and society. It includes a total of eight variables.

The *economic impacts pillar* (four variables) measures the effect of ICTs on competitiveness thanks to the generation of technological and non-technological innovations in the shape of patents, new products or processes, and novel organizational practices. In addition, it also measures the overall shift of an economy toward more knowledge-intensive activities.

The *social impacts pillar* (four variables) aims to assess the ICT-driven improvements in well-being that result from their impacts on the environment, education, energy consumption, health progress, or more-active civil participation. At the moment, because of data limitations, this pillar focuses on measuring the extent to which governments are becoming more efficient in the use of ICTs and provide increased online services to their citizens, and thus improving their e-participation. It also assesses the extent to which ICTs are present in education, as a proxy for the potential benefits that are associated with the use of ICTs in education.

Figure 3: Breakdown of indicators used in the Networked Readiness Index 2014 by data source



In general, measuring the impacts of ICTs is a complex task, and the development of rigorous quantitative data to do so is still in its infancy. As a result, many of the dimensions where ICTs are producing important impacts—especially when these impacts are not directly translated into commercial activities, as is the case for the environment and for health—cannot yet be covered. Therefore this subindex should be regarded as a work in progress that will evolve to accommodate new data on many of these dimensions as they become available.

COMPUTATION METHODOLOGY AND DATA

In order to capture as comprehensively as possible all relevant dimensions of societies' networked readiness, the NRI 2014 is composed of a mixture of quantitative and survey data, as shown in Figure 3.

Of the 54 variables composing the NRI this year, 27—or 50 percent—are quantitative data, collected primarily by international organizations such as International Telecommunication Union (ITU), the World Bank, and the United Nations. International sources ensure the validation and comparability of data across countries.

The remaining 27 variables capture aspects that are more qualitative in nature or for which internationally comparable quantitative data are not available for a large enough number of countries, but that nonetheless are crucial to fully measure national networked readiness. These data come from the Executive Opinion Survey (the Survey), which the Forum administers annually to over

15,000 business leaders in all economies included in the *Report*.⁸ The Survey represents a unique source of insight into many critical aspects related to the enabling environment, such as the effectiveness of law-making bodies and the intensity of local competition; into ICT readiness, such as the quality of the educational system and the accessibility of digital content; into ICT usage, such as capacity to innovate and the importance of government vision for ICTs; and into impacts, such as the impact of ICTs on developing new products and services and improving access to basic services.

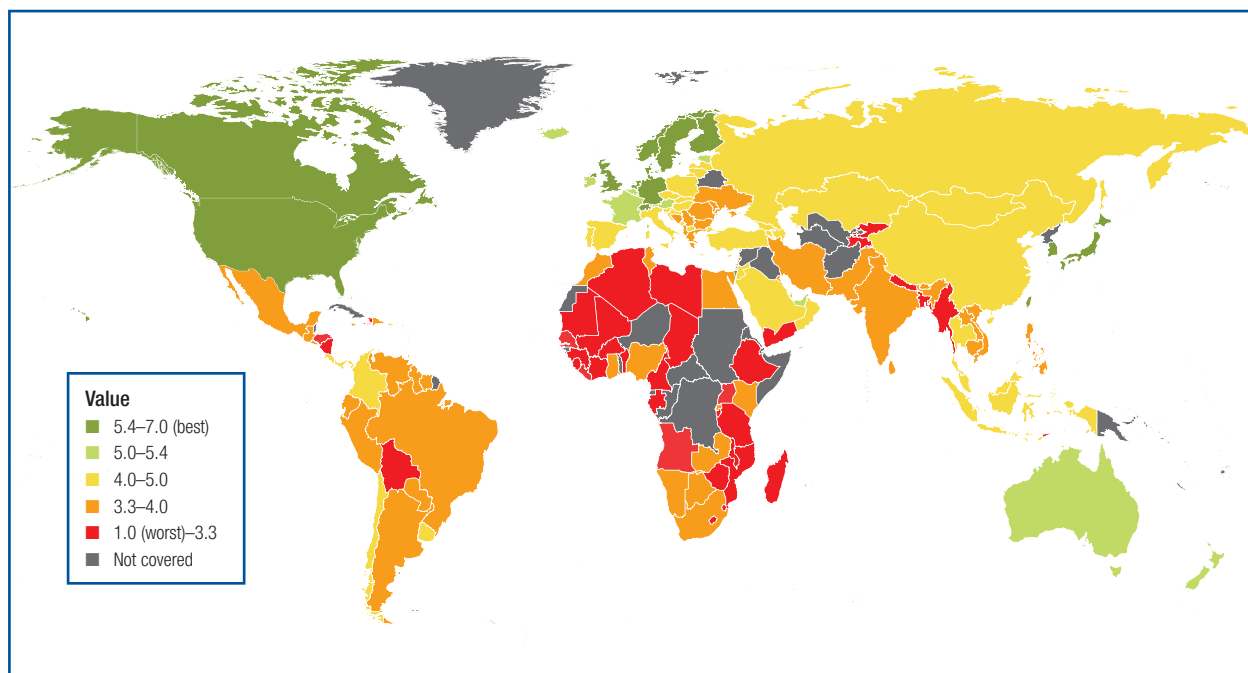
The NRI's coverage every year is determined by the Survey coverage and data availability for indicators obtained from other sources, mostly international organizations. This year the *Report* includes 148 economies, four more than the 2013 edition. The newly covered countries are Bhutan, Lao PDR, and Myanmar. We have also re-instated Angola and Tunisia into the Index, two countries that were not included in last year's edition. Tajikistan is not covered in the 2014 *Report* because Survey data could not be collected this year.

More details on variables included in the Index and their computation can be found in Appendix A and in the Technical Notes and Sources section at the end of the *Report*.

THE CURRENT NETWORKED READINESS LANDSCAPE: INSIGHTS FROM THE NRI 2014

This section provides an overview of the networked readiness landscape of the world as assessed by the

Figure 4: The Networked Readiness Index map



NRI 2014. It presents the results of the top 10 performers and selected countries by region, in the following order: Europe and the Commonwealth of Independent States; Asia and the Pacific; Latin America and the Caribbean, sub-Saharan Africa; and the Middle East and North Africa.

Tables 1 through 5 report the 2014 rankings for the overall NRI, its four subindexes, and its 10 pillars. In addition, the Country/Economy Profiles and Data Tables sections at the end of the *Report* present the detailed results for the 148 economies covered by the study and the 54 indicators composing the NRI. To complement the analysis of the results, Box 1 presents a classification of countries based on their NRI 2014 scores and the change rate of this Index over a two-year period; Box 2 assesses the nature of the digital divide in Europe; and Box 3 discusses the challenges large emerging economies must overcome if they are to keep moving forward in integrating ICTs into more robust innovation ecosystems that could help them transition from what appears to be a mid-life crisis toward a knowledge-based society. Figure 4 presents an intensity map of the world; economies are color-coded based on their NRI overall score measured on a 1-to-7 scale, with best- and worst-performing economies appearing in dark green and red, respectively. Finally, Appendix A of the present chapter details the structure of the NRI and describes the method of calculation.

TOP 10

As in previous years, the top 10 spots continue to be dominated by Northern European economies, the Asian Tigers, and some of the most advanced Western economies. Three **Nordic economies**—Finland, Sweden, and Norway—lead the rankings and are positioned among the top 5. Denmark and Iceland, the remaining two Nordic economies, also perform strongly, and despite small slips this year they feature among the top 20. Overall, their performance in terms of ICT readiness, with excellent digital infrastructures and robust innovation systems, allows them to score very highly both in ICT use—with almost universal Internet use, for example—and in innovation performances. The **Asian Tigers**—composed of Singapore, Hong Kong SAR, the Republic of Korea, and Taiwan (China)—also perform very strongly, all of them positioned at the forefront of the NRI and with Singapore, Hong Kong SAR, and the Republic of Korea featuring among the top 10. All these economies continue to boast outstanding business and innovation environments that are consistently ranked among the most conducive to entrepreneurship in the world. Finally, the top 10 includes some of the **most advanced Western economies**—the Netherlands, Switzerland, the United States, and the United Kingdom—that have recognized the potential of ICTs to embark in a new economic and social revolution, and thus have substantially invested in developing their digital potential.

In dynamic terms, this year the rankings remain very stable, with no movement in the top 6 and negligible

Table 1: The Networked Readiness Index 2014

Rank	Country/Economy	Value	2013 rank (out of 144)	Group*	Rank	Country/Economy	Value	2013 rank (out of 144)	Group*
1	Finland	6.04	1	ADV	75	Romania	3.95	75	CEE
2	Singapore	5.97	2	ADV	76	Sri Lanka	3.94	69	DEVASIA
3	Sweden	5.93	3	ADV	77	Moldova	3.89	77	CIS
4	Netherlands	5.79	4	ADV	78	Philippines	3.89	86	DEVASIA
5	Norway	5.70	5	ADV	79	Mexico	3.89	63	LATAM
6	Switzerland	5.62	6	ADV	80	Serbia	3.88	87	CEE
7	United States	5.61	9	ADV	81	Ukraine	3.87	73	CIS
8	Hong Kong SAR	5.60	14	ADV	82	Ecuador	3.85	91	LATAM
9	United Kingdom	5.54	7	ADV	83	India	3.85	68	DEVASIA
10	Korea, Rep.	5.54	11	ADV	84	Vietnam	3.84	84	DEVASIA
11	Luxembourg	5.53	16	ADV	85	Rwanda	3.78	88	SSA
12	Germany	5.50	13	ADV	86	Jamaica	3.77	85	LATAM
13	Denmark	5.50	8	ADV	87	Tunisia	3.77	n/a	MENA
14	Taiwan, China	5.47	10	ADV	88	Guyana	3.77	100	LATAM
15	Israel	5.42	15	ADV	89	Cape Verde	3.73	81	SSA
16	Japan	5.41	21	ADV	90	Peru	3.73	103	LATAM
17	Canada	5.41	12	ADV	91	Egypt	3.71	80	MENA
18	Australia	5.40	18	ADV	92	Kenya	3.71	92	SSA
19	Iceland	5.30	17	ADV	93	Dominican Republic	3.69	90	LATAM
20	New Zealand	5.27	20	ADV	94	Bhutan	3.68	n/a	DEVASIA
21	Estonia	5.27	22	ADV	95	Albania	3.66	83	CEE
22	Austria	5.26	19	ADV	96	Ghana	3.65	95	SSA
23	Qatar	5.22	23	MENA	97	Lebanon	3.64	94	MENA
24	United Arab Emirates	5.20	25	MENA	98	El Salvador	3.63	93	LATAM
25	France	5.09	26	ADV	99	Morocco	3.61	89	MENA
26	Ireland	5.07	27	ADV	100	Argentina	3.53	99	LATAM
27	Belgium	5.06	24	ADV	101	Guatemala	3.52	102	LATAM
28	Malta	4.96	28	ADV	102	Paraguay	3.47	104	LATAM
29	Bahrain	4.86	29	MENA	103	Botswana	3.43	96	SSA
30	Malaysia	4.83	30	DEVASIA	104	Iran, Islamic Rep.	3.42	101	MENA
31	Lithuania	4.78	32	CEE	105	Namibia	3.41	111	SSA
32	Saudi Arabia	4.78	31	MENA	106	Venezuela	3.39	108	LATAM
33	Portugal	4.73	33	ADV	107	Gambia, The	3.38	98	SSA
34	Spain	4.69	38	ADV	108	Cambodia	3.36	106	DEVASIA
35	Chile	4.61	34	LATAM	109	Lao PDR	3.34	n/a	DEVASIA
36	Slovenia	4.60	37	ADV	110	Zambia	3.34	115	SSA
37	Cyprus	4.60	35	ADV	111	Pakistan	3.33	105	MENA
38	Kazakhstan	4.58	43	CIS	112	Nigeria	3.31	113	SSA
39	Latvia	4.58	41	CEE	113	Suriname	3.30	117	LATAM
40	Oman	4.56	40	MENA	114	Senegal	3.30	107	SSA
41	Puerto Rico	4.54	36	ADV	115	Uganda	3.25	110	SSA
42	Czech Republic	4.49	42	ADV	116	Honduras	3.24	109	LATAM
43	Panama	4.36	46	LATAM	117	Zimbabwe	3.24	116	SSA
44	Jordan	4.36	47	MENA	118	Kyrgyz Republic	3.22	118	CIS
45	Brunei Darussalam	4.34	57	DEVASIA	119	Bangladesh	3.21	114	DEVASIA
46	Croatia	4.34	51	CEE	120	Bolivia	3.21	119	LATAM
47	Hungary	4.32	44	CEE	121	Liberia	3.19	97	SSA
48	Mauritius	4.31	55	SSA	122	Côte d'Ivoire	3.14	120	SSA
49	Azerbaijan	4.31	56	CIS	123	Nepal	3.09	126	DEVASIA
50	Russian Federation	4.30	54	CIS	124	Nicaragua	3.08	125	LATAM
51	Turkey	4.30	45	CEE	125	Tanzania	3.04	127	SSA
52	Montenegro	4.27	48	CEE	126	Swaziland	3.00	136	SSA
53	Costa Rica	4.25	53	LATAM	127	Mali	3.00	122	SSA
54	Poland	4.24	49	CEE	128	Gabon	2.98	121	SSA
55	Barbados	4.22	39	LATAM	129	Algeria	2.98	131	MENA
56	Uruguay	4.22	52	LATAM	130	Ethiopia	2.95	128	SSA
57	Macedonia, FYR	4.19	67	CEE	131	Cameroon	2.94	124	SSA
58	Italy	4.18	50	ADV	132	Malawi	2.90	129	SSA
59	Slovak Republic	4.12	61	ADV	133	Lesotho	2.88	138	SSA
60	Georgia	4.09	65	CIS	134	Sierra Leone	2.85	143	SSA
61	Mongolia	4.07	59	CIS	135	Benin	2.82	123	SSA
62	China	4.05	58	DEVASIA	136	Burkina Faso	2.78	130	SSA
63	Colombia	4.05	66	LATAM	137	Mozambique	2.77	133	SSA
64	Indonesia	4.04	76	DEVASIA	138	Libya	2.75	132	MENA
65	Armenia	4.03	82	CIS	139	Madagascar	2.74	137	SSA
66	Seychelles	4.02	79	SSA	140	Yemen	2.73	139	MENA
67	Thailand	4.01	74	DEVASIA	141	Timor-Leste	2.69	134	DEVASIA
68	Bosnia and Herzegovina	3.99	78	CEE	142	Mauritania	2.61	135	MENA
69	Brazil	3.98	60	LATAM	143	Haiti	2.52	141	LATAM
70	South Africa	3.98	70	SSA	144	Angola	2.52	n/a	SSA
71	Trinidad and Tobago	3.97	72	LATAM	145	Guinea	2.48	140	SSA
72	Kuwait	3.96	62	MENA	146	Myanmar	2.35	n/a	DEVASIA
73	Bulgaria	3.96	71	CEE	147	Burundi	2.31	144	SSA
74	Greece	3.95	64	ADV	148	Chad	2.22	142	SSA

Note: Group classification follows the International Monetary Fund's classification (situation as of October 2013).

* Groups: ADV = Advanced economies; CIS = Commonwealth of Independent States and Mongolia; DEVASIA = Developing Asia; LATAM = Latin America and the Caribbean; MENA = Middle East and North Africa; SSA = Sub-Saharan Africa.

Table 2: Environment subindex and pillars

ENVIRONMENT SUBINDEX			Political and regulatory environment		Business and innovation environment		ENVIRONMENT SUBINDEX			Political and regulatory environment		Business and innovation environment	
Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Country/Economy	Score	Rank	Score	Rank	Score
1	Singapore	5.87	1	5.90	1	5.84	75	Mexico	3.88	70	3.68	85	4.07
2	New Zealand	5.63	2	5.88	8	5.37	76	Bhutan	3.87	43	4.17	123	3.57
3	Finland	5.62	3	5.86	9	5.37	77	China	3.87	56	3.97	115	3.76
4	Hong Kong SAR	5.56	11	5.40	2	5.72	78	Kuwait	3.85	75	3.61	81	4.09
5	United Kingdom	5.50	5	5.66	10	5.33	79	Sri Lanka	3.85	74	3.62	82	4.08
6	Netherlands	5.48	8	5.53	5	5.44	80	Bosnia and Herzegovina	3.83	76	3.59	83	4.08
7	Norway	5.46	7	5.54	6	5.38	81	Ecuador	3.81	89	3.51	78	4.12
8	Sweden	5.45	6	5.63	15	5.26	82	Liberia	3.80	92	3.45	75	4.15
9	Switzerland	5.41	9	5.51	12	5.31	83	Armenia	3.80	104	3.32	67	4.28
10	Canada	5.39	12	5.31	3	5.46	84	Morocco	3.79	81	3.56	88	4.03
11	Luxembourg	5.31	4	5.73	29	4.90	85	Romania	3.79	101	3.38	72	4.20
12	Ireland	5.27	13	5.29	16	5.25	86	Iran, Islamic Rep.	3.79	86	3.53	86	4.04
13	Qatar	5.23	14	5.23	17	5.23	87	Russian Federation	3.78	100	3.39	73	4.17
14	Australia	5.20	15	5.23	21	5.17	88	Italy	3.77	99	3.39	76	4.15
15	United States	5.19	22	5.00	7	5.38	89	Greece	3.76	114	3.20	64	4.32
16	Denmark	5.19	19	5.16	18	5.21	90	Philippines	3.76	87	3.51	92	4.01
17	Germany	5.14	10	5.41	31	4.87	91	India	3.76	73	3.64	103	3.87
18	United Arab Emirates	5.10	24	4.91	13	5.28	92	Kenya	3.75	71	3.67	110	3.83
19	Belgium	5.08	21	5.01	22	5.14	93	Peru	3.75	119	3.10	61	4.39
20	Iceland	5.01	27	4.81	19	5.21	94	Trinidad and Tobago	3.73	93	3.45	91	4.01
21	Japan	4.99	16	5.23	40	4.75	95	Albania	3.72	117	3.14	65	4.31
22	Israel	4.97	28	4.67	14	5.27	96	Vietnam	3.68	91	3.47	100	3.88
23	Austria	4.97	18	5.19	39	4.75	97	Dominican Republic	3.68	110	3.24	79	4.12
24	Malaysia	4.95	25	4.84	24	5.07	98	Cambodia	3.66	95	3.43	98	3.90
25	Taiwan, China	4.94	34	4.43	4	5.45	99	Lesotho	3.66	90	3.48	108	3.84
26	Estonia	4.88	26	4.83	28	4.93	100	Senegal	3.64	106	3.26	89	4.02
27	Saudi Arabia	4.86	31	4.59	23	5.12	101	Colombia	3.64	96	3.41	104	3.87
28	Rwanda	4.83	17	5.22	55	4.45	102	Tunisia	3.64	94	3.44	109	3.83
29	Chile	4.83	38	4.34	11	5.32	103	Lebanon	3.63	142	2.62	48	4.63
30	France	4.82	23	4.97	47	4.67	104	Uganda	3.59	77	3.57	121	3.61
31	South Africa	4.76	20	5.05	53	4.48	105	Guatemala	3.59	123	3.02	74	4.16
32	Puerto Rico	4.75	29	4.64	33	4.86	106	Serbia	3.58	118	3.11	87	4.04
33	Oman	4.69	32	4.54	36	4.84	107	Malawi	3.57	69	3.70	130	3.43
34	Korea, Rep.	4.68	42	4.18	20	5.19	108	Sierra Leone	3.55	82	3.55	124	3.55
35	Portugal	4.63	39	4.26	25	5.00	109	Nigeria	3.54	112	3.23	106	3.85
36	Malta	4.62	30	4.63	49	4.62	110	El Salvador	3.53	121	3.10	95	3.96
37	Mauritius	4.61	33	4.48	43	4.75	111	Côte d'Ivoire	3.52	116	3.16	102	3.87
38	Barbados	4.58	35	4.42	42	4.75	112	Ethiopia	3.50	102	3.37	120	3.64
39	Cyprus	4.57	45	4.16	26	4.98	113	Swaziland	3.49	84	3.55	129	3.44
40	Bahrain	4.52	48	4.07	27	4.96	114	Ukraine	3.48	130	2.89	84	4.08
41	Jordan	4.45	44	4.16	41	4.75	115	Tanzania	3.47	85	3.54	132	3.39
42	Latvia	4.44	53	4.01	32	4.86	116	Brazil	3.45	78	3.57	135	3.33
43	Lithuania	4.41	52	4.02	37	4.79	117	Mali	3.44	111	3.23	119	3.65
44	Turkey	4.38	55	4.00	38	4.77	118	Pakistan	3.44	124	3.00	101	3.88
45	Spain	4.31	47	4.09	51	4.54	119	Egypt	3.44	115	3.18	117	3.69
46	Panama	4.31	62	3.76	35	4.85	120	Madagascar	3.43	129	2.90	94	3.97
47	Slovenia	4.28	72	3.66	30	4.89	121	Moldova	3.42	126	2.98	105	3.85
48	Ghana	4.23	41	4.19	66	4.28	122	Kyrgyz Republic	3.39	131	2.89	99	3.89
49	Czech Republic	4.23	51	4.05	60	4.41	123	Nepal	3.39	125	2.99	113	3.78
50	Hungary	4.22	54	4.00	56	4.44	124	Mozambique	3.36	113	3.22	126	3.49
51	Uruguay	4.21	57	3.96	54	4.46	125	Cameroon	3.35	132	2.87	111	3.83
52	Montenegro	4.21	80	3.56	34	4.86	126	Burkina Faso	3.35	108	3.24	128	3.45
53	Macedonia, FYR	4.21	67	3.74	46	4.67	127	Benin	3.33	107	3.25	131	3.41
54	Brunei Darussalam	4.20	46	4.15	69	4.25	128	Nicaragua	3.32	103	3.32	136	3.31
55	Poland	4.12	65	3.75	52	4.49	129	Honduras	3.31	128	2.95	118	3.67
56	Thailand	4.12	79	3.56	45	4.69	130	Paraguay	3.30	136	2.66	96	3.94
57	Kazakhstan	4.11	61	3.80	58	4.42	131	Bolivia	3.22	109	3.24	139	3.20
58	Croatia	4.10	88	3.51	44	4.69	132	Bangladesh	3.21	138	2.65	114	3.77
59	Namibia	4.10	37	4.38	112	3.81	133	Zimbabwe	3.20	122	3.06	133	3.35
60	Zambia	4.07	59	3.82	63	4.33	134	Gabon	3.20	120	3.10	137	3.30
61	Botswana	4.05	40	4.26	107	3.84	135	Argentina	3.19	135	2.78	122	3.61
62	Seychelles	4.05	49	4.07	90	4.02	136	Libya	3.17	141	2.64	116	3.69
63	Indonesia	4.04	68	3.71	62	4.36	137	Suriname	3.16	134	2.84	127	3.48
64	Costa Rica	4.00	63	3.76	70	4.24	138	Timor-Leste	3.14	127	2.95	134	3.33
65	Guyana	4.00	64	3.76	71	4.23	139	Yemen	2.94	143	2.58	138	3.30
66	Lao PDR	3.99	50	4.06	97	3.92	140	Mauritania	2.91	133	2.86	143	2.95
67	Jamaica	3.96	60	3.82	80	4.10	141	Haiti	2.84	144	2.58	141	3.09
68	Gambia, The	3.95	36	4.39	125	3.50	142	Guinea	2.77	139	2.65	144	2.89
69	Cape Verde	3.94	58	3.91	93	3.98	143	Algeria	2.76	140	2.64	145	2.87
70	Azerbaijan	3.94	66	3.75	77	4.13	144	Burundi	2.73	146	2.43	142	3.03
71	Bulgaria	3.94	105	3.29	50	4.59	145	Venezuela	2.72	148	2.30	140	3.15
72	Mongolia	3.91	98	3.39	57	4.43	146	Myanmar	2.68	137	2.66	146	2.71
73	Georgia	3.91	97	3.40	59	4.42	147	Angola	2.59	145	2.52	147	2.65
74	Slovak Republic	3.90	83	3.55	68	4.25	148	Chad	2.40	147	2.43	148	2.36

Table 3: Readiness subindex and pillars

READINESS SUBINDEX			Infrastructure and digital content		Affordability		Skills	
Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Score
1	Finland	6.61	1	6.88	18	6.41	1	6.55
2	Iceland	6.44	2	6.88	13	6.44	13	5.99
3	Sweden	6.39	3	6.85	10	6.48	21	5.83
4	Norway	6.28	6	6.80	28	6.18	17	5.86
5	United States	6.27	4	6.83	21	6.36	32	5.62
6	Singapore	6.20	16	6.30	46	5.88	2	6.42
7	Taiwan, China	6.17	5	6.81	53	5.74	14	5.96
8	Germany	6.16	11	6.48	43	5.94	12	6.05
9	Australia	6.15	8	6.79	49	5.83	20	5.85
10	Switzerland	6.15	9	6.69	66	5.40	3	6.36
11	Austria	6.14	10	6.53	34	6.09	22	5.79
12	Hong Kong SAR	6.11	26	5.88	22	6.36	10	6.08
13	Canada	6.10	7	6.79	65	5.41	8	6.10
14	Denmark	6.06	20	6.15	29	6.17	18	5.85
15	Netherlands	5.97	14	6.42	69	5.37	7	6.12
16	Cyprus	5.95	28	5.80	39	6.00	11	6.05
17	Korea, Rep.	5.93	13	6.42	57	5.72	31	5.66
18	Luxembourg	5.91	17	6.29	56	5.73	27	5.73
19	Japan	5.84	21	6.09	54	5.73	29	5.69
20	Israel	5.76	29	5.71	35	6.05	39	5.51
21	United Kingdom	5.74	15	6.36	79	5.16	28	5.69
22	Estonia	5.73	25	5.94	61	5.51	25	5.76
23	Malta	5.73	18	6.28	90	4.99	16	5.90
24	Lithuania	5.69	45	4.85	12	6.45	23	5.78
25	Belgium	5.66	22	6.04	101	4.59	4	6.34
26	Ireland	5.65	19	6.17	98	4.68	9	6.09
27	France	5.64	27	5.80	72	5.27	19	5.85
28	Slovenia	5.60	24	5.95	82	5.12	26	5.74
29	Latvia	5.60	41	5.03	26	6.21	35	5.56
30	Spain	5.60	32	5.48	41	5.99	50	5.33
31	Kazakhstan	5.57	58	4.50	2	6.88	51	5.32
32	Bahrain	5.52	39	5.05	25	6.29	58	5.23
33	Italy	5.49	42	4.91	32	6.09	43	5.47
34	Ukraine	5.49	74	4.06	3	6.88	37	5.54
35	Czech Republic	5.49	23	6.04	84	5.09	49	5.33
36	Qatar	5.48	31	5.60	100	4.59	5	6.26
37	Russian Federation	5.46	47	4.81	14	6.44	64	5.13
38	United Arab Emirates	5.44	30	5.62	85	5.09	33	5.62
39	Poland	5.40	38	5.07	52	5.78	48	5.34
40	Georgia	5.39	59	4.50	4	6.82	78	4.85
41	Croatia	5.38	54	4.57	36	6.03	36	5.55
42	Turkey	5.35	48	4.78	17	6.43	80	4.85
43	Portugal	5.35	36	5.18	62	5.47	46	5.40
44	Mongolia	5.31	69	4.19	7	6.61	65	5.12
45	New Zealand	5.27	12	6.42	127	3.24	6	6.14
46	Bosnia and Herzegovina	5.25	63	4.38	30	6.12	57	5.25
47	Mauritius	5.22	76	3.88	11	6.47	52	5.32
48	Jordan	5.22	88	3.51	6	6.64	38	5.51
49	Azerbaijan	5.21	55	4.55	40	5.99	66	5.09
50	Costa Rica	5.21	92	3.43	15	6.44	24	5.76
51	Armenia	5.13	53	4.58	63	5.45	47	5.37
52	Romania	5.11	51	4.69	68	5.39	54	5.26
53	Serbia	5.11	49	4.77	67	5.39	63	5.15
54	Saudi Arabia	5.11	33	5.32	96	4.73	55	5.26
55	Moldova	5.10	60	4.44	31	6.12	84	4.74
56	Trinidad and Tobago	5.09	57	4.52	74	5.25	42	5.49
57	Oman	5.07	70	4.14	33	6.09	73	4.99
58	Panama	5.06	65	4.28	27	6.20	86	4.72
59	Malaysia	5.03	71	4.12	48	5.88	67	5.09
60	Chile	5.01	44	4.86	81	5.13	71	5.02
61	Montenegro	4.99	46	4.81	103	4.54	34	5.62
62	Greece	4.97	40	5.04	102	4.59	53	5.29
63	Thailand	4.97	73	4.07	47	5.88	74	4.95
64	Kuwait	4.95	52	4.65	76	5.18	70	5.03
65	Indonesia	4.92	85	3.58	37	6.03	61	5.16
66	Slovak Republic	4.91	62	4.40	71	5.31	72	5.01
67	Hungary	4.89	64	4.35	94	4.80	41	5.50
68	Uruguay	4.88	50	4.76	80	5.14	83	4.75
69	Sri Lanka	4.88	104	3.12	38	6.02	40	5.51
70	Colombia	4.85	80	3.74	44	5.93	76	4.89
71	Macedonia, FYR	4.85	61	4.43	88	5.04	68	5.07
72	Venezuela	4.78	91	3.44	20	6.39	94	4.50
73	China	4.76	86	3.53	60	5.57	59	5.18
74	Seychelles	4.76	43	4.91	113	3.92	44	5.44
75	Bulgaria	4.75	34	5.26	119	3.74	56	5.26
76	Brazil	4.71	56	4.53	91	4.97	91	4.62
77	Vietnam	4.65	121	2.69	8	6.59	88	4.68
78	Brunei Darussalam	4.65	37	5.15	129	3.12	30	5.69
79	Lebanon	4.63	77	3.86	99	4.62	45	5.41
80	Guyana	4.62	98	3.32	70	5.37	60	5.18
81	Philippines	4.60	89	3.51	75	5.24	69	5.07
82	Paraguay	4.60	72	4.10	50	5.81	105	3.89
83	Ecuador	4.59	75	3.94	92	4.89	75	4.94
84	Bhutan	4.58	67	4.22	45	5.89	114	3.63
85	India	4.57	119	2.72	1	7.00	101	4.00
86	Albania	4.57	90	3.49	87	5.07	62	5.16
87	Tunisia	4.55	83	3.59	73	5.25	81	4.80
88	Jamaica	4.52	79	3.81	89	5.03	87	4.71
89	Puerto Rico	4.46	66	4.24	n/a	n/a	90	4.68
90	Peru	4.43	95	3.37	59	5.65	99	4.27
91	Barbados	4.40	35	5.25	144	1.99	15	5.95
92	Suriname	4.40	101	3.25	86	5.08	77	4.86
93	Egypt	4.35	99	3.30	16	6.44	120	3.32
94	Mexico	4.34	81	3.72	93	4.89	95	4.42
95	Morocco	4.31	93	3.42	51	5.78	111	3.73
96	El Salvador	4.24	102	3.15	55	5.73	107	3.85
97	Zimbabwe	4.20	128	2.42	24	6.33	108	3.85
98	South Africa	4.17	68	4.21	112	3.97	97	4.32
99	Kenya	4.14	94	3.39	97	4.73	98	4.29
100	Argentina	4.13	78	3.86	121	3.69	79	4.85
101	Algeria	4.12	127	2.43	42	5.96	102	3.99
102	Cape Verde	4.09	107	3.06	106	4.45	82	4.76
103	Dominican Republic	4.05	87	3.52	95	4.75	106	3.88
104	Bangladesh	4.02	112	2.88	23	6.34	128	2.84
105	Pakistan	3.97	110	2.97	19	6.40	136	2.54
106	Kyrgyz Republic	3.95	96	3.35	116	3.83	89	4.68
107	Guatemala	3.92	100	3.29	78	5.17	122	3.31
108	Honduras	3.89	115	2.83	77	5.18	112	3.67
109	Ghana	3.89	124	2.50	64	5.41	110	3.75
110	Iran, Islamic Rep.	3.87	103	3.14	118	3.74	85	4.73
111	Nepal	3.82	141	1.65	9	6.49	121	3.32
112	Uganda	3.80	113	2.87	58	5.68	127	2.86
113	Cambodia	3.73	97	3.35	105	4.50	119	3.34
114	Liberia	3.70	145	1.57	5	6.78	131	2.75
115	Bolivia	3.58	114	2.83	126	3.36	93	4.54
116	Namibia	3.46	106	3.10	125	3.37	104	3.91
117	Gabon	3.34	132	2.28	109	4.09	113	3.66
118	Botswana	3.32	109	3.01	142	2.39	92	4.57
119	Nigeria	3.31	117	2.81	107	4.42	132	2.71
120	Yemen	3.31	129	2.39	83	5.12	138	2.41
121	Nicaragua	3.30	82	3.66	140	2.48	109	3.76
122	Libya	3.23	84	3.58	145	1.73	96	4.37
123	Tanzania	3.17	120	2.70	111	4.03	129	2.77
124	Côte d'Ivoire	3.15	105	3.11	120	3.70	133	2.65
125	Rwanda	3.14	108	3.05	128	3.13	123	3.25
126	Zambia	3.12	130	2.37	124	3.40	117	3.59
127	Senegal	3.08	116	2.83	117	3.78	134	2.64
128	Swaziland	3.07	118	2.79	143	2.28	100	4.14
129	Lao PDR	3.03	125	2.46	130	3.10	118	3.51
130	Lesotho	2.99	131	2.37	138	2.66	103	3.95
131	Gambia, The	2.85	123	2.60	137	2.75	124	3.20
132	Timor-Leste	2.80	111	2.97	133	2.83	135	2.61
133	Mauritania	2.78	139	1.72	104	4.53	145	2.08
134	Benin	2.76	122	2.69	134	2.82	130	2.76
135	Ethiopia	2.70	135	1.95	115	3.85	140	2.30
136	Malawi	2.70	126	2.43	139	2.62	125	3.03
137	Cameroon	2.65	143	1.58	136	2.77	116	3.60
138	Angola	2.63	146	1.55	110	4.07	141	2.26
139	Guinea	2.63	134	2.01	122	3.69	142	2.17
140	Haiti	2.61	142	1.63	108	4.09	143	2.11
141	Sierra Leone	2.59	138	1.85	114	3.88	146	2.03
142	Mozambique	2.31	137	1.86	132	3.06	147	2.00
143	Mali	2.29	140	1.69	135	2.78	139	2.41
144	Madagascar	2.29	144	1.57	141	2.42	126	2.88
145	Burundi	2.28	133	2.12	n/a	n/a	137	2.45
146	Chad	2.24	148	1.39	123	3.44	148	1.89
147	Burkina Faso	2.21	147	1.41	131	3.10	144	2.11
148	Myanmar	2.16	136	1.88	146	1.00	115	3.60

Table 4: Usage subindex and pillars

USAGE SUBINDEX			Individual usage		Business usage		Government usage		USAGE SUBINDEX			Individual usage		Business usage		Government usage	
Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Score
1	Sweden	6.06	1	6.59	3	5.99	7	5.60	75	Georgia	3.63	76	3.43	110	3.21	55	4.24
2	Finland	6.01	6	6.42	2	6.02	8	5.57	76	Philippines	3.63	91	2.94	43	3.89	67	4.06
3	Korea, Rep.	5.89	9	6.32	10	5.48	3	5.85	77	Argentina	3.62	57	4.26	99	3.33	121	3.26
4	Singapore	5.87	10	6.13	15	5.21	1	6.26	78	Vietnam	3.60	84	3.18	88	3.43	58	4.19
5	Netherlands	5.86	4	6.48	6	5.71	14	5.40	79	Bosnia and Herzegovina	3.59	70	3.67	92	3.42	99	3.69
6	Norway	5.79	2	6.57	12	5.44	15	5.36	80	Thailand	3.58	85	3.17	59	3.70	84	3.88
7	Denmark	5.75	3	6.57	7	5.66	26	5.01	81	Sri Lanka	3.54	112	2.38	50	3.80	43	4.44
8	Luxembourg	5.73	5	6.43	13	5.27	10	5.48	82	Morocco	3.53	72	3.63	111	3.21	92	3.76
9	Japan	5.69	16	5.92	4	5.99	22	5.15	83	Moldova	3.53	73	3.55	125	3.05	75	3.99
10	Switzerland	5.64	11	6.07	1	6.10	35	4.74	84	Tunisia	3.51	81	3.25	103	3.30	77	3.98
11	United States	5.60	18	5.76	9	5.56	11	5.47	85	Mongolia	3.50	90	3.04	83	3.45	71	4.02
12	United Kingdom	5.58	8	6.33	17	5.06	17	5.35	86	Kenya	3.49	113	2.30	54	3.76	46	4.41
13	Germany	5.51	19	5.72	5	5.85	27	4.97	87	Dominican Republic	3.49	93	2.92	67	3.60	81	3.95
14	Israel	5.45	26	5.51	8	5.66	19	5.19	88	Botswana	3.46	79	3.31	106	3.25	86	3.82
15	Hong Kong SAR	5.41	12	6.03	16	5.13	24	5.07	89	Egypt	3.45	71	3.66	112	3.21	113	3.49
16	New Zealand	5.37	13	5.98	21	4.81	18	5.34	90	Lebanon	3.45	58	4.23	116	3.19	136	2.93
17	Taiwan, China	5.34	28	5.44	14	5.24	16	5.36	91	India	3.45	121	2.08	51	3.78	41	4.48
18	Qatar	5.33	21	5.69	26	4.53	4	5.77	92	Cape Verde	3.45	97	2.84	115	3.19	50	4.31
19	Australia	5.28	15	5.92	24	4.75	21	5.17	93	El Salvador	3.44	96	2.85	80	3.47	74	4.00
20	Austria	5.27	20	5.71	11	5.44	36	4.65	94	Jamaica	3.43	87	3.10	72	3.58	104	3.62
21	United Arab Emirates	5.24	29	5.30	29	4.37	2	6.06	95	Albania	3.41	82	3.25	107	3.24	93	3.75
22	Estonia	5.22	17	5.84	28	4.38	12	5.45	96	Guatemala	3.41	99	2.77	42	3.90	109	3.57
23	France	5.16	22	5.65	20	4.88	28	4.96	97	Rwanda	3.39	138	1.68	76	3.52	29	4.96
24	Iceland	5.16	7	6.39	22	4.80	53	4.28	98	Peru	3.36	94	2.91	89	3.43	94	3.75
25	Bahrain	5.13	14	5.96	49	3.81	5	5.62	99	Gambia, The	3.35	120	2.12	60	3.69	56	4.24
26	Canada	5.04	27	5.46	25	4.63	25	5.05	100	Ghana	3.34	100	2.74	90	3.42	85	3.88
27	Belgium	5.02	25	5.52	18	5.05	42	4.47	101	Ukraine	3.34	75	3.49	93	3.40	129	3.12
28	Malta	5.01	24	5.55	32	4.09	13	5.40	102	Guyana	3.34	103	2.54	63	3.66	87	3.81
29	Ireland	4.92	23	5.57	23	4.75	45	4.43	103	Namibia	3.25	101	2.69	68	3.59	116	3.47
30	Malaysia	4.83	49	4.49	27	4.45	9	5.55	104	Zambia	3.17	123	2.04	77	3.51	79	3.97
31	Saudi Arabia	4.78	44	4.67	34	4.04	6	5.62	105	Nigeria	3.17	110	2.42	73	3.55	111	3.54
32	Portugal	4.56	42	4.83	35	4.04	33	4.81	106	Senegal	3.17	115	2.26	85	3.45	88	3.80
33	Spain	4.53	32	5.21	40	3.96	44	4.44	107	Cambodia	3.16	105	2.51	78	3.48	114	3.48
34	Lithuania	4.51	41	4.83	33	4.09	37	4.60	108	Venezuela	3.13	88	3.07	119	3.15	127	3.18
35	Slovenia	4.44	34	5.09	37	4.02	57	4.20	109	Paraguay	3.13	98	2.79	105	3.27	120	3.33
36	Puerto Rico	4.40	63	4.03	19	5.05	63	4.12	110	Bhutan	3.10	114	2.28	130	2.99	70	4.04
37	Oman	4.40	56	4.30	57	3.72	20	5.18	111	Mali	3.08	118	2.14	114	3.19	82	3.91
38	Kazakhstan	4.39	51	4.42	66	3.61	23	5.12	112	Lao PDR	3.07	129	1.87	74	3.54	89	3.80
39	Chile	4.37	52	4.40	45	3.89	32	4.83	113	Iran, Islamic Rep.	3.05	111	2.39	129	3.00	91	3.76
40	Czech Republic	4.36	30	5.26	31	4.10	96	3.72	114	Suriname	3.04	86	3.11	108	3.23	141	2.78
41	Brunei Darussalam	4.36	50	4.47	56	3.73	30	4.86	115	Côte d'Ivoire	3.04	117	2.17	96	3.37	107	3.58
42	Latvia	4.35	31	5.25	48	3.81	78	3.97	116	Bolivia	3.02	108	2.44	118	3.16	115	3.47
43	Barbados	4.30	33	5.11	53	3.77	72	4.01	117	Honduras	2.95	106	2.46	91	3.42	133	2.98
44	Azerbaijan	4.24	61	4.19	52	3.78	34	4.77	118	Zimbabwe	2.93	107	2.45	109	3.22	128	3.14
45	Hungary	4.21	40	4.91	62	3.67	69	4.04	119	Cameroon	2.93	130	1.78	95	3.38	102	3.64
46	Croatia	4.18	39	4.99	81	3.46	65	4.08	120	Bangladesh	2.91	134	1.72	127	3.00	73	4.00
47	Brazil	4.13	59	4.21	41	3.92	54	4.27	121	Pakistan	2.91	126	1.93	97	3.36	118	3.43
48	Cyprus	4.13	45	4.62	58	3.71	66	4.07	122	Gabon	2.90	109	2.43	126	3.02	122	3.26
49	Slovak Republic	4.11	35	5.09	65	3.66	106	3.60	123	Nicaragua	2.84	122	2.08	113	3.20	123	3.25
50	Panama	4.10	68	3.74	39	3.99	39	4.56	124	Tanzania	2.84	137	1.69	120	3.13	98	3.69
51	Italy	4.07	37	5.05	61	3.68	112	3.49	125	Uganda	2.83	140	1.63	122	3.12	95	3.75
52	Montenegro	4.07	55	4.32	69	3.59	51	4.30	126	Kyrgyz Republic	2.81	102	2.55	137	2.88	132	3.00
53	Russian Federation	4.06	46	4.61	84	3.45	61	4.13	127	Burkina Faso	2.73	139	1.67	135	2.88	101	3.65
54	Poland	4.06	36	5.08	75	3.52	108	3.57	128	Swaziland	2.72	119	2.13	117	3.19	140	2.84
55	Uruguay	4.05	48	4.55	86	3.43	59	4.16	129	Madagascar	2.71	141	1.60	100	3.32	126	3.22
56	Macedonia, FYR	4.03	53	4.38	101	3.31	47	4.41	130	Ethiopia	2.71	146	1.46	141	2.77	83	3.90
57	Costa Rica	4.02	64	3.95	38	4.01	64	4.12	131	Mozambique	2.70	144	1.50	124	3.06	110	3.55
58	Kuwait	4.00	38	5.01	94	3.40	105	3.60	132	Liberia	2.68	136	1.69	123	3.10	124	3.24
59	Jordan	3.96	67	3.79	47	3.81	52	4.28	133	Nepal	2.66	125	1.96	132	2.95	130	3.07
60	Mauritius	3.95	66	3.86	64	3.66	48	4.34	134	Algeria	2.66	104	2.54	147	2.47	134	2.97
61	China	3.91	80	3.27	44	3.89	38	4.58	135	Sierra Leone	2.64	135	1.70	134	2.88	119	3.35
62	Colombia	3.91	77	3.40	79	3.47	31	4.86	136	Malawi	2.63	142	1.55	121	3.12	125	3.23
63	Turkey	3.90	69	3.69	46	3.87	60	4.14	137	Benin	2.63	124	1.98	128	3.00	137	2.90
64	Seychelles	3.90	65	3.87	55	3.76	68	4.06	138	Lesotho	2.57	127	1.92	136	2.88	135	2.93
65	Bulgaria	3.87	47	4.61	104	3.29	97	3.71	139	Libya	2.56	92	2.92	144	2.63	148	2.13
66	Trinidad and Tobago	3.86	60	4.20	87	3.43	80	3.96	140	Mauritania	2.54	116	2.24	139	2.85	146	2.53
67	Greece	3.83	43	4.74	102	3.30	117	3.45	141	Timor-Leste	2.48	128	1.90	142	2.66	138	2.89
68	Romania	3.76	62	4.17	98	3.34	90	3.77	142	Angola	2.48	133	1.74	143	2.64	131	3.07
69	Indonesia	3.75	95	2.90	36	4.03	49	4.31	143	Yemen	2.44	131	1.78	131	2.95	145	2.57
70	South Africa	3.72	78	3.39	30	4.15	103	3.62	144	Guinea	2.39	145	1.47	138	2.85	139	2.84
71	Mexico	3.72	89	3.07	70	3.59	40	4.50	145	Haiti	2.34	132	1.78	140	2.77	147	2.46
72	Serbia	3.66	54	4.36	133	2.93	100	3.69	146	Myanmar	2.22	143	1.51	145	2.50	143	2.65
73	Armenia	3.65	74	3.52	82	3.45	76	3.98	147	Chad	2.18	147	1.34	146	2.50	142	2.70
74	Ecuador	3.63	83	3.18	71	3.59	62	4.13	148	Burundi	2.12	148	1.30	148	2.42	144	2.64

Table 5: Impact subindex and pillars

IMPACT SUBINDEX			Economic impacts		Social impacts		IMPACT SUBINDEX			Economic impacts		Social impacts	
Rank	Country/Economy	Score	Rank	Score	Rank	Score	Rank	Country/Economy	Score	Rank	Score	Rank	Score
1	Singapore	5.93	6	5.63	1	6.24	75	Vietnam	3.41	96	2.98	62	3.85
2	Finland	5.91	1	6.04	7	5.78	76	Tunisia	3.39	90	3.03	72	3.76
3	Netherlands	5.85	5	5.63	3	6.06	77	Seychelles	3.39	77	3.16	79	3.63
4	Sweden	5.82	2	6.03	10	5.62	78	Poland	3.39	62	3.36	88	3.42
5	Korea, Rep.	5.67	7	5.25	2	6.09	79	Gambia, The	3.39	67	3.27	84	3.50
6	Israel	5.52	4	5.64	14	5.40	80	Ecuador	3.38	95	2.99	71	3.78
7	Taiwan, China	5.43	12	5.08	6	5.79	81	Peru	3.37	84	3.08	75	3.67
8	United States	5.39	9	5.20	12	5.58	82	Italy	3.37	58	3.40	94	3.34
9	United Kingdom	5.36	14	5.01	9	5.72	83	Thailand	3.35	104	2.88	68	3.83
10	Hong Kong SAR	5.32	13	5.03	11	5.62	84	El Salvador	3.31	109	2.84	70	3.78
11	Switzerland	5.30	3	5.64	26	4.96	85	Senegal	3.29	82	3.10	86	3.48
12	Norway	5.29	15	5.00	13	5.58	86	Bulgaria	3.27	73	3.20	93	3.35
13	Estonia	5.23	22	4.58	4	5.88	87	Bosnia and Herzegovina	3.27	88	3.04	85	3.49
14	Germany	5.20	8	5.22	20	5.17	88	Lao PDR	3.27	74	3.18	92	3.35
15	Luxembourg	5.17	10	5.16	19	5.17	89	South Africa	3.25	49	3.48	113	3.02
16	Japan	5.12	11	5.12	23	5.13	90	Greece	3.24	91	3.03	87	3.45
17	Canada	5.10	17	4.87	16	5.33	91	Nigeria	3.23	72	3.20	99	3.25
18	United Arab Emirates	5.01	27	4.19	5	5.84	92	Trinidad and Tobago	3.21	92	3.02	89	3.41
19	Denmark	4.99	16	4.94	24	5.05	93	Serbia	3.19	93	3.00	90	3.38
20	Australia	4.95	23	4.57	15	5.33	94	Jamaica	3.18	78	3.13	100	3.24
21	Qatar	4.84	32	3.95	8	5.72	95	Mali	3.18	69	3.25	109	3.10
22	New Zealand	4.81	26	4.44	17	5.18	96	Argentina	3.18	87	3.07	98	3.29
23	France	4.73	19	4.77	35	4.68	97	Bhutan	3.17	112	2.78	81	3.56
24	Austria	4.67	24	4.51	31	4.83	98	Ukraine	3.16	79	3.12	102	3.20
25	Iceland	4.61	25	4.51	34	4.72	99	Guatemala	3.16	94	2.99	95	3.32
26	Puerto Rico	4.56	21	4.66	38	4.46	100	Romania	3.13	97	2.96	96	3.30
27	Lithuania	4.53	28	4.11	27	4.96	101	Ghana	3.12	85	3.08	106	3.17
28	Malaysia	4.51	30	4.01	25	5.00	102	Guyana	3.12	106	2.87	91	3.37
29	Belgium	4.50	20	4.67	40	4.33	103	Kuwait	3.04	127	2.58	82	3.50
30	Malta	4.49	29	4.03	28	4.94	104	Bolivia	3.01	111	2.79	101	3.24
31	Ireland	4.43	18	4.83	55	4.03	105	Pakistan	2.99	98	2.96	112	3.03
32	Saudi Arabia	4.40	37	3.65	22	5.14	106	Zambia	2.99	113	2.78	104	3.20
33	Portugal	4.36	34	3.87	30	4.85	107	Iran, Islamic Rep.	2.97	114	2.77	105	3.17
34	Spain	4.30	31	3.97	36	4.63	108	Albania	2.95	125	2.60	97	3.30
35	Bahrain	4.26	63	3.35	18	5.17	109	Venezuela	2.94	115	2.76	108	3.12
36	Kazakhstan	4.26	60	3.38	21	5.15	110	Botswana	2.90	120	2.68	107	3.12
37	Chile	4.23	43	3.55	29	4.91	111	Cambodia	2.90	117	2.70	110	3.10
38	Brunei Darussalam	4.15	51	3.48	32	4.82	112	Ethiopia	2.88	128	2.57	103	3.20
39	Slovenia	4.07	33	3.92	43	4.22	113	Nicaragua	2.87	122	2.65	111	3.08
40	Oman	4.07	56	3.41	33	4.73	114	Lebanon	2.87	101	2.92	121	2.81
41	Panama	3.99	46	3.49	37	4.48	115	Paraguay	2.86	99	2.95	125	2.78
42	Hungary	3.97	36	3.68	42	4.26	116	Cameroon	2.85	103	2.88	123	2.81
43	Latvia	3.94	35	3.71	45	4.17	117	Namibia	2.85	105	2.88	122	2.81
44	Russian Federation	3.91	41	3.56	41	4.27	118	Burkina Faso	2.84	108	2.85	120	2.84
45	Czech Republic	3.87	38	3.63	47	4.12	119	Côte d'Ivoire	2.84	102	2.92	127	2.76
46	Azerbaijan	3.85	42	3.55	46	4.15	120	Honduras	2.80	116	2.75	119	2.85
47	Montenegro	3.81	39	3.60	56	4.02	121	Morocco	2.79	123	2.64	115	2.94
48	Jordan	3.81	44	3.53	51	4.09	122	Uganda	2.79	126	2.60	114	2.98
49	Colombia	3.79	75	3.16	39	4.42	123	Mozambique	2.73	121	2.67	124	2.79
50	Costa Rica	3.75	52	3.47	54	4.04	124	Swaziland	2.73	118	2.70	126	2.76
51	Rwanda	3.75	53	3.45	53	4.05	125	Malawi	2.72	110	2.79	131	2.64
52	Cyprus	3.73	45	3.49	57	3.97	126	Kyrgyz Republic	2.71	131	2.50	116	2.92
53	Uruguay	3.73	61	3.36	50	4.10	127	Bangladesh	2.71	130	2.50	118	2.91
54	Croatia	3.69	40	3.56	66	3.83	128	Tanzania	2.68	132	2.45	117	2.91
55	Macedonia, FYR	3.68	65	3.31	52	4.06	129	Suriname	2.62	107	2.86	138	2.38
56	China	3.67	81	3.11	44	4.22	130	Sierra Leone	2.62	124	2.63	133	2.61
57	Brazil	3.64	64	3.34	58	3.94	131	Zimbabwe	2.61	129	2.54	130	2.69
58	Barbados	3.62	57	3.40	64	3.84	132	Benin	2.58	119	2.69	136	2.47
59	Mexico	3.62	80	3.12	48	4.11	133	Liberia	2.57	134	2.43	128	2.71
60	India	3.61	50	3.48	73	3.74	134	Madagascar	2.52	135	2.42	132	2.61
61	Egypt	3.61	59	3.38	65	3.83	135	Nepal	2.51	141	2.32	129	2.70
62	Philippines	3.57	48	3.49	76	3.66	136	Gabon	2.49	136	2.41	134	2.58
63	Mongolia	3.57	89	3.04	49	4.10	137	Algeria	2.39	133	2.44	140	2.34
64	Dominican Republic	3.55	71	3.22	61	3.88	138	Angola	2.38	137	2.40	139	2.36
65	Turkey	3.55	68	3.27	67	3.83	139	Timor-Leste	2.34	143	2.30	137	2.39
66	Slovak Republic	3.54	54	3.44	78	3.63	140	Myanmar	2.33	139	2.37	141	2.30
67	Armenia	3.53	47	3.49	80	3.58	141	Lesotho	2.31	147	2.08	135	2.53
68	Moldova	3.52	76	3.16	60	3.89	142	Haiti	2.30	138	2.39	143	2.22
69	Sri Lanka	3.47	66	3.30	77	3.64	143	Yemen	2.24	140	2.35	145	2.13
70	Mauritius	3.47	70	3.25	74	3.69	144	Mauritania	2.23	142	2.32	144	2.14
71	Kenya	3.46	55	3.42	83	3.50	145	Guinea	2.15	148	2.04	142	2.27
72	Indonesia	3.46	86	3.07	63	3.84	146	Burundi	2.09	144	2.18	147	2.00
73	Cape Verde	3.45	83	3.09	69	3.81	147	Chad	2.08	146	2.12	146	2.05
74	Georgia	3.44	100	2.95	59	3.93	148	Libya	2.03	145	2.12	148	1.94

changes in the rest, with the exception of the significant improvement by six positions of Hong Kong SAR, which climbs to 8th place. Box 1 presents and analyzes the position and evolution of different economies in the rankings over the past two years, highlighting different dynamics in building and leveraging their digital ecosystems.

For a second consecutive year, **Finland** tops the rankings with a strong performance across the board. It ranks 1st in the readiness subindex thanks to an outstanding digital ICT infrastructure—the best in the world—and 2nd in both the usage and impact subindexes, with more than 90 percent of its population using the Internet and with high levels of technological and non-technological innovation. The country also comes in 3rd in the environment subindex, with a very robust innovation system. This positive digital landscape has been created over the years, as Finland decidedly started investing in building its ICT ecosystem in the mid-1990s as an answer to its financial and economic crisis at that time. Since then, the active role of all stakeholders—government, businesses, and individuals—has resulted in the positive outcome we see today.

As in past years, **Singapore** continues to follow closely in the rankings, remaining in 2nd place. With the best pro-business and pro-innovation environment worldwide, the city-state continues to obtain the top rank in terms of ICT impacts, notably on the social dimension. Supported by a government with a clear digital strategy that offers the best online services in the world, an ICT infrastructure that is relentlessly being improved over time (16th), and one of the highest quality educational systems in the world (3rd), notably in terms of math and science (1st), Singapore has become one of the most knowledge-intensive economies globally (2nd) and is an ICT-generation powerhouse (9th). Improving the already very high number of Internet users (29th) or households with a personal computer and Internet access (11th) to the level of some Nordic countries, coupled with reducing the cost of accessing fixed broadband Internet (now at 87th), would allow Singapore to lead the overall rankings.

Sweden (3rd) maintains its position this year despite a slight improvement in its overall score. Overall, the very strong performance of Sweden reflects its world-class, affordable (11th) ICT infrastructure (3rd) and a stable and pro-business and innovation environment (15th), despite its high tax rate (123rd). These strengths result in outstanding uptake and use of ICTs by individuals (1st), businesses (3rd), and government (7th) and one of the highest technological and non-technological innovation performances in the world (2nd), making Sweden a truly knowledge-based society.

The **Netherlands** retains its 4th position despite a slight decline in its score driven by a small drop in the economic impacts pillar, where it nevertheless ranks a

very respectable 5th globally. The country, as a service-based economy, has quickly and skilfully recognized the importance of ICTs to boost its innovation and competitiveness potential; this is reflected in virtually all the indicators, where the country ranks among the best in the world. ICTs have permeated all stages of society in the Netherlands, with nearly all individuals having access to a computer (1st) with an Internet connection at home (3rd), a large number of government services are online (5th), and businesses use extensive e-commerce in their transactions with other businesses (11th) and with consumers (4th). These scores, coupled with an environment highly conducive to innovation and entrepreneurship, result in very high levels of ICT-based innovations and the highest citizen e-participation in the world (1st). Although the affordability (67th) of a well-developed ICT infrastructure and digital content (14th) still remains an unresolved issue, it does not seem to interfere in the capacity of the country to fully leverage ICTs to obtain meaningful economic (5th) and social (3rd) impacts.

Stable at 5th place, **Norway** continues to leverage ICTs effectively. With a well-developed and affordable (28th) ICT infrastructure (6th), ICT uptake is virtually universal among Norway's population: 95 percent are Internet users and more than 90 percent have access to a personal computer (5th) and Internet (4th) at home. In addition, the country benefits from a stable pro-business and innovation environment (6th) and a government that is aware of the importance of ICTs for the economic and social development of a geographically vast nation with a widely dispersed population. Despite these many assets, compared with its Nordic neighbors, Norway depicts poorer results in terms of technological innovation (12th), notably in the domain of ICTs (16th); improving the quality of the overall educational system (18th), notably in the area of math and science (47th), may represent part of the solution.

Switzerland revalidates its 6th position of the previous edition. The country benefits from very good, albeit expensive (66th) ICT infrastructure (9th) and a good educational system that provides the necessary skills to create a knowledge-based, technology-rich economy. Those assets, coupled with a stable political and regulatory environment (9th) and excellent conditions for innovation and entrepreneurship (12th), have resulted in outstanding uptake and use of ICTs by businesses (1st) in all their transactions and in their ability to foster innovation. In this process of digitization, the government appears to be lagging slightly behind (35th): government online services (32nd) continue to be relatively reduced compared with those of other countries of its economic and social level of development, which partially affects its overall social impacts (26th).

The **United States** moves up two positions to 7th place, thanks to slight improvements in many areas of the Index. These include the country's already

Box 1: Which countries are bridging the digital divide and which countries are not? An evolutionary analysis of the NRI results

The GTR series, through its Networked Readiness Index (NRI), depicts how countries leverage ICTs to boost competitiveness and well-being. A constant finding in the NRI analysis, and one that gets reflected in the overall rankings, is that developed economies continue to lead the way in creating robust and impactful digital ecosystems while many developing and emerging economies have remained comparatively stagnant. This stagnation persists despite some improvements to their ICT infrastructures—specifically, ensuring more and better mobile telephony access and services. As a result, there has been little progress in bridging the digital divide across nations. This lack of progress casts doubts about the capacity of developing and emerging economies to embrace the full potential that ICTs have to offer.

However, the NRI rankings reflect the situation only at a particular moment in time. They do not take into account the evolution that different countries experience over time.

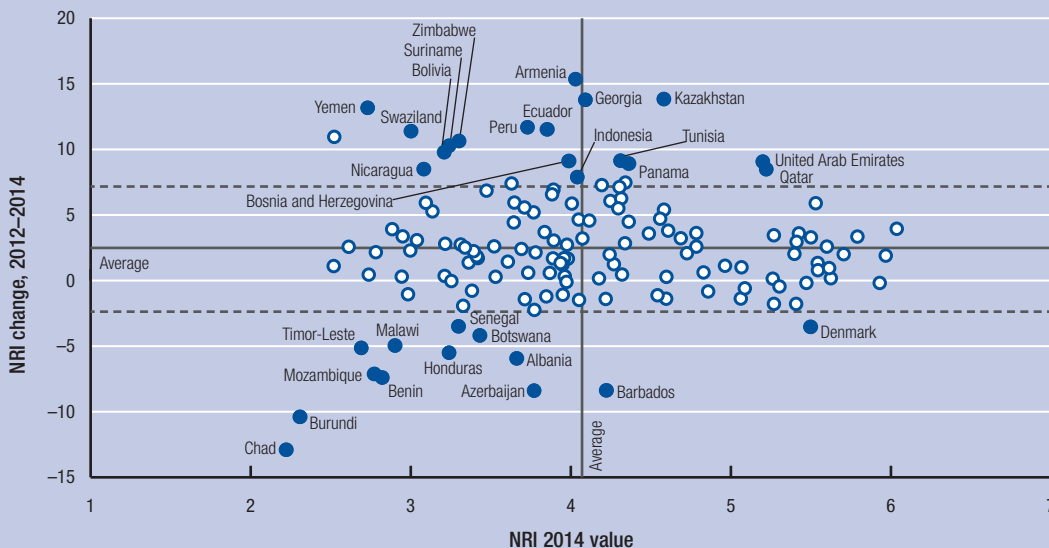
Figure A presents the situation of each analyzed economy based on both its current NRI score and its NRI evolution over the past three years. The position of each economy is then determined according to whether it falls above or below the NRI average in 2014, and whether it falls above or below the average change in the NRI score over the past two editions. As a result, each country's position in the figure reflects its placement in relation to the sample average—that is, whether it has an above- or below-average ICT capacity. Each country's position also indicates whether it is growing above or below the sample average—that is, whether it is catching up or lagging behind in the long-term

race of developing and leveraging its digital ecosystem. In addition, and in order to identify with more precision those countries that have experienced the starkest changes over time, the figure includes an upper and a lower band. These bands are calculated based on the standard deviation of the NRI change of the past two years; the upper band is the sample average change plus 1 standard deviation, and the lower band is the sample average change minus 1 standard deviation.

Based on this classification, and following the logic of a slightly modified Boston Consulting Group (BCG)'s "Growth-Share Matrix,"¹ we can identify four groups of countries:

1. *Rising stars:* Those countries whose NRI scores are above the sample average and whose scores are also growing more quickly than average. Armenia, Georgia, Kazakhstan, Panama, Qatar, and the United Arab Emirates belong to this group.
2. *Sliding stars:*² Those countries whose NRI scores are above average, but in which evolution seems to be lagging behind. Barbados and Denmark belong to this group.
3. *Question marks:* Those countries whose NRI scores are below average but that are quickly catching up. Bolivia, Ecuador, Haiti, Nicaragua, Peru, Suriname, Swaziland, and Yemen belong to this group.
4. *Laggards:* Those countries whose NRI is below average and that are lagging increasingly behind. Benin, Botswana, Burundi, Chad, Malawi, Mozambique, Timor-Leste, and Tunisia are in this group.

Figure A: The NRI 2014 compared with its evolution since 2012



Source: Authors' calculations.

(Cont'd.)

Box 1: Which countries are bridging the digital divide and which countries are not? An evolutionary analysis of the NRI results *(cont'd.)*

From this classification, we can learn several interesting things. First of all, several oil- and gas-rich economies in the Commonwealth of Independent States and Gulf Cooperation Council are quickly improving their digital ecosystems. The governments in these countries have recognized the importance of investing in ICTs as a way to diversify their economies and are quickly developing their digital infrastructure in order not to miss the digital revolution. Second, many countries in sub-Saharan Africa are lagging behind, with no sign of improvement over time. This gap may hamper their capacity to support further economic and social development as the positive impacts of ICTs become more and more apparent; this can have important consequences for their future economic development if actions are not adopted urgently. Third, in Latin America, those countries that

are particularly lagging behind are making significant strides to improve their digital potential. The rest of the countries in the region remain fairly stable. Panama, as an exception, is one of the leading countries in the region that relentlessly continues to strengthen its digital potential. Fourth, Barbados, and especially Denmark (which has always scored at the forefront of the rankings), should not be complacent but should address any weaknesses in the conditions that may hamper their potential to take advantage of their ICT capacity.

Notes

- 1 See the BCG matrix, available at <http://www.strategicmanagementinsight.com/tools/bcg-matrix-growth-share.html>.
- 2 In the original Boston Consulting Group's classification, this group would be the "cash cows."

good business and innovation environment (7th) and improvements in its ICT infrastructure (4th), notably in terms of wider access to international Internet bandwidth per user. Overall, the country exhibits a robust uptake of ICTs by all major stakeholders—businesses (9th), government (11th), and individuals (18th)—who manage to leverage well one of the best and more affordable (20th) ICT infrastructures (4th). Coupled with a pro-business and pro-innovation environment (7th), these result in a strong innovation capacity (5th) and significant ICT-related economic impacts (9th). The ranking of the United States, the largest economy in the world, in the top 10 shows that fully leveraging ICTs is not dependent on small or medium-sized economies, but instead depends on undertaking the right investments and creating the right condition for it.

With the most pronounced improvement among the top 10, **Hong Kong SAR** climbs six positions to 8th place. The sharp improvement in its score is driven by improvements in conditions for innovation and entrepreneurship (2nd) that were already very positive, a robust skills base (10th), and stronger business (16th) and government usage (24th). Overall, Hong Kong SAR enjoys a fairly well developed ICT infrastructure that, coupled with a stable environment conducive to innovation and entrepreneurship (4th), results in good economic (13th) and social (11th) impacts. Notwithstanding these strengths, individual uptake remains lower than it is in the Nordic countries that lead the rankings.

Despite a drop of two places, the **United Kingdom** continues to exhibit a very strong performance in 9th position. As in the Netherlands, as a service-based economy, the country early recognized the importance of ICTs to support its innovation and competitiveness performance. As a result, it has managed to build a well-developed ICT infrastructure (15th), exhibiting one of the

highest population uptakes (8th) and a well-developed e-commerce (1st), which, coupled with a strong pro-business environment, has resulted in solid economic (14th) and social (9th) impacts.

The **Republic of Korea** moves up one position, entering the top 10 this year. A country that has largely based its economic success on the ICT industry, Korea benefits from a strong ICT infrastructure (13th) and an excellent ICT uptake by individuals (9th), businesses (10th), and especially government (3rd), which ranks 1st in the world in terms of online services. The country's strong focus on developing its technological capacity as part of its economic development strategy has also resulted in a sturdy technological innovation performance (8th), notably in the field of ICTs (4th). Improvements in the conditions needed to support innovation and entrepreneurship (34th) could help Korea to leverage further its significant effort to become a leading knowledge-intensive economy.

EUROPE AND THE COMMONWEALTH OF INDEPENDENT STATES

Europe has been at the forefront of developing a digital ecosystem as a key ingredient that fosters innovation and competitiveness. As a result, several European countries lead the NRI rankings, with six European economies—Finland, Sweden, the Netherlands, Norway, Switzerland, and the United Kingdom—in the top 10. In addition, in order to maximize the positive impacts of ICTs throughout the European Union and create synergies and positive spillover effects, the European Commission has developed its Digital Agenda as one of seven flagship initiatives under its growth strategy Europe 2020.⁹ Despite these efforts, important differences remain across European economies, with Southern and Central and Eastern European

economies continuing to lag behind. A deeper analysis of the root causes of these differences shows that, in general, ICT infrastructure and individual uptake is more homogeneous across EU Member States. However, less favorable conditions for innovation and entrepreneurship across European countries result in starker disparities in terms of the economic impacts—for example, innovation performance—accruing from their use, which illustrates the changing nature of the digital divide in Europe and in the rest of the world. The digital divide should not be regarded only in terms of access to ICT infrastructure, but also in terms of the impacts that using ICTs can provide for the economy and society in general. Box 2 develops this analysis further and provides some recommendations for policies that would help to bridge the European digital divide.

Luxembourg, in 11th place, climbs five places thanks to continued improvements across the board. The country continues to reap the benefits of significant past efforts made to develop the ICT sector as a key economic strategy for diversifying its local economy. With one of the best ICT infrastructures in the world (17th), Luxembourg counts on a high ICT uptake (8th), with both businesses (13th) and individuals (5th) using these technologies extensively. Combined with optimal business conditions and a reliable and efficient political and regulatory environment (4th), the country has persisted in improving economic impacts, thanks to more technological and non-technological related innovations (10th) and the highest share of the workforce working in knowledge-intensive jobs in the world. In order to maintain this good momentum, the country should persevere in enhancing its overall innovation system (29th) so that it can fully leverage its ICT potential.

Germany continues to rise, this year by one position, to reach 12th place, thanks to persistent improvements in its overall business environment (17th) and the perceived quality of its educational system (14th), which seems to provide the right set of skills to engage in an innovation-driven globalized economy. With a very good ICT infrastructure (11th), which translates into high levels of individual (11th) and business (5th) ICT uptake, Germany benefits from high levels of ICT-driven economic impacts (8th), as reflected in the excellent innovation capacity (3rd) of local companies.

Despite a drop of five places this year, driven mainly by a slight deterioration of its business environment (16th), **Denmark**, now at 13th place, continues to benefit from one of the highest rates of ICT usage (7th), with all stakeholders using ICTs in their everyday activities. More precisely, ICT uptake among individuals (3rd) is one of the highest in the world: almost the entire population has access to a computer and an Internet connection at home and uses the Internet; businesses use ICTs for their communication and transactions with other businesses (18th) and clients (14th); and governments offer a large share of their services online (13th). Despite

this good performance, in comparison with other Nordic economies, there is some concern about the decreased ability of businesses to fully leverage ICTs to generate new services and products (33rd) and innovate by offering new organizational models (29th). These issues can potentially have a negative impact on an innovation-reliant country's ability to support further economic growth and social development.

Estonia moves up one place to 21st position thanks to improvements across many dimensions of the Index, notably ICT usage (22nd) by both individuals (17th) and businesses (28th). Following the model of neighboring Finland, the country has recognized the crucial role that ICTs have to play in the local economy and for social development. The result is that Estonia ranks 1st among the Baltic Republics, followed by **Lithuania** at 31st place and **Latvia** at 39th; it is also 1st among Central and Eastern European countries and well ahead of Southern European nations. With a well-developed ICT infrastructure (25th) and a good environment for business and innovation (28th), private companies have developed well-functioning e-commerce strategies (6th) and the country is managing to yield good economic (22nd) and social (4th) ICT-related results. Going forward, Estonia should follow the examples of its Nordic neighbors in developing a robust innovation system that can help further its decisive transition into a full-fledged knowledge-based society.

Moving out of the top 20, **Austria** drops three places to land at 22nd position, despite its very stable profile. Overall, the country boasts a very strong ICT infrastructure (10th) with high levels of business usage (11th), especially when interacting with other businesses (9th). Coupled with other innovation-related investments, such as research and development (R&D) and a favorable business environment (23rd), this results in a good technological performance both in the ICT sector (13th) and in the economy in general (10th). Further improvements in the entrepreneurial environment by easing the procedures to open new businesses (103rd), and in the quality of education in important areas for innovation, such as mathematics and science (39th), could help Austria leverage its digital potential better and obtain an even more robust innovation performance.

France moves up one position to 25th place, thanks to slight improvements in all three pillars of the readiness subindex: ICT infrastructure, affordability, and skills. Overall, the country presents a very harmonious uptake of ICTs across all agents, exhibiting one of the highest broadband Internet subscription rates in the world (4th), a fairly good development of e-commerce (27th), and a vast number of government services online (8th). Although some concerns about the business and innovation system (47th) exist—France has one of the highest tax systems in the world (136th) and relatively low levels of venture capital availability (49th)—the country manages to obtain

Box 2: The digital divide in Europe

Europe is slowly emerging from one of the worst financial and economic crises in decades, but growth prospects remain unstable and unemployment stubbornly high in many countries, notably those most severely hit by the crisis. Technological progress and digitization can represent one of the main sources of potential economic growth and employment generation for Europe, as has been recognized by the European Commission.¹

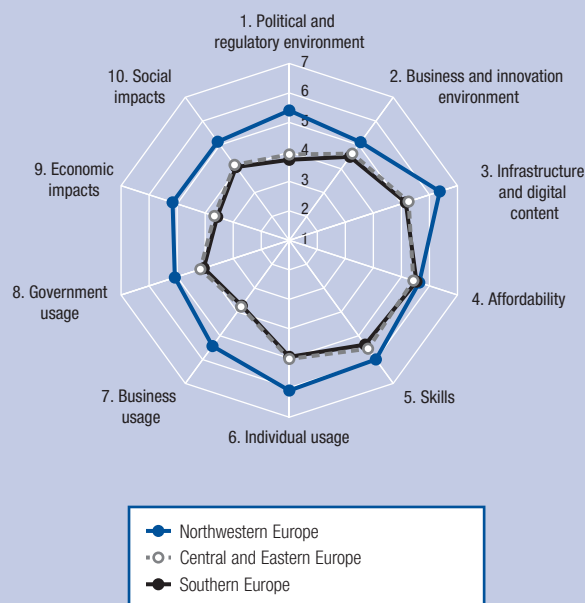
However, the level of digitization is not the same across European Union (EU) Member States, and thus the potential to benefit from ICT adoption remains uneven. An analysis of the Networked Readiness Index (NRI) results shows that, while many European countries are leading in the rankings and several Nordic and Western countries are within the top 10, many others continue to lag behind. A digital divide persists within the European Union.

Although it is difficult to create homogeneous groups of European countries in terms of their level of digitization and the benefits accruing from it, a broad classification by geography would show that Northern and Western Europe depicts much stronger results than Southern and Central and Eastern Europe, even if the situation differs broadly within these groups. For example, within Central and Eastern Europe, Estonia presents values similar to those of some of the countries in Western Europe; within Southern Europe, Portugal and Spain outperform Greece.

Figure A presents the NRI results for each of the 10 pillars for these three groups of EU Member States. Based on this analysis, a number of key findings can be highlighted:

1. The gap between Northwestern European economies and the rest of the Member States is reflected in all of the 10 pillars of the NRI, from the market and regulatory conditions that support high levels of ICT uptake to levels of usage by all stakeholders and the economic and social impacts accruing from ICTs.
2. Overall, most countries depict fairly well developed ICT infrastructures. Although some countries should continue strengthening these infrastructures, they may not be the main source of the digital divide in Europe.
3. The cost of accessing ICTs is similar in all EU Member States and thus should not be regarded as a primary source of different levels of ICT uptake.
4. The gap in ICT usage across countries is bigger for businesses and narrower across governments. Overall, governments in most EU Member States have recognized the importance of developing ICTs and offer a fairly large number of public services online. However, the differences among countries in the capacity of their businesses to develop and integrate ICTs in their business models are much starker.
5. The gap in terms of social and especially economic impacts is the widest of the four subindexes, illustrating the new nature of the digital divide in Europe. Because the benefits of ICTs increasingly permeate all activities, the digital divide within Europe becomes starker when viewed by considering the impacts that benefit different stakeholders.

Figure A: The NRI 2014: European Union



Source: Authors' calculations.

Note: Southern Europe includes Greece, Italy, Portugal, and Spain; Northwestern Europe includes Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, the Netherlands, Sweden, and the United Kingdom; and Central and Eastern Europe includes Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic, and Slovenia.

These findings have several policy implications both for EU Member States and for the European Commission's effort to build a common Digital Agenda that stimulates a virtuous circle of investment in ICT infrastructure, higher uptake levels, and stronger impacts for all. Arguably the main implication is that digital strategies should focus not only on developing ICT infrastructure but also on creating the right conditions for an effective use of ICTs to boost innovation, competitiveness, and greater social inclusion. In order to do all that, public policies and company strategies are needed to improve the digital literacy of the population; to boost the overall skills capacity of the workforce through effective educational and training systems; and to encourage an effective integration of ICTs with other sources of innovation, such as R&D investments or higher levels of on-the-job training. To maximize their impact, these activities will need to be coordinated across stakeholders, so creating and strengthening public-private collaborations will be key.

Note

- 1 European Commission 2013.

good economic impacts (19th) and a large share of its population is employed in knowledge-intensive jobs (10th).

Benefiting from a fairly well developed ICT infrastructure (19th) and a pro-business and innovation environment (16th), **Ireland** moves up one position to 26th place. Since the early days of the Internet revolution, Ireland has identified ICTs as one of the key industries that could help diversify its economy and has attracted many global ICT companies thanks to its favorable environment for business. As a result, the island boasts good levels of digital connectivity that, coupled with a skilful labor force, has resulted in good economic impacts (18th) derived from technology-related innovations. On a less positive note, the government seems to lag behind in embracing ICTs in their offerings of online services (55th), which affects the country's capacity to fully leverage ICTs to increase their social impacts (55th).

Portugal and **Spain**, at 33rd and 34th position respectively, present fairly stable profiles. As in past editions, both countries have managed to develop good ICT infrastructures (36th and 32nd, respectively) and ICT uptake has permeated among their populations, particularly in Spain where almost three-quarters are Internet users (34th). In addition, both governments have made significant attempts to increase the number of services they offer online. Despite these efforts, both countries continue to struggle to fully leverage ICTs to boost innovation (42nd and 57th, respectively), and weaknesses in their innovation ecosystems persist, notably in Spain (51st). Addressing these weaknesses and integrating ICT investments better with other innovation-enhancing investments, such as R&D, would result in more robust economic outputs, which are needed for the economic transformation of these countries.

In Southeastern Europe, once again **Slovenia**, despite its current economic difficulties, continues to lead the rankings, moving up one position to reach 36th place. The country boasts a fairly robust ICT infrastructure (24th), along with good ICT uptake by individuals (34th) and government in its offering of online services (35th). Despite these positive features, Slovenia does not manage to completely leverage the full economic potential of ICTs for boosting innovation, where it continues to lag behind other EU countries. Weaknesses in Slovenia's innovation system, with low levels of venture capital (127th), a limited capacity to innovate (54th), and low levels of on-the-job training (105th) result in low levels of innovation, in terms of both new products and services (69th) and organizational models (68th), which hinder the productivity-enhancing potential of the economy. Within the region, **Croatia** follows at 47th place, with **Bosnia and Herzegovina** (68th) and **Serbia** (79th) lagging behind because of insufficient development of their ICT infrastructures, weak ICT uptake, and weaknesses in their innovation systems that hinder their potential to fully enjoy the benefits that can accrue from ICT.

In Central and Eastern Europe, the **Czech Republic** repeats last year's position at 42nd place, despite sharp improvements in rendering a fairly good ICT infrastructure (23rd) more affordable (84th), which has resulted in a slightly higher ICT uptake by individuals (30th). However, this improvement is set off by a slight deterioration in the political and regulatory environment (51st) that does not allow for better ICT-related economic (38th) or social impacts (47th). Overall, the country continues to depict strong ICT uptake by individuals, reflected by the fact that a large share of its population uses the Internet (28th) and e-commerce is well developed (9th). However, the government continues to lag behind in supporting and promoting the use of ICTs in their activities (96th), and weaknesses in the innovation and entrepreneurial systems (60th) hinder the country's capacity to fully leverage ICTs for improving innovation, competitiveness, and well-being.

Other countries in Central Europe—such as **Hungary** and **Poland**, at 48th and 55th place respectively—have lost some ground in the rankings because of the relatively faster progress of other countries, while the **Slovak Republic** improves its position by two places to reach 59th position. In addition, **Bulgaria** and **Romania**, 72nd and 76th respectively, drop one position each, depicting relatively stable profiles.

Despite a slight improvement in many indicators related to ICT infrastructure (42nd) and uptake (37th), which gives rise to a stable score, **Italy** suffers from a significant drop of eight places in the rankings to reach 58th place: other countries progress faster in building and fully utilizing their digital ecosystems. Persistent weaknesses in Italy's political and regulatory environment (99th), coupled with some significant challenges in its innovation system, hinder the country's capacity to fully leverage ICTs to boost innovation, competitiveness, and well-being.

As in the case of Italy, **Greece** suffers from a notable drop of 10 ranks despite a slight improvement in its overall score, coming in at 74th place this year. Continued improvements in its ICT infrastructure (40th) and the uptake of its citizens (43rd), as well as a rising number of broadband Internet subscriptions (27th) and Internet users (53rd), are not reflected in better, innovation-led economic (91st) or social (87th) impacts. Weaknesses in the country's political and regulatory environment (114th) coupled with a low capacity to innovate (117th) and scarce access to venture capital (146th) affect the country's capacity to introduce new services and products (129th) or organizational models (128th) that could help to transform its national economy and lead it toward more productive activities.

Within the Commonwealth of Independent States, several countries improve their performances, reflecting the key importance and hopes they have placed on ICTs to diversify their economies and lead them toward more knowledge-intensive activities.

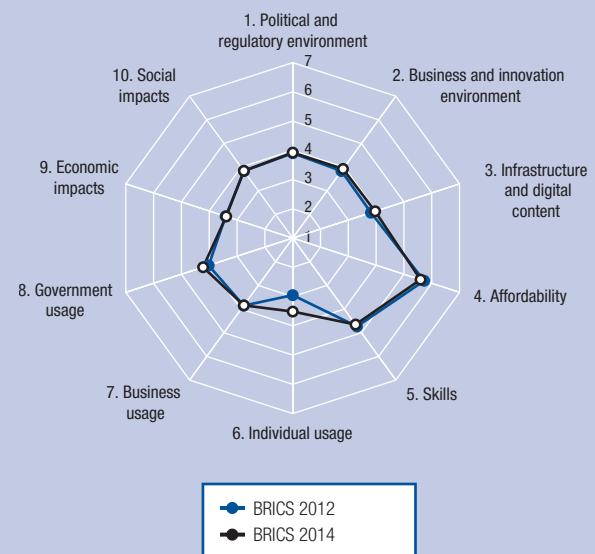
Box 3: Challenges faced by BRICS economies to fully leverage ICTs

Since the beginning of the worst financial and economic crisis of the past 80 years, the global economy has experienced a change in its traditional growth patterns. Advanced economies exhibited negative or sluggish growth, while emerging markets, and notably the BRICS economies—Brazil, the Russian Federation, India, China, and South Africa—continued to show robust growth. Several different reasons may explain these growth patterns for emerging markets; among them are the development of stronger domestic markets, an increase in the price of commodities, and access to more and better financing thanks to higher capital in-flows.

Notwithstanding this progress of the BRICS, we have recently observed that many of these emerging economies are experiencing difficulties in maintaining the rapid economic growth of these past years. Many of the favorable conditions fueling that growth have begun to fade away; this can have consequences not only for these particular countries, but—given their size and increasing importance in an interconnected world—also for the global economy.

In order to support sustained and stable growth in the long term, emerging markets must increase their levels of productivity, which they can do in two ways: by introducing the necessary reforms that will improve the functioning of their markets and boost their innovation potential, and by better leveraging their digital ecosystems. In terms of the latter, an analysis of the Networked Readiness Index (NRI) results for the past years shows that, in general, little progress has been achieved.

Figure A: The NRI in BRICS economies, 2012 and 2014



Source: Authors' calculations.

Table A: The NRI in BRICS economies, 2012 and 2014

	BRAZIL		RUSSIAN FEDERATION		INDIA		CHINA		SOUTH AFRICA											
	2012		2014		2012		2014		2012		2014									
	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value								
Networked Readiness Index	65	3.9	69	4.0	56	4.0	50	4.3	69	3.9	83	3.8	51	4.1	62	4.1	72	3.9	70	4.0
Environment subindex	101	3.5	116	3.4	100	3.5	87	3.8	78	3.7	91	3.8	64	3.9	77	3.9	34	4.6	31	4.8
1. Political and regulatory environment	77	3.6	78	3.6	102	3.2	100	3.4	71	3.7	73	3.6	46	4.1	56	4.0	23	4.9	20	5.0
2. Business and innovation environment	121	3.5	135	3.3	83	3.8	73	4.2	91	3.8	103	3.9	105	3.7	115	3.8	50	4.4	53	4.5
Readiness subindex	72	4.7	76	4.7	32	5.4	37	5.5	64	4.8	85	4.6	66	4.8	73	4.8	94	4.1	98	4.2
3. Infrastructure and digital content	68	4.0	56	4.5	40	4.8	47	4.8	100	3.2	119	2.7	87	3.5	86	3.5	82	3.6	68	4.2
4. Affordability	67	5.3	91	5.0	17	6.2	14	6.4	1	6.9	1	7.0	42	5.7	60	5.6	94	4.6	112	4.0
5. Skills	86	4.7	91	4.6	53	5.2	64	5.1	100	4.3	101	4.0	57	5.2	59	5.2	101	4.3	97	4.3
Usage subindex	54	3.8	47	4.1	60	3.7	53	4.1	78	3.4	91	3.4	51	3.8	61	3.9	76	3.4	70	3.7
6. Individual usage	66	3.3	59	4.2	52	3.9	46	4.6	117	2.0	121	2.1	82	2.9	80	3.3	96	2.6	78	3.4
7. Business usage	33	4.0	41	3.9	83	3.4	84	3.4	47	3.8	51	3.8	37	4.0	44	3.9	34	4.0	30	4.2
8. Government usage	59	4.0	54	4.3	71	3.7	61	4.1	46	4.3	41	4.5	33	4.6	38	4.6	89	3.6	103	3.6
Impact subindex	53	3.7	57	3.6	73	3.4	44	3.9	52	3.7	60	3.6	41	4.0	56	3.7	81	3.3	89	3.3
9. Economic impacts	52	3.5	64	3.3	53	3.4	41	3.6	41	3.6	50	3.5	79	3.2	81	3.1	59	3.4	49	3.5
10. Social impacts	54	3.9	58	3.9	89	3.4	41	4.3	65	3.8	73	3.7	30	4.8	44	4.2	98	3.3	113	3.0

(Cont'd)

Box 3: Challenges faced by BRICS economies to fully leverage ICTs (cont'd.)

Figure A compares the NRI scores by pillar for the BRICS economies in the 2012 and 2014 editions. Overall, the results have remained stable in virtually all pillars, and notably so for the economic and social impacts accruing from ICTs. The only exception has been a slight improvement in the individual usage score, which reflects the significant effort made to facilitate a broader access to ICTs for a wider share of the population.

In comparative terms, however, this stability in the scores represents a drop in the global rankings because other economies are progressing faster in developing and leveraging their ICT potential. Table A shows that since 2012—with the exception of the Russian Federation, which rises six places in the rankings—all other BRICS economies have dropped over time, in some cases significantly, and are now classified around the middle of the overall rankings. A more nuanced analysis of the different subindexes confirms that this drop in rankings is particularly important for economic

and social impacts, where only the Russian Federation manages to improve in both score and rank.

Reversing this situation will require the adoption of holistic strategies that support better development of ICT infrastructure and higher uptake of ICTs throughout these countries, including in rural areas. Although the vast expanse of these nations may represent a challenge, they should continue to invest in strengthening their ICT infrastructures and facilitating wider access to them. In addition, and very importantly, the conditions needed to better leverage ICTs need to be improved by integrating these technologies better into more robust innovation and entrepreneurial ecosystems that can support higher economic and social returns. Strengthening the institutional framework to support the development of ICTs, improving the quality of the educational systems and of the scientific and technological base in the country, and supporting interactions between research institutions and local companies will be thus be key going forward.

Kazakhstan is one of the most prominent of this group, leading the regional rankings at 38th, five positions up from the last edition. The country has improved its ICT infrastructure (58th), which remains one of the most affordable to access in the world (2nd)—an advantage that is also reflected in stronger ICT uptake by individuals (54th), with more than half of its population using the Internet or owning a computer with an Internet connection at home. The effort to upgrade the digital capacity of the country has been led by a strong government vision (27th) that recognizes the importance of promoting ICTs to diversify an economy that otherwise continues to be very reliant on the extraction of fossil fuels. Going forward, the country needs to continue building and strengthening its innovation system and the capacity of local companies to innovate (now 74th) to improve the economic impacts accruing from an increasing uptake of ICTs.

With a similar profile, **Azerbaijan** follows Kazakhstan closely in the rankings as it positions itself at 49th place, seven places up since the last edition. Improvements in the country's ICT infrastructure (55th), giving rise to much higher ICT uptake—especially by individuals (61st)—have yielded this positive result. Despite this advance, the country continues to lag behind in terms of fostering technological innovation, exhibiting low levels of overall and ICT-related patents (75th). To some extent this lag reflects the severe impediments existing in an incipient innovation system (77th) and the insufficient quality of its educational system (114th). Addressing these long-term challenges over the coming years will be crucial for Azerbaijan to diversify its economy and make it less dependent on oil revenues while transitioning toward a knowledge-based society.

Similar to other countries in the region, and in sharp contrast to other BRICS economies (see Box 3) the **Russian Federation** moves up four positions to

enter the top 50 this year. Slight improvements in the country's ICT infrastructure, which has become more affordable, along with higher rates of individual uptake (46th), have resulted in this positive outcome. Despite this progress, the country continues to suffer from a fairly inefficient political and regulatory environment (100th) and weaknesses in its innovation system, including a poor quality educational system (85th) that hinders its capacity to fully leverage ICTs to innovate, either through new products and services (113th) or new organizational models (93rd). It is also worth noting that, although individual ICT uptake is rather good (46th), both government usage (61st) and a poor government vision for developing ICTs (102nd) as well as inferior business uptake (84th) to support its innovation potential (64th) and business activity (94th) remain in need of attention.

Within the region, **Georgia** at 60th place and especially **Armenia**—which has one of the sharpest improvements and reaches 62nd place this year—continue on their positive path toward higher positions in the rankings. In contrast, **Ukraine**, in the middle of a difficult political and social context, drops to 80th place, while the **Kyrgyz Republic** repeats its 118th position of the past edition.

ASIA AND THE PACIFIC

With three economies from the region in the top 10 of the NRI rankings and several countries showing improvement, Asia and the Pacific is very dynamic and active in developing its ICT agenda. Yet a significant digital divide persists between the most advanced economies—such as the Asian Tigers and Japan—and emerging economies and other trailing countries.

Regardless of their position on the development ladder, all Asian economies have much to gain from increased networked readiness. It will allow populations

of the least advanced among them to gain access to much-needed basic services, to improve government transparency and efficiency, and—for the most advanced—it will contribute to boosting their innovation capacity and allow them to attain higher levels of competitiveness.

Taiwan, China, slips to 14th place in this edition despite a stable performance in terms of score. This relative drop in the rankings is primarily the result of improvements in other countries. Taiwan remains at the frontier both as a high-tech manufacturer and as a technology-driven economy, with strong usage of ICTs among all society's stakeholders. In addition, the economy manages to improve its already developed infrastructure (5th) by, for example, expanding its international Internet bandwidth by a significant amount and by making access to ICTs more affordable (53rd). Consequently, the economy scores strong social (6th) and economic impacts (12th), although these could be increased further by addressing some weaknesses in its political and regulatory environment (34th). This remains Taiwan's main area for improvement, especially with its lengthy procedures to enforce contracts (131st).

Japan moves up five positions to attain 16th place this year. Although a link between this improvement and its current economic outlook cannot be established, renewed business confidence in the political environment may have contributed to this progress. In addition, Japan has achieved marginal improvements in its ICT infrastructure, which has become more affordable, and maintains its competitive advantage in the high innovation capacity of local firms (4th). Technology and innovation continue to play a key role in making Japan one of the most productive economies worldwide; these have managed to extend to society, as social impacts have continued to improve (23rd). Yet further improvements in social and economic impacts could be achieved by incentivizing a more dynamic environment that could, for example, foster innovation through new organizational models (37th). A more conducive institutional framework, especially the general business and innovation environment (40th), could contribute to delivering better results and boost competitiveness.

Australia occupies the 18th rank and is stable since last year, despite an improved score. The country registers a sharp improvement in the affordability of ICTs (49th) and in some notable aspects of individual usage, such as the penetration of broadband subscriptions. According to ITU, the increase in smartphone usage is leading to more handset data download because owners of smartphones are more likely to purchase goods, access video and audio content, pay bills, and use other online services.¹⁰ This increased usage is partially reflected in some aspects of their economic impacts through the creation of new services, new products, and new organizational models. Compared with individuals, businesses and government are less dynamic in taking up ICTs.

Neighboring **New Zealand** (20th) shows a stable performance in the rankings with a slight advancement in score. The country's regulatory and business environment remains its strongest competitive advantage (2nd overall in the environment subindex, just behind Singapore). New Zealand ranks 1st for the independence of its judicial system and 1st in both the number of days and the number of procedures to start a business. The excellent skill base of its population (6th) also contributes to the country's ability to properly use and leverage a fairly good ICT infrastructure, although it remains rather pricy (127th), constituting New Zealand's main weakness.

Malaysia is also stable (30th) and confirms its leadership as the highest ranked economy in Developing Asia. Malaysia maintains relatively competitive regulatory (25th) and business (24th) environments, and its government continues to use ICTs extensively (9th), highlighting the high priority of this sector in the government's agenda. Business usage (27th) is also strong, as firms invest to adopt new technologies and make the effort to become increasingly innovative. The combination of a favorable environment and an overall high level of ICT usage results in high positive economic (30th) and social (25th) impacts. However, individual usage (49th), although improving in many dimensions, has yet to expand so that ICTs become a widespread technology in Malaysian households. This will certainly increase as the economy develops, but further investment in infrastructure and digital content (71st) are needed to ease access and foster even higher economic and social impacts.

China falls four places in the rankings this year and occupies the 62nd position overall, despite an increase in its overall score. The country is slowly improving its innovation potential but still lags behind in leveraging the full potential of ICTs. For example, despite an increase in patent applications, the overall level remains relatively low (32nd) with just 11.5 applications per million population. Individual usage is also growing, which explains most of the progress in China's score. However, only just over 40 percent of individuals use the Internet on a regular basis and there are only 13 fixed broadband Internet subscriptions for every 100 people (51st). Mobile broadband Internet has registered more substantial growth, but its penetration is still low, with 17 subscriptions per 100 population (76th). Consequently, individual usage in China still ranks low (80th), trailing behind the level of ICTs used by other stakeholders: business (44th) and government (38th). Certainly the vast size of the country and its proportion of rural population does not allow for rapid improvement in ICT usage and infrastructure build up, yet China needs to fill the gap to meet its ICT potential. Some of the constraints to better leverage ICTs that have been faced by the country in the past are not improving. The institutional framework does not lead to higher ICT uptake (56th), and the business environment (115th) witnesses a relative

worsening because of excessive bureaucracy and red tape, high taxes (135th), and delayed availability of new technologies (107th), at least at the national, aggregate level. In terms of readiness, China is making an effort to improve its infrastructure, with augmented production of electricity and higher international Internet bandwidth capacity and server security. Yet performance in these dimensions is still relatively low because improvements hardly keep up with the country's rapid development. Moreover, progress on the construction of hard ICT infrastructure is counterbalanced by a diminished accessibility of digital content (67th). And although the skill base of the workforce is growing (for instance, participation in secondary education is growing to reach 86.6 percent of its population), it is not growing as quickly as in other competing economies, and the country attains a relatively low 59th position on the skills pillar. Furthermore, the affordability of ICTs has dropped to 60th place, representing the main area of decline. All these limitations combine to realize only low economic impacts (81st), allowing a limited impact of ICTs on new services and products and a low share of the workforce employed in knowledge-intensive activities. Further and sustained efforts should be made to unleash the innovative potential of ICTs, both through investment in capacity building and infrastructure and through a more open and creative environment that could foster new ideas and business models.

Since the last assessment, **Indonesia** climbs 12 places to attain 64th position, the third best result among members of the Association of Southeast Asian Nations (ASEAN) after Singapore and Malaysia.¹¹ This result is achieved thanks to balanced improvements across the board rather than to a sharp increase in one particular area, although more significant progress takes place in the environment subindex. Both the political and regulatory environment (68th) and the business environment (62nd) are improving. The former is driven by stronger perceptions about the effectiveness of the country's institutions, with enhanced intellectual property protection (55th), a more efficient legal system (49th), and better-developed ICT regulations (46th). The latter is driven by stronger local competition (66th, up several positions since last year) and the greater availability of the latest technologies (60th), while venture capital availability remains high (17th) and slightly improving as well. However, further advancements can be achieved in this area, as excessive red tape continues to limit the creation of new businesses. Indonesia's readiness also improves. While affordability remains one of its main strengths (37th), progress in skills and infrastructure add to the country's fairly solid performance. After having achieved full mobile network coverage last year, its international Internet bandwidth capacity improves significantly to reach 77th place. In terms of skills, the quality of its educational system is improving as well as its population's participation in higher education,

with a secondary education enrollment rate of 81 percent. Yet readiness can be further enhanced by continuing investing in education and especially in ICT infrastructure, where the capacity of secure Internet servers (105th) and electricity production (104th) remain insufficient to sustain future ICT development. Usage, also on a positive trend, has stayed more stable. Across stakeholders, businesses (36th) lead, with companies quickly absorbing the latest technologies and increasingly integrating ICTs in their daily activities. Businesses are followed by the government (49th), while households continue to lag behind (95th). The penetration of mobile phones passed 100 subscriptions per population a few years ago, mobile broadband subscriptions are rapidly evolving, and social networks are popular. However, the low usage of the Internet (112th) and the scarce availability of personal computers (103rd) and home Internet connections (117th) still reflect gaps in the fulfilment of Indonesia's ICT agenda. Consequently, economic and social impacts (86th and 63rd, respectively) are increasing but still low compared to the tremendous improvements registered in the few years. It is hoped that the benefits of ICTs are building up and will be secured in the near future.

Thailand, similar to most other ASEAN members, improves its performance this year, reaching 67th place in the rankings. Despite the wide gap vis-à-vis Singapore and, to a lesser extent, Malaysia, Thailand exhibits progress in all the subindexes. Its main strengths lie in its relative affordability of ICTs (47th) and its business and innovation environment (45th). However, in both these pillars Thailand alternates good results with areas for improvement. For example, in terms of affordability, the accessible mobile phone tariffs (30th) are counterbalanced by less competitive broadband Internet prices (86th). Similarly, the business and innovation environment includes a high level of local competition (41st) as well as low government procurement of advanced technology (105th). Business usage is another area of relative strength (59th), thanks to the widespread use of ICTs for consumer transactions (50th) and also to active technology absorption (50th). Individual usage of ICTs still lags behind (85th), yet it shows significant improvement with a good penetration of mobile phones (38th) and usage of virtual social networks (49th), comparable to those of advanced economies. Yet, aside from mobile telephony, other technologies remain relatively scant, especially the breadth of mobile broadband technologies (132nd). Moreover, the institutional environment does not seem to be particularly conducive (79th) and the government does not appear to be particularly eager to push the digital agenda nationwide (84th). The resulting economic impact is therefore not yet satisfactory (104th), with few ICT PCT applications, few organizational models, and a low share of the workforce in knowledge-intensive activities.

Sri Lanka, another ASEAN economy, drops seven places to take the 76th position in the rankings, but its score continues on a positive upward trend. The environment subindex, both in its political and regulatory component and in its business and innovation component, loses some ground, yet this is compensated for by stronger usage, especially among business (50th) and government (43rd) stakeholders. Individual usage is also improving, but because it is starting from a very low base (112th) it still needs to fill important gaps across the board, while the country's infrastructure (104th) demands sustained investments to support the ICT sector adequately.

India is the least performing of the BRICS economies and is continuing on its declining trajectory to arrive at 83rd place in this edition. The drop in rankings can be traced back mainly to difficulties in improving historical limitations and keeping up with other emerging economies in several dimensions. Overall, India's networked readiness profile remains hindered by the quality of its political, regulatory, and business environment (91st) and its lack of digital infrastructure (119th), which is reflected in low individual usage (121st) and wide gaps in education participation that limit the creation of a wide skill base (101st). Red tape and corporate tax continue to create a difficult environment for businesses to operate, with almost no improvements since the last assessment. On this dimension—despite the positive availability of venture capital (27th), competitive local markets (24th), the availability of the latest technologies (58th), and improving perceptions of judicial independence (40th)—bureaucracy and administrative costs are extremely burdensome. For example, enforcing contracts remains a long process, both in terms of number of procedures (134th) and time (146th). In terms of readiness, the development of the country's infrastructure proceeds slowly: for example, electricity production expands, but remains insufficient overall (101st); the number of secure Internet servers also increases but remains low (108th). However, the most worrisome signals of insufficient progress on the digital agenda come from the lack of skills buildup, with dismal progress made in secondary education participation (68.5 percent, ranking 105th) and literacy rate (127th). The inadequate diffusion of basic skills required in a knowledge society is certainly a drag on ICT development and hinders leveraging the yet-untapped innovation potential of large, young Indian human resources. The low level of ICT usage by households and individuals reflects the strong human, infrastructure, and digital divides that characterize India. The penetration of mobile phones is low (69.9 percent) and not growing, while the numbers of Internet users (12.6 percent), households with a personal computer (10.9 percent), and mobile broadband subscriptions (5 percent) are disappointing (all ranking below the 102nd position). The main strength of India lies in its very affordable set

of ICT tariffs (1st) and its businesses' capacity to adopt new technology (48th). The government continues to emphasize ICTs as a promising tool to address some of the country's priorities such as job creation, corruption, red tape, and education. However, this vision has yet to translate into a structural transformation of India's economy and society.

Improving its position both within the ASEAN group and overall, the **Philippines** climbs eight places to reach the 78th position. With a significant improvement in its overall score, the country continues its positive trend. The scores of all the 10 networked readiness pillars register an increase. A significant improvement in the perceived efficiency in the country's legal system and property rights protection drive the political and regulatory environment up to 87th place. ICT readiness is the other area where the Philippines improves the most, thanks to a more affordable (75th) access to ICT infrastructure and better skills (69th), despite the need for higher quality in the educational system. Business usage is, as in many other Asian economies, at a more advanced stage (43rd) than individual usage (91st). Progress made in terms of economic impacts registered last year continues this year, moving up eight positions and reaching 48th place. The role of ICTs in fostering innovation by creating new products and services (42nd) and organizational models (28th) is confirmed and contributes to this promising result.

With a stable performance, **Vietnam** is overtaken by the Philippines in the ASEAN group but remains 84th overall and marginally improves its score. The affordability pillar is corroborated as the main strength of Vietnam's performance (8th), jumping 30 positions since the last assessment. The business and innovation environment is the other main area where Vietnam progresses significantly, albeit from a low base (100th this year). The other many shortcomings endure: the poor overall quality of the political and regulatory environment (91st) and ICT infrastructure (121st) limit the expansion of the ICT sector, while available skills (88th) show no signs of development. The usage of ICTs by individuals (84th), businesses (88th), and government (58th) remain stable, with little progress registered since the last assessment. Such a lack of dynamism not only is detrimental to the development of ICTs, but also seriously undermines the country's competitiveness going forward.

The eight ASEAN members covered by the NRI in the last edition improve their overall scores and a majority make progress in the rankings as well, although some continue to be located toward the lower end: **Cambodia** (108th), the newly covered **Lao PDR** (109th), and **Myanmar** (146th) close the regional rankings.

Finally, **Bhutan**, assessed for the first time this year, ranks 94th; **Pakistan** is ranked 105th, down three places; **Bangladesh** is 114th, losing one position; and **Nepal** is 126th.

LATIN AMERICA AND THE CARIBBEAN

Improving the connectivity of the region continues to represent one of its main challenges despite the recent efforts of many countries to develop and update their ICT infrastructures. Countries such as Chile, Panama, Uruguay, and Colombia have made significant progress in developing and ensuring more and better access to ICT infrastructure, ensuring higher ICT usage across stakeholders. However, persistent weaknesses in the broader innovation system hinder the overall capacity of the region to fully leverage ICTs to foster its competitiveness potential, highlighting the rise of the new digital divide—that is, the divide between countries that are achieving positive economic and social impacts related to the use of ICTs and those that are not.

Despite a slight increase in its overall score, **Chile** drops one notch to 35th place while still leading the regional rankings. As mentioned above, the country relentlessly continues to develop its ICT infrastructure and ensure higher ICT usage across stakeholders, with one of the highest rates of Internet users (45th), e-commerce (35th), and online government (24th) services in the region. Despite this important progress, weaknesses in its innovation system, which are reflected in the relatively low capacity of Chilean companies to innovate (63rd) and concerns about the quality of its educational system (74th), especially math and science education (107th), continue to hinder Chile's capacity to fully leverage ICTs to support innovation and the transition to a knowledge-based economy.

Panama continues its ascent in the rankings, moving up three spots to 43rd place. The country has recognized the importance of ICTs as one of the key sources of economic growth for the future both as an industry and as an enabler for innovation, notably in the service sector. This governmental vision (22nd) is reflected in higher rates of ICT uptake by businesses (39th) and individuals (68th), even if the reported figures do not reflect the government's efforts to provide free universal Internet access. Notwithstanding this progress, the country still suffers from weaknesses in its educational system (75th), notably in important areas for innovation such as math and science (114th), and in its political and regulatory environment (62nd). Panama's overall capacity to innovate is also still low (50th). These weaknesses hinder its ability to fully leverage its digital potential to foster higher levels of competitiveness.

Stable at 53rd place, **Costa Rica** exhibits some progress in ensuring higher ICT uptake, with an important increase in the number of households with access to an Internet connection (59th) and a higher proportion of its population with mobile broadband subscriptions (70th), thanks to efforts to guarantee affordable (15th) access to the ICT infrastructure. Notwithstanding these strengths, overall individual (64th) and government (64th) usage remain a bit low, and some weaknesses in the political and regulatory environment

(63rd)—notably in the effectiveness of law-making bodies (140th) and the number of days to enforce a contract (123rd), as well as the conditions needed to boost innovation and entrepreneurship (70th)—affect the country's capacity to leverage its ICT potential to foster innovation and ensure the transition toward a knowledge-based economy (65th).

Barbados suffers a significant drop in the rankings, falling 16 positions to arrive at 55th place. This decline is driven by sharp increases in the price of accessing its ICT infrastructure and a drop in the economic impacts derived from ICT usage (57th). Overall, the Caribbean island continues to boast an excellent educational system (6th) that, coupled with a relatively favorable environment for business (38th), could result in higher economic impacts than those yet achieved. However, weaknesses in its innovation system, where companies report low levels of capacity to innovate (81st) and difficulties in accessing venture capital financing (98th), along with long and cumbersome procedures to start a business (94th), continue to hamper its innovation potential and thwart its ability to leverage the digital ecosystem. Going forward, addressing these weaknesses while continuing to improve its ICT infrastructure and uptake would result in greater economic and social impacts.

Despite the improvement in score that reflects the effort **Uruguay** has made to boost its ICT infrastructure and uptake over the past years, because other countries are progressing more quickly the country drops four places to land at 56th place. As in past years, Uruguay continues to improve its ICT infrastructure (50th), which has become more affordable (80th), resulting in higher levels of uptake by individuals (48th). Notwithstanding this progress, the country continues to suffer from weaknesses in its overall innovation system: of concern is the quality of its educational system (120th) and its capacity to provide the necessary skills for a changing economy, as well as its low capacity to innovate (88th). This situation results in modest economic impacts (61st) in terms of fostering innovation and ensuring a faster transition toward a knowledge-based economy (66th).

Colombia moves up three positions to reach 63rd place this year. Improvements in its ICT infrastructure, which has become relatively more affordable (44th), and in individual uptake (77th)—with a larger number of Internet users (66th) and households with a personal computer (74th) and an Internet connection (75th)—have allowed for this positive result. Notwithstanding this progress, the country continues to suffer from poor framework conditions for entrepreneurship and innovation (104th) and from weaknesses in its educational sector, notably in the quality of math and science education (108th), resulting in a poor capacity to innovate (83rd) and a small share of its population engaged in knowledge-intensive jobs (89th).

Despite a slight increase in NRI score thanks to improvements in its ICT infrastructure (56th), **Brazil** drops nine positions to arrive at 69th place because other economies have been faster to embrace the digital revolution. Overall, the country exhibits relatively high levels of ICT usage, with about half of its population using the Internet, a well-developed e-commerce industry (30th), and a government committed to offering a significant number of its services online (32nd), resulting in fairly good citizen e-participation (31st). However, a poor business and innovation environment (135th), coupled with weaknesses in its educational system (121st)—notably in the area of math and science (136th)—hampers the full attainment of the economic impacts that ICTs can provide (64th). Only a small proportion of its population is engaged in knowledge-intensive jobs (75th).

After a couple of years of important improvements in the rankings, **Mexico** does not consolidate past gains and falls 16 positions to reach 79th place. Despite some progress in expanding and upgrading its ICT infrastructure (81st) and uptake by individuals (89th), this is insufficient to catch up with advances in other economies, and thus Mexico does not manage to digitally converge with more-advanced economies. The cost of accessing its existing ICT infrastructure remains high (93rd) and the quality of its educational system (119th) continues to pose a severe challenge to providing the country with the skills necessary required for a changing and more digital economy. All this results in low ICT usage levels by both individuals and businesses, in spite of the government's significant efforts to offer many of its services online (28th), thereby enabling good rates of citizen e-participation (25th). In addition, its innovation ecosystem needs strengthening and, in general, Mexican companies have a low capacity to innovate (75th), resulting in low economic impacts (80th) and a population that concentrates largely on low-productivity activities and few jobs considered to be knowledge intensive (97th). A full implementation of the country's digital agenda and addressing the persistent weaknesses in the innovation system should help in resolving several of these persistent challenges.

Peru jumps 13 places to attain 90th position, thanks to some improvement in its ICT infrastructure—for example, greater access to international Internet bandwidth and higher individual uptake. Despite this progress, the country continues to lag significantly behind in terms of its capacity to fully leverage ICTs to build its competitiveness and modernize its economy, which continues to rely heavily on mining. Overall, weaknesses in its educational sector (134th), which does not seem to provide the right set of skills, coupled with relatively low deployment of its ICT infrastructure (95th), result in low levels of ICT uptake by both individuals (94th) and businesses (89th). In addition, weaknesses in enabling conditions for leveraging digital capacity

for innovation (93rd), along with a weak political and regulatory environment (119th) and an excessive number of days to open new businesses (103rd), result in a poor innovation capacity (106th) and an economy that is not able to offer many knowledge-intensive jobs (94th). Improving the development of ICT infrastructure and access to it, coupled with better conditions and interaction with other innovation-related investments—such as education, training, and R&D—would help to improve the situation going forward.

Argentina drops one position to reach 100th place. In general, the country boasts few changes since last year. Although the development of an expensive (121st) ICT infrastructure (78th) and uptake by individuals (57th) present values above the Latin American average, the severe weaknesses in its business environment (135th) and concerns about the quality of its educational system (104th) and its ability to provide the workforce with the necessary skills for the economy result in this disappointing position.

Finally, **Paraguay** (102nd), **Venezuela** (106th), **Honduras** (117th), **Bolivia** (120th), **Nicaragua** (124th), and **Haiti** (143rd) close the regional rankings. These countries all suffer from both important weaknesses in the development of their ICT infrastructures and a lack of the innovation and entrepreneurial conditions that could help them fully leverage them.

SUB-SAHARAN AFRICA

Sub-Saharan Africa slowly continues to develop its ICT infrastructure, especially by expanding the share of the population covered by, and having access to, mobile telephony and by expanding the number of Internet users, which in some countries—such as South Africa—has almost doubled. These improvements have led to many important innovations that provide more and better services that were previously unavailable, such as financial services. Notwithstanding this progress, the region overall continues to suffer from a relatively poor ICT infrastructure, which remains costly to access, although some notable exceptions exist. More importantly, severe weaknesses persist in the region's business and innovation ecosystems, which result in very low positive economic and social impacts. Addressing these weaknesses, not only by developing a more solid ICT infrastructure but also by improving the framework conditions for innovation and entrepreneurship, will be crucial to avoid the emergence of a new digital divide that will be evident in a disparity of the economic and social impacts associated with what has been called the digital revolution.

Mauritius recovers the ground lost last year and moves up seven positions to attain 48th place. Gains across the board—most notably in terms of a better ICT infrastructure and skills base, along with a higher level of individual usage—have led this improvement. Overall, the government's vision (31st) to develop ICTs as a key

sector to support the economic development of the island, coupled with a positive political and regulatory environment, have resulted in improvements in an affordable (11th) ICT infrastructure and higher levels of ICT users, even if less than half of its population uses the Internet or has a computer with an Internet connection at home. Improving the economic impacts (70th) accruing from a higher use of ICTs will require resolving some important weaknesses in the innovation system, such as the capacity of local companies to innovate (72nd), which is still considered low.

Despite some important improvements in the penetration of ICTs among individuals, which is reflected in a higher NRI score, **South Africa** remains stable at 70th place. In the past year, an expensive (112th) ICT infrastructure (68th) has exhibited little progress. In using ICTs, the business community (30th) seems to have taken the lead, using ICTs vigorously in interactions with other businesses (30th); this business-to-business use seems much more developed than interactions with consumers (62nd). On the other hand, the government (103rd) lags substantially behind in embracing ICTs, offering few online services (80th), which in turn results in low social impacts (113th). Weaknesses in the innovation system, notably in terms of skills development (97th), also affect the country's economic potential (49th) despite its fairly robust political and regulatory environment.

In the bottom half of the rankings, **Rwanda** moves up three positions to reach 85th place, regaining some of the ground lost last year. Overall, the country depicts a profile similar to that of previous years. It makes little progress in improving its very expensive (128th) ICT infrastructure (108th), which results in a low uptake by its population (138th) despite the clear vision of the government (5th) to promote ICTs in the country. Weaknesses in its innovation system and the low share of its population that graduates from secondary education (139th) also affect its capacity to fully leverage ICTs to boost innovation (93rd) or increase its population's online participation (112th).

Despite some very significant efforts to boost its ICT infrastructure and ICT uptake by its population, **Kenya** remains stable at 92nd place. As in the case of Rwanda, despite a strong government vision (26th) to develop ICTs, the actual uptake by its population (113rd) continues to remain very low, albeit increasing: only around 10 percent of households have a computer (113th) or an Internet connection (103rd). Weaknesses in the innovation and entrepreneurial environment (110th) and a fairly low skills base (98th) also affect the capacity of the country to fully achieve the potential benefits accruing from ICTs.

In East Africa, **Zambia** (110th) and **Uganda** (115th), swapping places from last year, and **Tanzania** (125th) continue to lag behind in developing their ICT infrastructures, promoting higher ICT uptake, and finally benefiting from the economic yields associated with

it. The situation is similar in West Africa, where many countries—such as **Senegal** (113th), **Gabon** (128th), and **Cameroon** (131st)—remain at the bottom of the rankings as a consequence of both the insufficient development of their ICT infrastructures despite important progress made in their mobile telephony uptake, and weaknesses in their innovation systems that result in a low capacity to boost their overall competitiveness. Efforts to close the digital divide in these countries should focus not only on developing their ICT infrastructures but also on improving the framework conditions for innovation in order to avoid the perpetuation of the gap in economic and social impacts that constitute the new digital divide.

THE MIDDLE EAST AND NORTH AFRICA

As in previous years, the region depicts a highly diversified outlook in terms of the capacity of countries to leverage ICTs to boost competitiveness and well-being. On the one hand, Israel and several Gulf Cooperation Council states have continued their efforts to improve ICT uptake and integrate ICTs better in more robust innovation ecosystems in order to obtain higher returns.¹² On the other hand, many countries in North Africa continue to lag behind and suffer from important weaknesses in their framework conditions and overall innovation capacity that prevent them from fully leveraging ICTs and obtaining higher returns.

Israel repeats its position at 15th place, leading the regional rankings with a stable profile. The country continues to boast a fairly good ICT infrastructure (29th) that remains affordable (35th) and results in very high levels of ICT usage (14th) across all agents. Around three-quarters of the country's households count on a personal computer (21st) and Internet connection (29th) at home and are Internet users (31st), and more than half of its population has access to mobile broadband (26th). The government has also made a significant effort to offer its services online (15th), and e-commerce (23rd) is fairly well developed. In addition, the country benefits from a rather skilful labor force (39th), despite some concerns about the quality of education (56th), that—coupled with favorable conditions for innovation and entrepreneurship (14th) and a high capacity of companies to innovate (4th)—result in very high technological capacity, as evidenced by the high number of overall patents (5th), notably in ICT-related fields (4th).

Qatar remains stable at 23rd place and leads the rankings in the Arab world. In the past year, the country has continued to improve and upgrade its ICT infrastructure (31st) and uptake (18th), thanks to a decisive effort led by the government's strong vision (3rd) that has identified ICTs as one of the key industries that will diversify the local economy and boost the productivity of all sectors. Qatar is among the top 10 in the world in terms of Internet users (9th) and households having access to a computer (8th) and Internet connection (10th), which has become almost

universal and has helped to achieve very high social impacts (8th). Economic impacts (32nd), while improving, could be higher. Technological innovation (46th) remains modest, and just a quarter of its population is employed in knowledge-intensive jobs (61st). Continuing to address some of the weaknesses in its innovation system, which is quickly evolving and strengthening, would result in a higher technological potential.

The **United Arab Emirates** continues to move up in the rankings, this year by one position, to reach 24th place. Improvements in its ICT infrastructure (30th) and ICT uptake by individuals (29th) have led to greater economic impacts (27th) and thus the rise in the rankings. As in Qatar, the government has a strong vision (1st) to develop ICTs as one of the key industries to diversify the local economy; this is reflected in the already high and rapidly increasing levels of ICT uptake across all stakeholders. More precisely, 85 percent of its population use the Internet (14th) and have access to a personal computer at home (18th); government services are largely available online (9th) and e-commerce is relatively well established (20th). Benefiting from a pro-business environment, the country also obtains fairly good economic impacts (27th), even though its technological innovation capacity remains low (49th). Sustaining efforts to strengthen its innovation ecosystem will be important going forward in order to boost the potential results of a fairly well developed digital ecosystem.

Stable at 29th place, **Bahrain** continues to depict a robust performance. Although ICT infrastructure, especially in terms of international Internet bandwidth (74th), may not be as well developed in Bahrain as in other countries, it is less costly to access (25th) and uptake by individuals is one of the highest in the world (14th), with a very high number of Internet users (10th); the number of households with a personal computer (3rd) is similar to that of the Nordic countries. As for other countries in the region, the government has a strong vision to develop the sector (14th) and offers a wide range of services online. Notwithstanding these strengths, Bahrain suffers from an overall low capacity to innovate (82nd), which reflects persistent weaknesses in its innovation system. Along with some concerns about the quality of its educational system (48th), notably in math and science (77th), these weaknesses hamper the country's capacity to obtain higher economic impacts (63rd) and transition toward a knowledge-based economy (74th).

Despite some significant improvement in the uptake of ICTs by individuals and development in its infrastructure, **Saudi Arabia** falls one position to reach 32nd place. Overall the country depicts a very stable profile compared with that of previous editions. Similar to others in the region, the government (6th) is leading the effort to digitally connect and advance the country, while individual uptake (44th), despite recent improvements,

and business uptake (34th), with a limited development of e-commerce (54th), lag a bit behind. Notwithstanding a fairly business friendly environment (23rd) that should continue its efforts to cut red tape (107th), weaknesses in its innovation system do not allow the economic impacts that ICTs could bring (37th). Going forward, strengthening its innovation system through more and more efficient investments to foster the scientific and technological capacity of the country will be important to increasing the share of its population working at knowledge-intensive jobs (67th) and helping the transition from a resource-based economy toward an innovation-driven one.

In the Levantine, both **Jordan** and **Lebanon** improve their scores, but while Jordan moves up three positions to 44th place, reaffirming its leadership in the area, Lebanon drops three to 97th place.

In North Africa, countries—except Algeria—suffer significant drops and are positioned in the lower half of the rankings, illustrating the difficulties they face if they are to fully develop their ICT potential and leverage it to obtain great social and economic impacts. **Tunisia**, at 87th place, leads the area, followed by Egypt, Morocco, and Algeria at 91st, 99th, and 129th place, respectively.

Egypt, at 91st place, falls 11 positions despite a slight improvement in individual ICT uptake (71st), which has nevertheless been smaller than the improvement seen by other countries that have evolved faster. Overall, Egypt continues to lag behind in terms of developing its ICT infrastructure (99th), although it remains fairly affordable (16th). ICT uptake by government is average (42nd), but penetration among citizens (71st)—with less than half its population using the Internet (75th)—and businesses, in their interaction with other businesses (81st) and consumers (70th), remain modest. Weaknesses in the political and regulatory environment (115th) and the business and innovation environment (117th) result in a low innovation capacity by Egyptian companies (111th) and thus limited economic (59th) and social (65th) positive outcomes.

Falling 10 positions, **Morocco**, at 99th place, barely ranks among the first 100 analyzed economies. As in the case of Egypt, ICT infrastructure (93rd) has slowly improved. This is also the case of individual ICT uptake, although progress in Morocco has been slower than in other countries that are moving faster. Overall, the country's economic (123rd) and social (115th) impacts remain very low, partly as a consequence of the relatively low ICT uptake, partly because of the poor conditions for boosting innovation and entrepreneurship (88th) in the country, and partly because of its low skills base (111th). In comparative terms, individuals are more advanced in using ICTs, with more than half of its population using internet (57th), than both businesses, where e-business still lags behind, and the government, which notably scores poorly in terms of its offerings of online services (125th).

After a sharp drop in the past edition, **Algeria** manages to move up two positions to reach 129th place. With very poor general conditions for business and innovation development (145th), a poorly developed ICT infrastructure (127th), and very low ICT penetration across all stakeholders, it is not surprising that the country does not achieve higher economic (133rd) and social (140th) impacts.

CONCLUSIONS

With the advent of the information revolution, ICTs have become ubiquitous and the world hyperconnected, deeply transforming the economic and social relationships across stakeholders. In this environment of fast-paced change, a new form of asset that can be thought of as the gold or oil of previous economic revolution periods has emerged: data. Large amounts of data, often referred to as *big data*, are constantly generated both in a structured and non-structured manner. Thanks to advances in ICTs, the volume and velocity of generation of these data are unprecedented, as is the capacity of organizations to capture and treat them, potentially generating great economic and social value. However, success in extracting this value requires more than just the generation of or access to big data. Organizations, both public and private, need to decide how to acquire, treat, and interpret these data. This will frequently require new management philosophies and organizational structures capable of adapting and benefiting from the new market opportunities. At the same time, the potential of big data to be misused is also increasingly becoming a source of concern. Privacy issues, and sometimes concerns about geopolitical and strategic matters regarding national security, have been raised. Measures that can build resilience and avoid these perils will need to be developed.

Against this backdrop, for the past 13 years, the Networked Readiness Index (NRI) of the GITR series has contributed to better understanding and measuring the determinants and impacts that ICTs can make, analyzing national conditions and stakeholders' readiness to fully leverage the potential that ICTs unveil. An analysis of the digital landscape confirms some of the key findings that have been presented in previous editions. Overall, the digital divide between advanced economies and emerging and developing ones persists. This is notable especially in terms of the economic and social impacts that ICTs can provide and that characterize the changing nature of this digital divide. The NRI results show that many developing and emerging countries have made significant attempts to develop their ICT infrastructure—mainly by increasing mobile telephony, which has become increasingly available for a large share of the population and has resulted in new services, such as financial services, that were previously unavailable. However, progress in building and upgrading the enabling infrastructure to allow for more and higher

quality Internet connections or to expand ICT uptake has been slower, especially in the least-developed countries. In addition, these countries suffer from unfavorable business and innovation conditions and weaknesses in their educational systems, hindering their capacity to fully leverage the existing ICT uptake and resulting in lower innovation and competitiveness capacity. This situation is particularly worrisome in sub-Saharan African countries. On a more positive note, some countries, notably in the Commonwealth of Independent States and the Gulf Cooperation Council, have made significant progress over the past years, channeling many of the fossil fuel revenues toward ICT investments as a strategy to diversify their economies and make them less dependent on volatile international energy prices.

Another trend that is confirmed by the results is that large intra-regional disparities persist across all regions: from Latin America to Asia and the ASEAN countries, from the Middle East and North Africa to Europe and the EU countries. In Latin America, the regional rankings continue to be led by Chile, Panama, Costa Rica, and Uruguay—countries that portray relatively good results, albeit with some weaknesses in their overall innovation systems, in terms of increasingly developing their digital ecosystems. On the other hand, little progress is recorded for countries such as Brazil, Mexico, Argentina, Bolivia, and Venezuela. Within Asia and the ASEAN countries, the differences are also stark. Although Singapore continues to be at the forefront of the global rankings, Malaysia is the only other economy from the region that manages to score within the top 30, followed distantly by Indonesia and Thailand just above the top half of the rankings; Pakistan, Bangladesh, and Nepal come in toward the bottom of the rankings. In the Middle East and North Africa, the differences have become even more pronounced. While many countries from the Gulf Cooperation Council, especially Qatar and the United Arab Emirates, have continued their decisive progress toward strengthening their digital and innovation ecosystems, countries in North Africa continue to suffer from significant challenges to promoting ICT uptake and from poor conditions that present obstacles to integrating ICTs and leveraging them to boost innovation and competitiveness. Finally, in Europe, notably even within the European Union, the differences are also significant. A deeper analysis reveals that differences in terms of fostering ICT infrastructure and uptake are not so prominent—to a large extent, this is thanks to the efforts of the European Commission to develop a robust digital infrastructure throughout the Union. However, differences across countries in the conditions under which innovation can occur affect their capacity to fully take advantage of the existing infrastructure. Efforts to continue bettering these conditions for innovation will be key to reducing this new digital divide going forward.

Finally, of special importance given their size and influence in the global economy, is the situation of the

BRICS economies—more precisely, their inability to make decisive progress in developing and leveraging their ICT potential. Overall, although the situation differs across the five economies, they all seem to face difficulties in developing and benefiting from their digital potential. While their vast geographical expanse may hinder their capacity to quickly and more economically develop their ICT infrastructure and reach out to larger shares of the population, weaknesses in their innovation systems persist despite the many efforts to mitigate these limitations. This situation hampers their potential to benefit from the economic and social benefits that ICTs could bring about to boost their competitiveness and allow them to transition toward full-fledged knowledge-based societies.

The GTR series and the NRI provide a comprehensive analytical framework for assessing not only the progress made in raising ICT connectivity in different countries, but also—and more importantly—the progress made in obtaining the desired economic and social impacts that higher connectivity and the rise of big data can yield in generating growth and high-quality employment in a rapidly changing context. Designed and produced as a framework for multi-stakeholder dialogue, it also serves to identify and define policies and measures that can catalyze change toward better leveraging ICTs and achieving their full potential.

NOTES

- 1 Alexander 1983.
- 2 Google, no date, *Explore Flu Trends Around the World*, available at <http://www.google.org/flutrends/>.
- 3 Schaefer et al. 2011.
- 4 Gawande 2011.
- 5 Parry 2012.
- 6 The Economist Intelligence Unit 2013.
- 7 See Lanier 2010; see also Kakutani 2010.
- 8 Browne et al. 2013.
- 9 See European Commission, 2010a, b.
- 10 ITU 2013, Box 2.4.
- 11 The members of the Association of Southeast Asian Nations (ASEAN) are Cambodia, Indonesia, Laos PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.
- 12 The six Gulf Cooperation Council states are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

REFERENCES

- Alexander, C. P. 1983. "The New Economy." *Time Magazine*, May 30. Available at <http://content.time.com/time/magazine/article/0,9171,926013,00.html>.
- BCG (Boston Consulting Group). 1970. "BCG Growth-Share Matrix: Definition." *Strategic Management insight, Strategy Tools*. May 1. Available at <http://www.strategicmanagementinsight.com/tools/bcg-matrix-growth-share.html>
- Browne, C., T. Geiger, and T. Gutknecht. 2013. "The Executive Opinion Survey: The Voice of the Business Community." In *The Global Competitiveness Report 2013–2014*. Geneva: World Economic Forum. 83–92. Available at www.weforum.org/gcr.
- The Economist Intelligence Unit. 2013. "In Search of Insight and Foresight: Getting More out of Big Data." White Paper, sponsored by Oracle and Intel. London, New York, Hong Kong, and Geneva: The Economist Intelligence Unit. Available at http://www.managementthinking.eiu.com/sites/default/files/downloads/In%20search%20of%20insight%20and%20foresight_0.pdf.
- European Commission. 2010a. *Digital Agenda for Europe: A Europe 2020 Initiative*. March. Available at <http://ec.europa.eu/digital-agenda/>.
- . 2010b. *Europe 2020*. March. Available at http://ec.europa.eu/europe2020/index_en.htm.
- . 2013. *Digital Agenda Scoreboard, 2013*. Commission Staff Working Document. Brussels: European Commission. Available at <https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/DAE%20SCOREBOARD%202013%20-%20SWD%202013%20217%20FINAL.pdf>.
- Gawande, A. 2011. "Doctor Hotspot." *PBS Frontline*. WGBH Educational Foundation. Available at <http://www.pbs.org/wgbh/pages/frontline/doctor-hotspot/>.
- Google. No date. *Explore Flu Trends Around the World*. Available at <http://www.google.org/flutrends/>.
- ITU (International Telecommunication Union). 2013. *Measuring the Information Society*. Geneva: ITU.
- Kakutani, M. 2010. "A Rebel in Cyberspace, Fighting Collectivism." *Books of the Times*, January 14. *The New York Times*. Available at http://www.nytimes.com/2010/01/15/books/15book.html?_r=0.
- Lanier, J. 2010. *You Are Not a Gadget*. New York: Vintage Books, Random House.
- Parry, M. 2012. "College Degrees, Designed by the Numbers." *The Chronicle of Higher Education*, July 18. Available at <https://chronicle.com/article/College-Degrees-Designed-by/132945/>.
- Schaefer, S., C. Harrison, N. Lamba, and V. Srikanth. 2011. *Smarter Cities Series: Understanding the IBM Approach to Traffic Management. Redguides for Business Leaders*. IBM. Available at <http://www.redbooks.ibm.com/redpapers/pdfs/redp4737.pdf>.

Appendix A: Structure and computation of the Networked Readiness Index 2014

This appendix presents the structure of the Networked Readiness Index 2014 (NRI). As explained in the chapter, the NRI framework separates environmental factors from ICT readiness, usage, and impact. That distinction is reflected in the NRI structure, which comprises four subindexes. Each subindex is in turn divided into a number of pillars, for a total of 10. The 54 individual indicators used in the computation of the NRI are distributed among the 10 pillars.

In the list below, the number preceding the period indicates the pillar to which the variable belongs (e.g., indicator 2.05 belongs to the 2nd pillar; indicator 8.03 belongs to the 8th pillar). The numbering of the indicators matches the numbering of the data tables at the end of the *Report*.

The computation of the NRI is based on successive aggregations of scores, from the indicator level (i.e., the most disaggregated level) to the overall NRI score (i.e., the highest level). Unless noted otherwise, we use an arithmetic mean to aggregate individual indicators within each pillar and also for higher aggregation levels (i.e., pillars and subindexes).^a

Throughout the *Report*, scores in the various dimensions of the NRI pillars are reported with a precision of two decimal points. However, exact figures are always used at every step of the computation of the NRI.

Variables that are derived from the World Economic Forum's Executive Opinion Survey (the Survey) are identified here by an asterisk (*). All the other indicators come from external sources, as described in the Technical Notes and Sources section at the end of the *Report*. These variables are transformed into a 1-to-7 scale in order to align them with the Survey's results. We apply a min-max transformation, which preserves the order of, and the relative distance between, scores.^b

NETWORKED READINESS INDEX 2014

$$\begin{aligned} \text{Networked Readiness} \\ \text{Index} &= 1/4 \text{ Environment subindex} \\ &+ 1/4 \text{ Readiness subindex} \\ &+ 1/4 \text{ Usage subindex} \\ &+ 1/4 \text{ Impact subindex} \end{aligned}$$

ENVIRONMENT SUBINDEX

$$\begin{aligned} \text{Environment subindex} &= 1/2 \text{ Political and regulatory} \\ &\quad \text{environment} \\ &+ 1/2 \text{ Business and innovation} \\ &\quad \text{environment} \end{aligned}$$

1st pillar: Political and regulatory environment

- 1.01 Effectiveness of law-making bodies*
- 1.02 Laws relating to ICTs*
- 1.03 Judicial independence*
- 1.04 Efficiency of legal system in settling disputes*^c
- 1.05 Efficiency of legal system in challenging regulations*^c
- 1.06 Intellectual property protection*
- 1.07 Software piracy rate, % software installed
- 1.08 Number of procedures to enforce a contract^d
- 1.09 Number of days to enforce a contract^d

2nd pillar: Business and innovation environment

- 2.01 Availability of latest technologies*
- 2.02 Venture capital availability*
- 2.03 Total tax rate, % profits
- 2.04 Number of days to start a business^e
- 2.05 Number of procedures to start a business^e
- 2.06 Intensity of local competition*
- 2.07 Tertiary education gross enrollment rate, %
- 2.08 Quality of management schools*
- 2.09 Government procurement of advanced technology products*

READINESS SUBINDEX

Readiness subindex = 1/3 Infrastructure and digital content
+ 1/3 Affordability
+ 1/3 Skills

3rd pillar: Infrastructure and digital content

- 3.01 Electricity production, kWh/capita
- 3.02 Mobile network coverage, % population
- 3.03 International Internet bandwidth, kb/s per user
- 3.04 Secure Internet servers per million population
- 3.05 Accessibility of digital content*

4th pillar: Affordability^f

- 4.01 Mobile cellular tariffs, PPP \$/min.
- 4.02 Fixed broadband Internet tariffs, PPP \$/month
- 4.03 Internet and telephony sectors competition index, 0–2 (best)

5th pillar: Skills

- 5.01 Quality of educational system*
- 5.02 Quality of math and science education*
- 5.03 Secondary education gross enrollment rate, %
- 5.04 Adult literacy rate, %

USAGE SUBINDEX

Usage subindex = 1/3 Individual usage
+ 1/3 Business usage
+ 1/3 Government usage

6th pillar: Individual usage

- 6.01 Mobile phone subscriptions per 100 population
- 6.02 Percentage of individuals using the Internet
- 6.03 Percentage of households with computer
- 6.04 Households with Internet access, %
- 6.05 Fixed broadband Internet subscriptions per 100 population
- 6.06 Mobile broadband Internet subscriptions per 100 population
- 6.07 Use of virtual social networks*

7th pillar: Business usage

- 7.01 Firm-level technology absorption*
- 7.02 Capacity for innovation*
- 7.03 PCT patent applications per million population
- 7.04 Business-to-business Internet use*^g
- 7.05 Business-to-consumer Internet use*^g
- 7.06 Extent of staff training*

8th pillar: Government usage

- 8.01 Importance of ICTs to government vision of the future*
- 8.02 Government Online Service Index, 0–1 (best)
- 8.03 Government success in ICT promotion*

IMPACT SUBINDEX

Impact subindex = 1/2 Economic impacts
+ 1/2 Social impacts

9th pillar: Economic impacts

- 9.01 Impact of ICTs on new services and products*
- 9.02 PCT ICT patent applications per million population
- 9.03 Impact of ICTs on new organizational models*
- 9.04 Employment in knowledge-intensive activities, % workforce

10th pillar: Social impacts

- 10.01 Impact of ICTs on access to basic services*
- 10.02 Internet access in schools*
- 10.03 ICT use and government efficiency*
- 10.04 E-Participation Index, 0–1 (best)

NOTES

- a Formally, for a category i composed of K indicators, we have:

When two individual indicators are averaged (e.g., indicators 1.04)

$$\text{category}_i = \frac{\sum_{k=1}^K \text{indicator}_k}{K}$$

and 1.05 in the 1st pillar), each receives half the weight of a normal indicator.

- b Formally, we have:

$$6 \times \left(\frac{\text{country score} - \text{sample minimum}}{\text{sample maximum} - \text{sample minimum}} \right) + 1$$

The *sample minimum* and *sample maximum* are, respectively, the lowest and highest country scores in the sample of economies covered by the GCI. In some instances, adjustments were made to account for extreme outliers. For those indicators for which a higher value indicates a worse outcome (i.e., indicators 1.07, 1.08, 1.09, 2.03, 2.04, 2.05, 4.01, and 4.02), the transformation formula takes the following form, thus ensuring that 1 and 7 still corresponds to the worst and best possible outcomes, respectively:

$$-6 \times \left(\frac{\text{country score} - \text{sample minimum}}{\text{sample maximum} - \text{sample minimum}} \right) + 7$$

- c For indicators 1.04 and 1.05, the average of the respective scores is used in the computation of the NRI.
- d For indicators 1.08 and 1.09, the average of the respective normalized scores is used in the computation of the NRI.
- e For indicators 2.04 and 2.05, the average of the respective normalized scores is used in the computation of the NRI.
- f The affordability pillar is computed as follows: the average of the normalized scores of indicators 4.01 mobile cellular tariffs and 4.02 Fixed broadband Internet tariffs is multiplied by a *competition factor*, the value of which is derived from indicator 4.03 Internet and telephony sectors competition index. It corresponds to the score achieved by an economy on this indicator normalized on a scale from 0.75 (worst) to 1.00 (best), using the min-max transformation described above. A normalized score of 0.75 is assigned to an economy with a competition index score of 0, which means that a monopolistic situation prevails in the 19 categories of ICT services considered. A normalized score of 1.00 is assigned to an economy where all 19 categories are fully liberalized. Where data are missing for indicator 4.03 (i.e., Puerto Rico and Timor-Leste), the score on the affordability pillar, which is simply the average of the normalized scores of indicators 4.01 and 4.02, is used. The competition index score for Taiwan, China, was derived from national sources.
- g For indicators 7.04 and 7.05, the average of the respective scores is used in the computation of the NRI.

The Internet of Everything: How the Network Unleashes the Benefits of Big Data

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Exabytes (10^{18}) of new data are created every single day. Much of this information is transported over Internet protocol (IP) networks. First described by Clive Humby as the “new oil,”¹ this data growth is fueling knowledge economies, sparking innovation, and unleashing waves of creative destruction. But most of these data are unstructured and underutilized, flowing at a volume and velocity that is often too large and too fast to analyze. If data do, in fact, comprise the new raw material of business, on par with economic inputs such as capital and labor,² then deriving insight and added value from this new input will require targeted transmission, processing, and analysis.

A rising share of this data growth is flowing over IP networks as more people, places, and things connect to this Internet of Everything (IoE). Proprietary networks, built on industry-siloed standards such as those in manufacturing or electric utilities, are increasingly migrating to IP networks, facilitating the growth of big data, and fast becoming the key link among data generation, processing, analysis, and utilization.

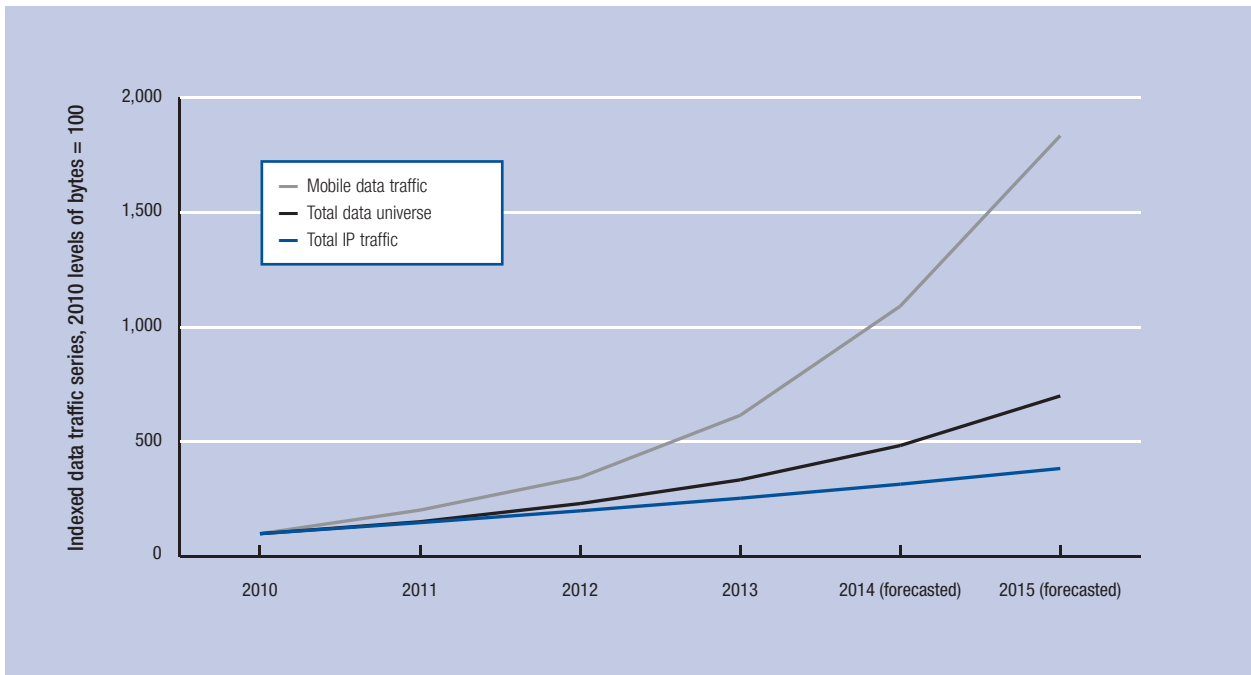
How can we effectively maximize value from this data explosion and avoid the pitfall of diminishing marginal data value? This chapter details how IP networks underpin the IoE and can accelerate big data’s transformational impact on individuals, businesses, and governments around the world. After first highlighting four major trends driving data growth over IP networks and detailing how networks are central to maximizing analytical value from the data deluge, the chapter identifies critical technology and public policy challenges that could either accelerate or encumber the full impact of big data and the IoE.

ACCELERATING DATA PRODUCTION AND DATA TRAFFIC

Data growth is skyrocketing. Over 2.5 quintillion bytes of data are created each day; 90 percent of the world’s stored data was created in the last two years alone.³ To put this into context, one hour of customer transaction data at Wal-Mart (2.5 petabytes) provides 167 times the amount of data housed by the Library of Congress. The research consultancy IDC estimates that the digital universe—all digital data created, replicated, or consumed—is growing by a factor of 30 from 2005 to 2020, doubling every two years. By 2020, there will be over 40 trillion gigabytes (or 40 yottabytes) of digital data—or 5,200 gigabytes for every person on earth.⁴

Much of this data growth is traversing IP networks. Cisco’s Visual Networking Index estimates that, from 2012 to 2017, total traffic over IP networks will grow threefold, rising at a compound annual growth rate (CAGR) of 23 percent. Mobile data traffic, however, is growing at an even faster pace: over the same period, mobile data will grow 13-fold, with a CAGR of 66 percent, capturing a greater share of all data created and transmitted (Figure 1).⁵

Figure 1: Growth rates and rising share of mobile data



Sources: Cisco 2013b; EMC² 2013; authors' calculations.

Despite the rapid growth in data production and transmission, however, only a small fraction of all physical objects in the world are currently connected to IP networks. Cisco estimates that less than 1 percent of physical objects are connected to IP networks.⁶ But the loE is expanding as more devices and users are connecting to IP networks every day, conducting more transactions and processes online.

For individuals, the impacts of the loE are felt daily. Sensors embedded in shoes, for example, track the distances that fitness enthusiasts run and automatically upload information to social media profiles to immediately compare athletic achievements with those of friends. Internet-enabled alarm clocks gather data on weather and traffic, combining that information with a user's schedule, determining the optimal time to wake local residents. And applications on smart phones can control home electronic devices, adjusting heating and cooling levels as well as arming (or disarming) security settings remotely.

At an industrial level, applications using sensor technologies are capturing vast amounts of data to improve decision-making. Sensors embedded in agricultural fields monitor temperature and moisture levels, controlling irrigation systems. Devices in oil fields and deep well rigs track all aspects of drilling and fuel delivery, increasing production efficiency. And sensors in vehicles are able to monitor usage, informing decisions around refueling and repair as well as vehicle design.

For governments, loE and big data applications are helping to monitor pandemics and environmental conditions, improve public safety and security, and

increase efficiency in the delivery of public services such as municipal traffic systems that incorporate real-time remote monitoring to streamline traffic flows.

As more people, places, and things connect to the loE, the data universe will continue to grow rapidly. The loE will not only fuel the expansion of big data and data transmission, but can also provide targeted, automatic, data-driven analysis for our day-to-day lives.

CRITICAL DRIVERS OF DATA GROWTH

In 1944, the first digital computer, the Colossus, was deployed in the United Kingdom to decipher codes during World War II. The Colossus was able to process data at 5,000 characters per second (~25 Kb/s).⁷ Currently the world's fastest supercomputer, the MilkyWay-2, can process $54,902 \times 10^{12}$ operations per second (54,902 TFlop/s).⁸ This intensive growth in data processing power continues today, coupled with extensive growth in data production. This data growth also supports four major trends that lead to a rising share of data transmission over IP networks in the world of the loE, as described below.

- Internet protocol (IP) is becoming the common language for most data communication.** Proprietary industrial networks are migrating to IP, bringing previously isolated data onto public and managed IP networks. The Internet's history is built on the migration of proprietary networks to IP. Proprietary data networks such as AppleTalk and IBM Systems Network Architecture (SNA) have migrated to IP over time, and traditional time-division multiplexing (TDM) voice networks are migrating to

Voice over Internet Protocol (VoIP). Today electricity grids, building systems, industrial manufacturing, oil systems, and a multitude of other sectors with networks that were previously built with proprietary protocols are increasingly migrating to IP as industries and enterprises recognize the value of interoperability and scale. Each migration shifts a large amount of data production and transmission onto IP networks (see Box 1).

- **Previously unconnected places, people, things, and processes are connecting to networks for the first time.** Billions of people and devices will come online in the next five years, adding heavily to the endpoints collecting data and to the devices consuming information. Cisco's Visual Networking Index estimates that, between 2012 and 2017, 7 billion more devices will connect to the Internet, reaching a total of 19 billion connected devices. These figures are conservative projections; other estimates of the total number of connected devices range from around 20 billion to 50 billion by 2020.⁹ By 2017, nearly half of the world's population (3.6 billion out of 7.6 billion people) will be connected to the Internet. Of the world's total inhabited areas, mobile network coverage will increase to 85 percent in 2017, up from 79 percent in 2012.¹⁰ In addition, a diversity of processes are migrating online. These include transactional activities (such as payments and requests), environmental monitoring (such as environmental sensors and remote monitoring), and government interactions (including census taking, tax collections, and benefit distributions).
- **Existing physically stored information is being digitized in order to record and share previously analogue material.** Over the last decade, the digital share of the world's stored information has increased from 25 percent to over 98 percent.¹¹ Information previously stored on other media—such as paper, film, and other analogue formats—is being digitized, along with meta-information about the data itself (e.g., descriptive statistics, frequency, distribution, dispersion, etc.). This digitization of information is leading to greater exchange of stored media and data over the Internet.
- **The introduction of Internet protocol version 6 (IPv6) allows for trillions of trillions (10³⁸) of devices to connect to the Internet.** IPv6 is the latest update to the protocol that underpins the Internet. It defines the system for routing traffic on the Internet by giving identification and location to all points connected to the global IP network. The previous version of the protocol, IPv4, enabled only approximately 4 billion IP addresses. But IPv6 provides more than 340 trillion, trillion, trillion, addresses,¹² ensuring no immediate exhaustion of IP

Box 1: Big data: Huge and growing data volume from industrial applications

Industrial applications of the Internet of Everything (IoE) generate immense data flows, which are increasingly shifting over to Internet protocol (IP) networks. One reason for the shift is that IP networks have increased reliability. Industrial networks have traditionally been concerned with uptime and latency, and IP networks have evolved to be able to handle industrial demands and the data flows that come with them.

In the oil and gas industry, for example, data are utilized across the entire value chain, from exploration, production, refining, and distribution to marketing and retail. Sensors and computing are used to capture and monitor seismic data, borehole activity, environmental readings, weather, production utilization, storage capacity, spot pricing (trading), transportation, inventory levels, demand and forecasts, and location data. In seismic exploration, the cost, size, and speed of data are all rising as exploration moves to 3D imaging. Data capture amounted to around 300 megabytes per square kilometer in the 1990s. By 2006, data per square kilometer amounted to 25 gigabytes, while today the amount per square kilometer is in the petabytes.¹ According to Chevron and industry-wide estimates, a "fully optimized" digital oil field based on data utilization results in 8 percent higher production rates and 6 percent higher overall recovery.²

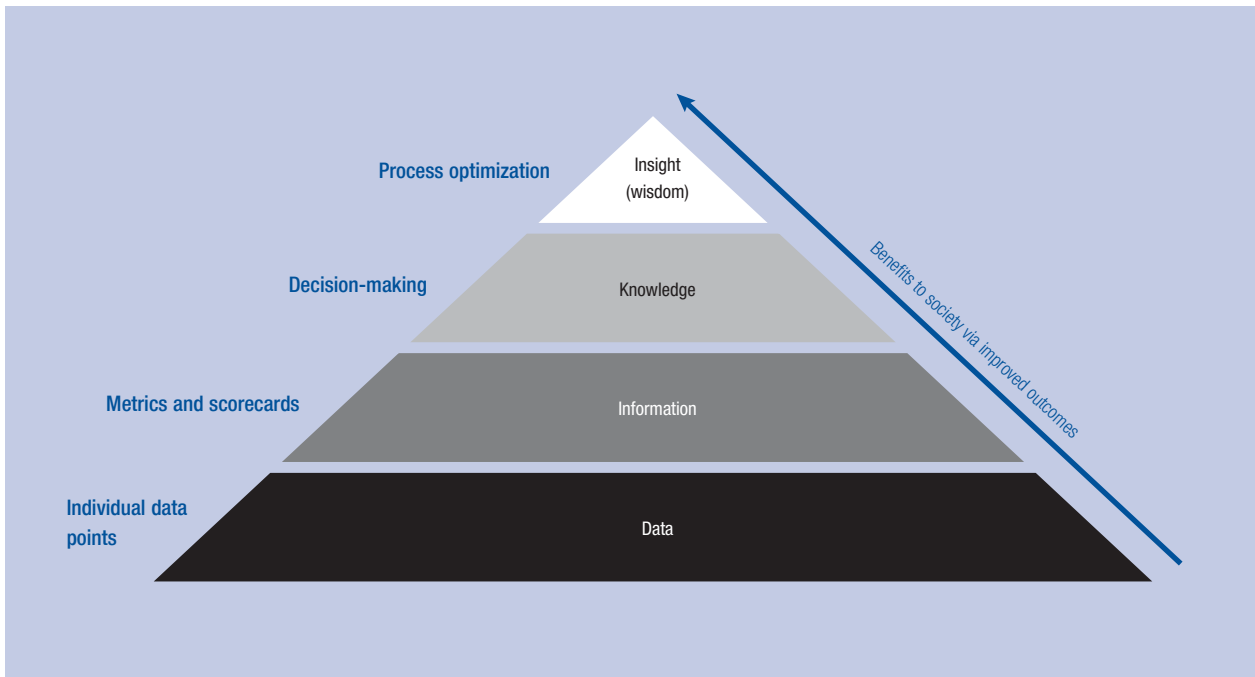
In electric utility grids, data utilization also improves efficiency. Current grids monitor data to control electricity flows (both to and from the grid) based on real-time demand, thus improving generator efficiency and ensuring more-sustainable energy sources. Upgrading standard electric meters to "smart meters" allows information to be communicated over a network back to a control center and increases the amount of data captured. While traditional meters are read once a month, some smart meters can report usage rates in 15-minute intervals. For every million meters, this leads to 96 million measurements per day, an estimated 3,000-fold increase in data collection.³ Conservative estimates of the total amount of data that will be generated by smart meters by 2019 in the United States alone (assuming only two readings per day, and below full deployment) yields measurements in the order of hundreds of petabytes per year.⁴

In an example from another industry, aircraft manufacture and operation, sensors on General Electric (GE)'s jet plane turbines illustrate the vast amount of data generated daily. GE estimates that each sensor on a GE turbine generates approximately 500 gigabytes of data every day. Each turbine has 20 sensors, and globally GE owns approximately 12,000 turbines. This aggregates to petabytes of data daily.⁵

Notes

- 1 Beals 2013; see also note 4 at the end of this chapter.
- 2 Leber 2012.
- 3 IBM Software 2012.
- 4 Danahy 2009; Fehrenbacher 2009.
- 5 Lopez 2013.

Figure 2: Turning data into insight



Sources: Ackoff 1989; authors' interpretation.

addresses or limits to the number of IP connections. The sheer number of available addresses allows for every single star in the known universe to have 4.8 trillion addresses.

THE GAP BETWEEN DATA GROWTH AND DATA VALUE

Current estimates suggest that only half a percent of all data is being analyzed for insights;¹³ furthermore, the vast majority of existing data are unstructured and machine-generated.¹⁴ Applying analytics to a greater share of all data can lead to productivity increases, economic growth, and societal development through the creation of actionable insights.

Data alone are not very interesting or useful. It is when data can be used and become actionable that they can change processes and have direct positive impact on people's lives. The IoE generates data, and adding analysis and analytics turns those data into actionable information. Building on the framework of the knowledge hierarchy,¹⁵ aggregated data become information that, when analyzed, become knowledge. Knowledge can lead to insights and informed decision-making, which at the highest level is wisdom (Figure 2).

For example, society at large can benefit from tracking trends observed from metadata such as anonymized mobile phone data used to track population migration after the earthquake and cholera outbreaks in Port-au-Prince, Haiti.¹⁶ Likewise, analyzing social media discussions can identify crises or flu outbreaks.

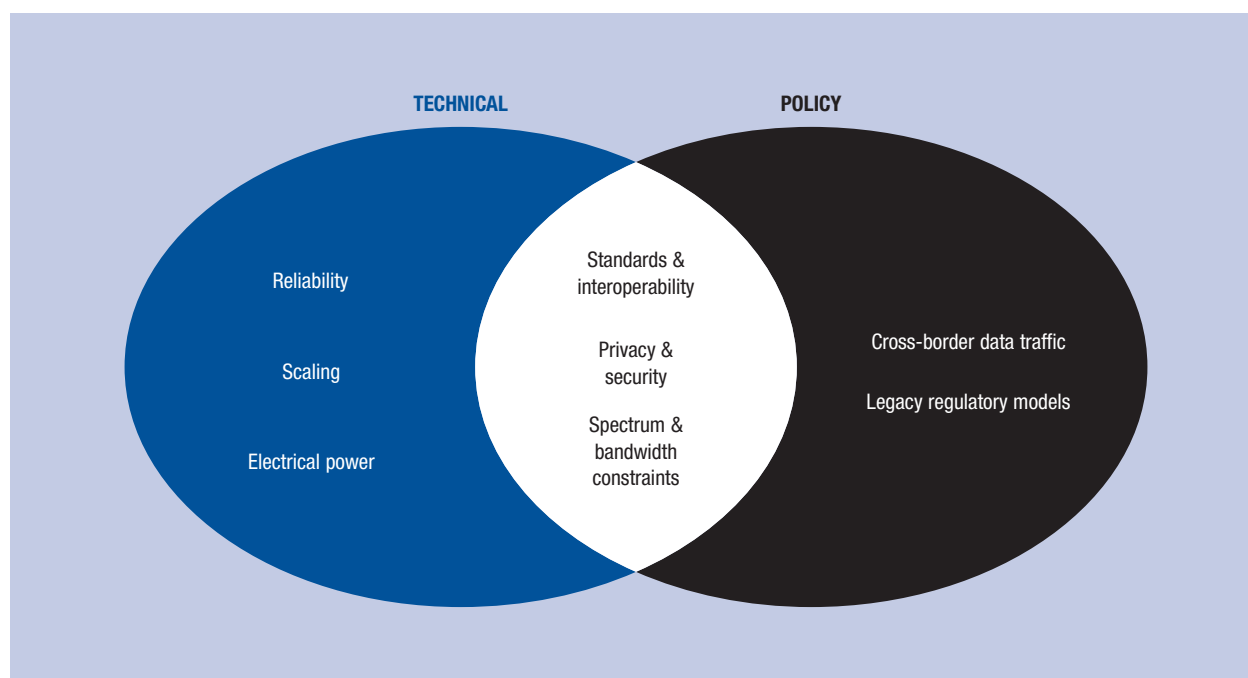
At an industrial level, big data analysis can yield very large benefits. For example, the value of modernizing the US electricity grid to be data-driven is estimated at

US\$210 billion. A reconstituted electricity grid would be based on an architecture driven by "technology selections to fully harness the convergence of data, controls and transactions."¹⁷

According to Bradley et al. in a recent Cisco White Paper, harvesting data for critical decision-making though the IoE can create approximately US\$14.4 trillion dollars of added value in the commercial sector over the next 10 years across a wide range of industries.¹⁸ This opportunity exists in the form of new value created by technology innovation, market share gains, and increasing competitive advantage. It translates into an opportunity to increase global corporate profits by approximately 21 percent, driven by improvements in asset utilization (reducing costs and improving capital efficiency), employee productivity (improved labor efficiency), supply chain logistics (eliminating waste and improving process efficiency), customer experience (adding more customers), and innovation (reducing time to market).

Similarly, research by the Economist Intelligence Unit and Capgemini indicates that big data analytics were responsible for a 26 percent improvement in business performance among a cohort of companies examined, and forecasts that the impact could increase to 41 percent in three years.¹⁹ Capturing these gains, however, may require concurrent investment in resources to manage the rise in data. It is forecasted that by 2020, an average business will have to manage 50 times more information than it does today, while the average information technology (IT) staff is expected to rise only by 1.5 times.²⁰

Figure 3: Policy and technical issues facing big data and the IoE



Source: Authors.

EQUIPPING IP NETWORKS TO DELIVER BIG DATA INSIGHTS

Moving up the knowledge pyramid from data to insights and informed decisions is a critical challenge facing businesses and governments. Equipping IP networks to better transmit data to processing centers as well as enabling the network to create, analyze, and act on data insights is one comprehensive approach. Building this capability will require improving network infrastructure, building analytical capabilities and “intelligence” into the network, and distributing computing and analytical capabilities throughout the network, particularly at the edge. Specifically, these are:

- *Network infrastructure improvements.* These improvements include connecting all things, including unintelligent ones (those that are capable only of transmitting data, not receiving them); securing infrastructure; improving inter and intra-data center traffic flows; and increasing the ability to manage private and public networks.
- *Building intelligence into the network.* This will require building in the ability to compute data in motion and host partner applications in an ecosystem where applications can be built to analyze data inflow, particularly enabling machine-to-machine (M2M) services.
- *Distributing computing and storage.* Efficient distribution will require moving the ability to analyze data only in the data center to add processing at the edge (or near the edge) of the network, to prevent

delays in processing caused by latency as well as delays caused by network congestion.

TECHNICAL AND POLICY CHALLENGES

Building a network that will maximize the impact of big data requires powerful and seamless interactions among sensors, devices, computing, storage, analytics, and control systems.

But although IP networks are primed to support the expansion of big data and the IoE, technical and policy challenges exist in the ability of current IP networks to fully exploit big data expansion (Figure 3). An approach that tackles these issues concurrently will help to create the right ecosystem. The discussion below highlights specific issues that will need to be addressed thoughtfully.

Standards and interoperability issues span both the technical and policy domains. Agreement on standards is critical to develop economies of scale by encouraging product and service innovation around a common language, and generally accepted global standards allow for greater interoperability between devices. Requirements differ for closed critical networks (such as utilities) and open networks (for example, those that may monitor parking space availability), but common standards allow information to be exchanged within, and among, these networks when those needs arise.

Privacy issues arise with the growth of data, particularly with regard to data generated by or about individuals. Policymakers must identify the appropriate balance between protecting the privacy of individuals’ data and allowing for innovation in service delivery and product development. New technologies and services,

such as location-based services, are bringing these privacy issues to the forefront, offering users enhanced experiences while raising concerns of identity protection. Some policies—such as transparency in the use of data and effective mechanisms for consumer control of personal data—can help in this regard. The key *security issues* for big data include the reliable prevention of hacking and access by unauthorized and unwanted users to large databases and data flows. In order to ensure a healthy ecosystem where users, consumers, and businesses feel safe in engaging in big data activities, network security is essential.

Over the next five years, the growth of mobile data traffic will require greater radio spectrum to enable wireless M2M, as well as people-to-people (P2P) and people-to-machine (P2M), connectivity. Ensuring device connectivity and sufficient bandwidth for all of the uses of wireless sensors will require careful planning. The spectrum requirements are going to be heterogeneous and will include narrowband and broadband frequencies, short haul and long haul spectrum, continuous data transmission and short bursts of data transmission, and licensed spectrum in addition to license-exempt spectrum. *Bandwidth constraints* will also be an obstacle in transmitting data over existing networks. The examples cited in Box 1 reflect the volume of data being generated by proprietary networks, resulting in the need to move computing close to the network edge in a distributed intelligence architecture. Data loads will be lumpy across various applications of the IoE, and matching bandwidth needs to bandwidth availability will be a continuous challenge.

As more critical processes are conducted as part of the IoE, the need for *reliability* in IP networks increases. Healthcare applications that require instant communication between end users and medical professionals, safety and security applications, utility functions, and industrial uses are examples where continuous, uninterrupted, real-time communications require reliable and redundant connectivity. Low latency (the time required for round-trip data transmission) is already required for advanced cloud computing applications such as high-definition video conferencing and industrial collaboration. Any interruption to the transmission of data over networks negatively impacts these processes.

Constraints on the technological limits of electrical efficiency and on computer memory and processing already pose *limits to computing* and data analysis. Data centers, for example, exemplify the boundaries where electrical power, cooling resources, and space design are constantly redesigned and re-imagined to advance current capabilities. As the IoE expands into tens of billions of connected devices, the technological aspects of IP networks have to be able to manage the huge scale of device connectivity. One aspect of this expansion, Internet addressing, is being resolved with the migration

from IPv4 to IPv6. Other challenges include determining how virtualized computing environments may support a reallocation of computing resources. And new sources of electrical power (advanced batteries, simple chemical reactions, etc.) will be needed to power the multitude of new devices that will emerge.

IoE applications that collect and handle data across sovereign jurisdictions could be negatively affected by policies restricting *cross-border data traffic and global trade* in IoE-related services. Emerging cross-border issues include national data protection rules and data transfers, data portability and interoperability standards, and liability costs for cloud service providers. Furthermore, trade in some IoE services may fall under existing international trade agreements, while others do not.

As the IoE permeates across business sectors, the application of IoE technology in traditional industries presents new challenges to *legacy regulatory models*. IoE technology is impacting business models, input/output markets, and end users in markets ranging from healthcare to utilities. The heavily regulated energy markets, in particular, face a range of issues from “connected energy” technologies. At the consumer level, smart meters may present privacy and security challenges. However, at the aggregation and distribution levels, utility companies face the new reality of a changing energy source mix and must adapt to transactional loads and markets along with existing grid control that needs to adapt to distributed intelligence as well as challenges to traditional regulated utility pricing.

THE CENTRALITY OF THE NETWORK

Since the beginning of our species, humans have been processing data. We have been our own primary data machines. But today, with the advent of vast arrays of computing power, we increasingly rely on data processed by others, and the IoE and the era of big data are transforming our lives.

Data flows and the ability to capture value from data are changing industries, creating new opportunities while impacting others. For example, the “app economy”—the business created by software applications running on smartphones—has created hundreds of thousands of jobs.²¹ One recent study estimates that the marginal impact of data utilization in the IoE could raise US gross domestic product by 2 percent to 2.5 percent by 2025.²²

The IoE—where more data are being captured by more devices, interacting with more people and changing the processes by which we live, learn, work, and play—is having a profound impact on the world. But the value derived from the IoE can be measurably increased if IP networks are able to facilitate the rise of big data and generate added positive impact for society.

NOTES

1 Palmer 2006.

2 The Economist 2010.

- 3 IBM 2013.
- 4 Gantz and Reinsel 2012. A useful reminder in the sequence of data storage and memory is that the measure increases by the thousands and the sequence is from byte, kilobyte, megabyte, gigabyte, terabyte, petabyte, exabyte, zettabyte and beyond.
- 5 Cisco 2013b
- 6 Cisco 2013a.
- 7 McLellan. 2013.
- 8 Top500.org 2013.
- 9 Biggs et al. 2012.
- 10 GSM Association 2012.
- 11 Cukier and Mayer-Schoenberger 2013.
- 12 More specifically, 340,282,366,920,938,463,463,374,607,431,768, 211,456 addresses, or roughly 3.4 times 1038.
- 13 Gantz and Reinsel 2012.
- 14 Canalys 2012.
- 15 Ackoff 1989.
- 16 Bengtsson et al. 2011.
- 17 De Martini and Von Prellwitz 2011; Taft et al. 2012, p. 2.
- 18 Bradley et al. 2013.
- 19 EIU 2012.
- 20 EMC² 2013.
- 21 In the United States, according to Mandel and Scherer (2012), over 500,000 jobs have been created through application development since 2007; in the European Union, Vision Mobile and Plum (2013) found that nearly 800,000 jobs have been created this way.
- 22 Mandel 2013.

REFERENCES

- Ackoff, R. 1989. "From Data to Wisdom." *Journal of Applied Systems Analysis* 16: 3–9.
- Beals, B. 2013. "The Big Deal about Big Data in Oil and Gas." Hitachi. Available at www.lnm.com.br/bah/downloads/Hitachi_Bert-Beals_BAH2013.pptx.
- Bengtsson L., X. Lu, A. Thorson, R. Garfield, and J. von Schreeb. 2011. "Improved Response to Disasters and Outbreaks by Tracking Population Movements with Mobile Phone Network Data: A Post-Earthquake Geospatial Study in Haiti." *PLoS Med* 8 (8): e1001083. doi:10.1371/journal.pmed.1001083.
- Biggs, P., with T. Johnson, Y. Lozanova, and N. Sundberg. 2012. "Emerging Issues for Our Hyperconnected World." In *The Global Information Technology Report: Living in a Hyperconnected World*. Geneva: World Economic Forum and INSEAD. 47–56.
- Bradley, J., J. Barbier, and D. Handler. 2013. "Embracing the Internet of Everything to Capture Your Share of \$14.4 Trillion." *Cisco White Paper*. Available at http://www.cisco.com/web/about/ac79/docs/innov/loE_Economy.pdf.
- Canalys. 2012. *Defining Big Data* report. September 27. Palo Alto, Shanghai, Singapore, and Reading, UK: Canalys.
- Cisco. 2012. Cisco Global Cloud Index: Forecast and Methodology, 2012–2017. Available at http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns1175/Cloud_Index_White_Paper.html.
- . 2013a. "Connections Counter: The Internet of Everything in Motion." *the network: Cisco's Technology News Site*, July 29. Available at <http://newsroom.cisco.com/feature-content?type=web-content&articleId=1208342>.
- . 2013b. Visual Networking Index (VNI). Available at http://www.cisco.com/en/US/netsol/ns827/networking_solutions_solution_category.html.
- Cukier, K. and V. Mayer-Schoenberger. 2013. "The Rise of Big Data: How It's Changing the Way We Think about the World." *Foreign Affairs* May/June. Available at <http://www.foreignaffairs.com/articles/139104/kenneth-neil-cukier-and-viktor-mayer-schoenberger/the-rise-of-big-data>.
- Danahy, J. 2009. "The Coming Smart Grid Data Surge." October 5. Available at http://www.smartgridnews.com/artman/publish/News_Blogs_News/The-Coming-Smart-Grid-Data-Surge-1247.html.
- De Martini, P. and L. von Prellwitz. 2011. "Gridonomics: An Introduction to the Factors Shaping Electric Industry Transformation." *Cisco White Paper*. Available at http://www.cisco.com/web/strategy/docs/energy/gridonomics_white_paper.pdf.
- The Economist. 2010. "Data, Data Everywhere." *Managing Information*, Special Report, February 25. Available at <http://www.economist.com/node/15557443>.
- EIU (Economist Intelligence Unit). 2012. *The Deciding Factor: Big Data and Decision Making*, June 12. Report commissioned by Capgemini. Available at http://www.managementthinking.eiu.com/sites/default/files/downloads/The%20deciding%20factor_FINAL.pdf.
- EMC². 2013. "Digital Universe." Available at <http://www.emc.com/leadership/programs/digital-universe.htm>.
- Fehrenbacher, K. 2009. "Smart Grid Data About to Swamp Utilities." October 12. *Gigaom*. Available at <http://gigaom.com/2009/10/12/smart-grid-data-about-to-swamp-utilities/>.
- Gantz, J. and D. Reinsel. 2012. "The Digital Universe in 2020: Big Data, Bigger Digital Shadows, and Biggest Growth in the Far East." *IDC iView*, sponsored by EMC. December. Available at <http://www.emc.com/collateral/analyst-reports/idc-the-digital-universe-in-2020.pdf>.
- GSM Association. 2012. "GSMA Announces New Global Research That Highlights Significant Growth Opportunity For The Mobile Industry." Press Release, October 18. Available at <http://www.gsma.com/newsroom/gsma-announces-new-global-research-that-highlights-significant-growth-opportunity-for-the-mobile-industry>.
- IBM. 2013. Website. "Big Data." Available at <http://www.ibm.com/big-data/us/en/>.
- IBM Software. 2012. "Managing Big Data for Smart Grids and Smart Meters." *IBM White Paper*. Somers, NY: IBM Corporation. Available at <ftp://public.dhe.ibm.com/software/pdf/industry/IMW14628USEN.pdf>.
- Leber, J. 2012. "Big Oil Goes Mining for Big Data." *MIT Technology Review*, May 8. Available at <http://www.technologyreview.com/news/427876/big-oil-goes-mining-for-big-data/>.
- Lopez, M. 2013. "GE Speaks on the Business Value of the Internet of Things." *Forbes.com*, May 10. Available at <http://www.forbes.com/sites/maribellopez/2013/05/10/ge-speaks-on-the-business-value-of-the-internet-of-things>.
- Mandel, M. 2013. "Can the Internet of Everything Bring Back the High-Growth Economy?" *Policy Memo*, September. Washington, DC: Progressive Policy Institute (PPI). Available at http://www.progressivepolicy.org/wp-content/uploads/2013/09/09.2013-Mandel_Can-the-Internet-of-Everything-Bring-Back-the-High-Growth-Economy-1.pdf.
- Mandel, M. and J. Scherer. 2012. "The Geography of the App Economy." September 20, South Mountain Economics LLC. Available at http://files.ctia.org/pdf/The_Geography_of_the_App_Economy.pdf.
- McLellan, C. 2013. "Big Data: An Overview." *Going Deep on Big Data*. ZDNet special feature, October 1. Available at <http://www.zdnet.com/big-data-an-overview-7000020785/>.
- Palmer, M. 2006. "Data Is the New Oil." Blog Post, November 3. Available at http://ana.blogs.com/maestros/2006/11/data_is_the_new.html.
- Taft, J., with P. De Martini and L. von Prellwitz. 2012. Utility Data Management and Intelligence. Cisco. http://www.cisco.com/web/strategy/docs/energy/managing_utility_data_intelligence.pdf.
- Top500.org. 2013. Supercomputer Sites. <http://www.top500.org/system/177999>, accessed October 4, 2013.

Vision Mobile and Plum Consulting. 2013. *The European App Economy: Creating Jobs and Driving Growth*. Report sponsored by ACT, September. Available at <http://www.act4apps.org/wp-content/uploads/2013/09/ACT-The-European-App-Economy-20131.pdf>.

Big Data Maturity: An Action Plan for Policymakers and Executives

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The total volume of structured and unstructured data generated by individuals, enterprises, and public organizations is multiplying exponentially; 90 percent of the total data stored today is less than two years old.¹ So-called big data has the potential to improve or transform existing business operations and reshape entire economic sectors. It can also pave the way for disruptive, entrepreneurial companies and allow new industries to emerge.

THE BIG DATA IMPERATIVE

If they are to capitalize on this potential, organizations should avoid a common misapprehension. Much debate has focused on the need to develop the technology to store and analyze the deluge of data that threatens to drown companies. Although this technology is indeed necessary, it is not sufficient to enable big data to be exploited fully.

Organizations must instead remold their decision-making culture so that senior executives make more judgments based on clear data insights rather than on intuition. They must build the necessary internal capabilities, deploying the technical and human resources to interpret data in an astute manner. Moreover, because they rely on governments to provide the requisite environment, they must ask policymakers to create the regulatory framework and information and communications technology (ICT) infrastructure to remove external obstacles.

We propose a Big Data Maturity Framework that is based on the experiences of organizations that have undergone a big data transformation. This framework will allow organizations to assess their progress in this arena and determine what they need to do to extract greater business and organizational benefits from the vast volume of data. The framework incorporates three elements: (1) environment readiness; (2) internal capabilities; and (3) the various, steadily more sophisticated, ways to use big data that range from increased efficiency in existing operations to a complete change in an organization's business model.

WHAT IS BIG DATA?

Big data represents the newest and most comprehensive version of organizations' long-term aspiration to establish and improve their data-driven decision-making. It is characterized by what are known as the "three Vs"—large data *volumes*, from a *variety* of sources, at high *velocity* (i.e., real-time data capture, storage, and analysis). Besides structured data (such as customer or financial records), which are typically kept in organizations' data warehouses, big data builds on unstructured data from sources such as social media, text and video messages, and technical sensors (such

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performance or allow them to gain access to new revenue pools.

This continuation of a trusted managerial approach does not, however, imply an endorsement of inertia. Rather, organizations must foster a new decision-making culture to exploit the opportunities presented by big data and prepare their own internal capabilities to handle this new era. At the same time, they must encourage governments to nurture an environment conducive to the exploitation of big data.

THE BUSINESS IMPACT OF BIG DATA

Many organizations are still in the early stages of reaping the benefits of big data. Writing in the *Harvard Business Review*, Andrew McAfee and Erik Brynjolfsson explored the impact of big data on corporate performance. The authors interviewed executives in 330 publicly traded companies in the United States. They then examined relevant performance data, enabling them to measure the extent to which corporate attitudes toward big data correlated with how the respective companies were faring.

McAfee and Brynjolfsson's conclusions were remarkable for establishing a connection between big data and performance: "The more companies characterized themselves as data-driven, the better they performed on objective measures of financial and operational results." The advantage gained by these companies over their rivals was also marked: "In particular, companies in the top third of their industry in the use of data-driven decision-making were, on average, 5 percent more productive and 6 percent more profitable than their competitors."⁴

Despite these findings, broad adoption of advanced big data practices has not yet materialized. A 2013 Gartner survey found that less than 8 percent of companies surveyed have actually deployed big data technology.⁵

Investment in forthcoming projects is much more widespread; the research firm IDC has forecasted that the market for big data technology and services will reach US\$16.9 billion by 2015, up from US\$3.2 billion in 2010. This represents a 40 percent annual growth rate, seven times the rate for the overall ICT business.⁶ This trend is affecting all regions. For example, over 40 percent of chief information officers in the Middle East, according to IDC, are considering big data technology investment in 2013. Although few have actually undertaken large-scale big data or analytics programs to date, IDC forecasts investment in this area to grow at a compound annual growth rate of over 20 percent over the coming five years.⁷

Both expenditure and implementation vary substantially across regions, industries, and functional domains. For example, highly digitized industries such as telecommunications and travel still tend to spend substantially more on big data projects than the energy

sector, and there is far more implementation of big data initiatives in the United States than in the Asia Pacific region. Meanwhile, the Economist Intelligence Unit found that big data is most frequently enlisted to assist financial management and marketing/sales, and deemed least valuable in human resources management.⁸

How big data is used

The big data maturity stages (Figure 2) depict the various ways in which data can be used, from selective adoption to large-scale implementation. Depending on the maturity of an organization's big data capabilities, big data can significantly increase top-line revenues and markedly reduce operational expenses. The path to business model transformation, the highest level of maturity, promises potential high returns but often involves major investment over many years.

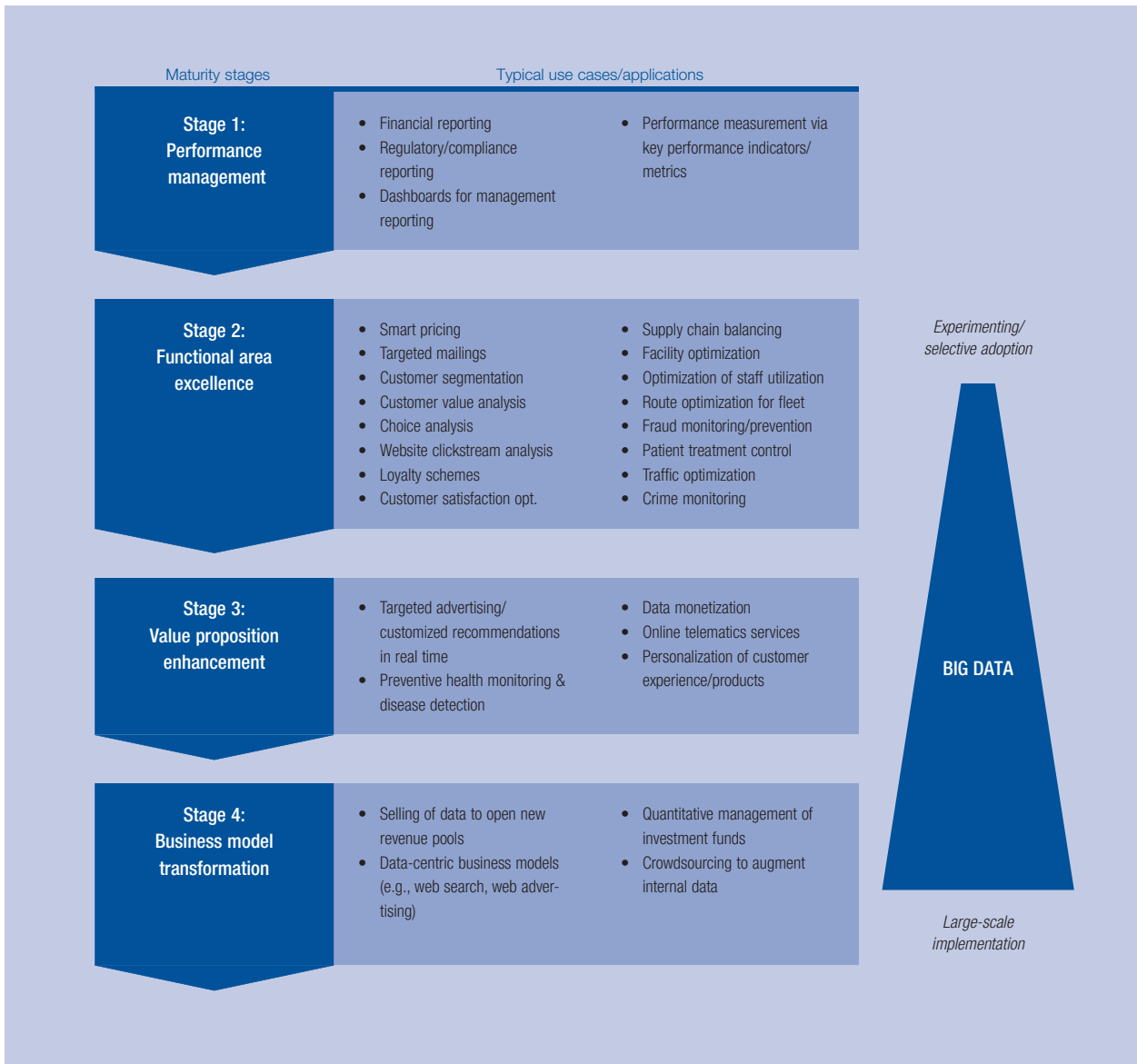
The first maturity stage, performance management, enables executives to view their own business more clearly through, for example, user-friendly management information dashboards. This stage typically relies on internal data, with an organization establishing key performance indicators (KPIs) to evaluate its success at achieving stated goals.

During stage 2, functional area excellence, organizations start to experiment with internal and external data to improve selected facets of their business. This may involve sales and marketing techniques such as customer segmentation and targeting, or entry-stage analytical methods for product recommendations. For example, one retailer analyzed data recounting the past purchasing behavior of individual customers in conjunction with the company's most recent sales to predict and recommend each customer's most likely next purchase. This resulted in a revenue increase of up to 5 percent, depending on the customer segment.

Advances in operational efficiency through big data, such as the efficient deployment of staff resources and the optimization of the supply chain, also reside within this maturity stage. Recent examples include a German car manufacturer that used real-time performance monitoring of production machinery to trigger a 20 percent increase in productivity. Each machine was tightly monitored to highlight downtime and plan around those production disruptions to optimize the utilization of the overall plant. In the public sector, a Canadian hospital observed previously unseen patterns in streaming data from monitoring of newborns, enabling detection of dangerous infections 24 hours before symptoms appeared.⁹

At the value proposition enhancement stage (stage 3), organizations start to monetize big data, positioning it as a value driver of the business that offers a new source of competitive advantage beyond the mere improvement of operations or services. In many instances this involves obtaining data from external sources and

Figure 2: Big data maturity stages and related use cases



Source: Booz & Company.

deriving insights from it. This may include innovations such as customized, real-time recommendations or the personalization of services to augment the customer experience.

For example, one leading European bank tailored its website content to trigger an increase of 12 percent in sales. After customers logged in, the bank presented one of several alternative websites based on the relevant individual’s transaction history and segment and the company’s overall product portfolio. The content was specific to the predicted needs of the customer to maximize sales potential.

Data-rich organizations, such as retailers or telecommunications companies, are better equipped than others to utilize their internally generated data in this way. For instance, a global mass merchant was

able to increase its profit per customer by 37 percent by applying advanced customer analytics, such as behavioral segmentation, to identify its best customers and provide them with personalized offers. The frequency of those target customers’ purchases rose by approximately 25 percent, and the average basket size increased by around 10 percent.

Another instructive case involved the US city of Los Angeles, which introduced demand-responsive pricing for parking. The city sets specific prices for hourly parking in each street, varying according to the time and day. These prices are based on in-depth choice modeling, fed with data from parking sensors, surveys, weather forecasts, information about holidays, local business activities, and other information. The goal is to reach a steadily high, but not excessive, utilization

of parking space at all times. The initial results are impressive. Although city parking revenues increased by 2.4 percent due to higher utilization, 60 percent of parking rates actually fell and congestion during peak hours decreased by 5 percent.¹⁰

In the final maturity stage, business model transformation, big data permeates the whole organization. It becomes deeply embedded within the operation, determining the nature of the business and the mode of executive decision-making.

This stage can be reached by both product and services organizations alike. One example of the latter involves the recent merger of the two large advertising companies Omnicom and Publicis. Their industry is moving away from the creative “Mad Men” approach, where a catchy phrase was the pinnacle of aspiration, toward a more science-based, data-driven business that aims to personalize ads. The ultimate goal is to deliver the right message to the right person at the right time. The Internet and mobile devices play a major role in this development. This new “ad tech” world will be dominated by those major players that possess the most comprehensive data about consumers and are thus able to understand them better—who they are, where they are, what they like, who their friends are, and so on. Omnicom and Publicis believe that their combined size will produce the desired volume of data.

General Electric (GE) provides a prominent example of a product organization placing great faith in big data. GE expects that machinery and equipment will soon be loaded with sensors, making in-depth status data available both in real time and across longer time spans. To be at the forefront of this development, GE is investing more than US\$1 billion in building up its data science capabilities to provide data and analytics services across business functions and geographies.¹¹

Another showcase for the transformative potential of big data comes from the public sector. Regional and national-level policymakers around the world are launching “open data” initiatives, making data available to the public via integrated web portals and automated interfaces. Recent examples involve the United Kingdom and New York City.¹² Although originally conceived as a way of increasing the transparency of government decisions, the release of public data is an important environmental factor enabling organizations to use big data, creating novel applications and services.

However, some organizations do not have to progress through all the big data maturity stages. A data-driven business model has been integral to companies such as Google, Facebook, and Twitter, which have burst on to the scene in recent years and are introducing new technologies to capture the digital advertising market. Such companies actually started operations at the final stage. By doing so, they have prompted others to proceed through the earlier stages to keep up.

Obstacles to progress

Despite widespread interest in data-driven decision-making in one form or another, companies face many potential pitfalls in extracting the maximum commercial benefit from big data usage. Some of these relate to their own internal systems and culture; others are tied to the external environment.

The most prominent obstacle is the shortage of available talent specializing in data analytics—data scientists with an advanced education in mathematics or statistics who are also able to translate raw data material into exploitable commercial insights. Although many educational institutions have now started to establish courses to address this scarcity, the market demand is already considerable.

Many organizations also suffer from poor-quality data that are fragmented across various systems, geographies, and functional silos. Embracing the potential of big data as a concept will take organizations only so far. First and foremost, they must get the basics right. Internal data has to be of high quality—consistent, accurate, and complete—and available across the organization.

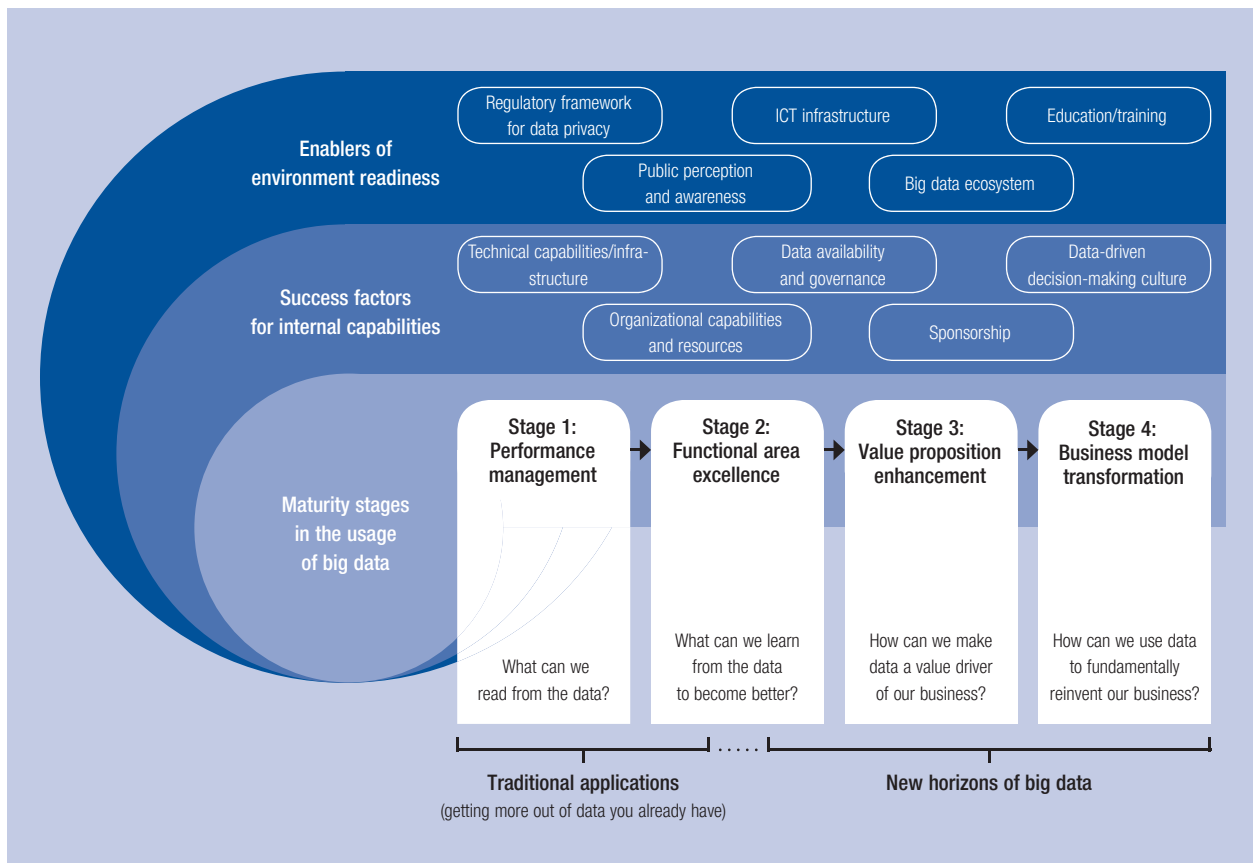
The prevailing decision-making culture presents a major internal obstacle—the one that is the least straightforward to identify and then overcome. To complicate matters, changing this culture may impinge on personal concerns relating to status. Companies and public institutions typically rely on the intuition of senior managers for important decisions. As big data extends its reach, executive instinct is challenged by the facts of hard data. However, while data can be of great assistance in solving an actual problem, it still holds true that senior management has to ask the right questions.

Many of the external challenges that companies face revolve around data privacy considerations. For example, very specific details of an individual’s lifestyle preferences and buying habits are now captured and analyzed by companies through their own websites or by monitoring social media. These details are all collected without that person’s explicit consent, leading to significant public reservations about big data. Such concerns about privacy will strengthen demands for tighter regulatory control, potentially limiting companies’ ability to exploit big data opportunities or exposing them to threats of legal and regulatory intervention.

HOW TO REACH BIG DATA MATURITY

Our big data maturity framework (Figure 3) comprises three elements: the enablers of environment readiness, the organization’s internal capabilities, and the different stages of maturity and sophistication in which big data can be used. The framework enables organizations to view the extent of their success in overcoming obstacles, and identifies what more can be done to promote big data maturity and reach the desired destination.

Figure 3: Big data maturity framework



Source: Booz & Company.

The environment readiness dimension considers how far the relevant governments have enabled organizations in their jurisdiction to use big data freely and productively. This is achieved through appropriate regulations and a supportive infrastructure.

The organization's internal capabilities dimension sheds light on a company's readiness to execute big data. By building up these capabilities and integrating them effectively, organizations move further along the path of data-driven decision-making and position themselves to extract greater benefits from big data.

While environment readiness serves as an enabler for big data usage, internal capabilities act as critical success factors for organizations seeking to progress through the maturity stages.

The following two sections explain the full range of actions that governments and organizations need to undertake and which of these take precedence.

Environment readiness: Priorities for policymakers

Big data will soon become ubiquitous practice in both the public and private worlds. Policymakers therefore need to act in a timely manner to promote an environment that is supportive to organizations seeking to benefit from this inevitable progression. Failure to develop comprehensive environment readiness carries

the risk of losing competitive advantage vis-à-vis other countries.

Policymakers must therefore:

- formulate a vision for the usage of data consistent with the public interest, fostering a common understanding with citizens and obtaining their buy-in;
- enable a big data ecosystem by establishing policies to facilitate valid business models for third-party data, service, and information technology system providers; and
- speed and scale up the education of talent to address the likely significant shortage of talent with the requisite skills to leverage and handle big data—from both a business and an IT perspective, potentially in public-private partnerships (PPPs). Such PPPs can avoid having students in tailored university programs graduate with outdated learning by fostering and exploiting private contributions to the educational agenda. PPPs can involve public sponsorship of private education programs, and private support for university education in terms of knowledge transfer and financial endowments.

Priorities for policymakers will vary in different parts of the world. Developing countries, for example, will concentrate on building up the required ICT infrastructure and education programs to prepare for large-scale demand from organizations intent on using big data. In more developed countries, however, the government's primary concerns should be ensuring transparent regulation and promoting a public-interest argument for big data.

Policymakers must make the case for big data

In particular, policymakers should set clear rules regarding data privacy so that organizations know which personal data they can store and for how long, and which data are explicitly forbidden by privacy regulations.

If the scope of permissible data is to expand, skeptical citizens must first be persuaded that big data will work in their favor by paving the way for better products and services. Forward-thinking governments will initiate and inform this public debate about the benefits of big data. Indeed, Jules Polonetsky and Omer Tene, in their *Stanford Law Review* article (2013), argue that finding the right balance between individuals' legitimate privacy concerns and the overall rewards offered by big data practices may be the greatest contemporary public policy challenge.¹³

The outcome of this debate will vary depending on the country. Cultural factors will have a strong bearing on the decision about the right level of data privacy in any given country, and this decision will result in a regulatory regime appropriate for citizens and organizations. On a regional level, groups such as the European Union allow possible harmonization of data privacy regulation across borders, given that the constituent countries may share attitudes on this issue.

Policymakers should promote harmonization

On a global level, though, no binding agreement to harmonize regulation around data privacy currently looks likely in the short to medium term. Because countries have legitimate differences on this issue, this lack of harmonization threatens the adoption of big data on an international scale.

The prevailing patchwork situation accentuates the lack of clarity on lawful data usage—especially the question of which jurisdiction holds sway for certain cross-border cases. For example, if data are owned by a company in the European Union, but hosted on servers in the United States, which privacy law applies? Legal inconsistency between countries can even inhibit free commerce across borders. This problem arises, for example, when an organization plans to outsource data operations to a foreign provider, yet some personal data are prohibited from being transferred out of the country concerned.

The Organisation for Economic Co-operation and Development (OECD) *Guidelines on the Protection of*

Privacy and Transborder Flows of Personal Data, which were revised and updated in 2013, may represent a practical step in the direction of harmonization.¹⁴ In the absence of binding rules, a common understanding for data privacy and data protection regulation on the basis of guidelines and recommendations from a high-profile international organization is the most sensible option currently available.

The OECD guidelines follow a best-of-breed approach. They formulate basic principles around the limitation of collection of personal data, the specification of the purpose of data collection, the protection of collected data, the prevention of data loss or unauthorized access, and the right of individuals to obtain information about collected data. The guidelines have in the past influenced national legislation, including privacy acts in Australia, Japan, Mexico, and New Zealand. We encourage both OECD members and non-members to review and adopt those basic principles and recommendations to establish common ground.

An organization's internal capabilities: Priorities for executives

There is no general rule dictating how organizations should navigate the stages of big data maturity. They must each decide for themselves, based on their own situation—the competitive environment they are operating in, their business model, and their existing internal capabilities. In less-advanced sectors, with executives still grappling with existing data, making intelligent use of what they already possess may have a substantial impact on decision-making.

The main priorities for executives are to:

- develop a clear (big) data strategy;
- prove the value of data in pilot schemes;
- identify the owner for “big data” in the organization and formally establish a “Chief Data Scientist” position (where applicable);
- recruit/train talent to ask the right questions and technical personnel to provide the systems and tools to allow data scientists to answer those questions;
- position big data as an integral element of the operating model; and
- establish a data-driven decision culture and launch a communication campaign around it.

Quick wins

Organizations should resist expensive upfront infrastructure investments for overly ambitious big data projects. Instead, they should select opportunities for high business impact and adopt pilot schemes that also allow for periodic refinements along the way.

Seeking out proprietary data that can be immediately exploited for commercial gain may provide

one such quick win. For example, a mobile phone operator can collect anonymized real-time travel patterns, which are of value for navigation system operators that want to provide up-to-date traffic information to their customers.

Help from outside

External data providers can offer all types of data to organizations and can therefore complement existing data-gathering efforts. Typical datasets offered by external providers include contact, lifestyle, and demographic information on (market segments of) individuals. Social media platforms are also demonstrated to be great sources of relevant big data—for example, for sentiment analysis (to determine the voice and desires of the consumer) or for personalizing product offerings. In addition to sourcing data from outside the organization, the selective use of external analytics service providers can also prove instrumental in establishing big data maturity quickly, while potentially training employees to take on these tasks themselves.

CONCLUSION

We currently see big data as poised to have significant impact in public and business spaces alike. Large-scale investment is flowing into establishing big data capabilities in many organizations, despite the limited number of cases in which it has been successfully used in completed projects and initiatives. Decision makers already acknowledge the future influence of data-driven decision-making.

However, organizations confront vast differences in their ability to utilize big data to good effect, as seen in their stages of big data maturity. These differences range from adopting big data practices for operational improvement in selected functional areas or building or revamping an organization's value proposition to completely transforming their business model based on big data. At the more advanced stages, organizations learn to monetize big data far beyond simply getting better at what they are currently doing; learning this lesson is an accomplishment that can mean a fundamental shift for them. Environment readiness plays a pivotal role in enabling such success, because its effect is far greater than the evolution of individual organizations' internal capabilities and usage levels of big data.

Nonetheless, policymakers and organizations in general still have much to do if they want to realize the full potential of big data. For their part, governments throughout the world need to create a supportive environment for the usage of big data to attract business to their region. Meanwhile, organizations must act in a timely manner to determine how they can most effectively deploy big data. They will have to predict what the world of data-driven insights will look like in the

medium term, anticipate which trends will lead there, and position their organization accordingly.

Within the next five years, big data will become the norm, enabling a new horizon of personalization for both products and services. Wise leaders will soon embrace the game-changing opportunities that big data affords for their societies and organizations, and will provide the necessary sponsorship to realize this potential. Skeptics and laggards, meanwhile, look set to pay a heavy price.

NOTES

- 1 IBM, no date. "What Is Big Data?"
- 2 Constone 2012.
- 3 Aberdeen Group 2013.
- 4 McAfee and Brynjolfsson 2012, p. 6.
- 5 Gartner 2013.
- 6 The New York Times 2012.
- 7 ITP.net 2013.
- 8 The Economist Intelligence Unit 2013.
- 9 This chapter contains examples from many clients whose identities are not stated due to confidentiality reasons.
- 10 Munford 2013.
- 11 Catts 2012.
- 12 In the UK, the initiative is available at <http://data.gov.uk/>; in New York City it is available at <https://data.cityofnewyork.us/>.
- 13 Polonetsky and Tene 2013.
- 14 OECD 2013.

REFERENCES

- Aberdeen Group. 2013. "Big Data Trends in 2013," February 1. Available at <http://www.aberdeen.com/Aberdeen-Library/8244/RA-big-data-trends.aspx>.
- Catts, T. 2012. "GE's Billion-Dollar Bet on Big Data." *Bloomberg Businessweek*, April 26. Available at <http://www.businessweek.com/articles/2012-04-26/ges-billion-dollar-bet-on-big-data>.
- Constone, J. 2012. "How Big Is Facebook's Data? 2.5 Billion Pieces of Content and 500+ Terabytes Ingested Every Day." *Tech Crunch Conference Highlights*, August 22. Available at <http://techcrunch.com/2012/08/22/how-big-is-facebooks-data-2-5-billion-pieces-of-content-and-500-terabytes-ingested-every-day/>.
- The Economist Intelligence Unit. 2013. "The Evolving Role of Data in Decision-Making." Available at <http://www.economistinsights.com/analysis/evolving-role-data-decision-making>.
- Gartner. 2013. "Survey Analysis: Big Data Adoption in 2013 Shows Substance Behind the Hype." Available at <http://www.gartner.com/id=2589121>.
- IBM. No date. "What Is Big Data?" Available at <http://www.ibm.com/big-data>.
- ITP.net. 2013. "DWTC to Highlight Big Data at GITEX: Event Organiser to Host First Ever Big Data Conference on October 22," September 29. Available at <http://www.itp.net/595102-dwtc-to-highlight-big-data-at-gitex#UkrZ9oasiSo>.
- McAfee, A. and E. Brynjolfsson. 2012. "Big Data: The Management Revolution." *Harvard Business Review*, October. Available at <http://hbr.org/2012/10/big-data-the-management-revolution>.
- Munford, M. 2013. "Don't Follow the Leaders, Watch the Parking Meters." *The Daily Telegraph*, September 15. Available at <http://www.telegraph.co.uk/technology/news/10307926/Dont-follow-leaders-watch-the-parking-meters.html>.

The New York Times. 2012. "IDC Sizes Up the Big Data Market," March 7. Available at http://bits.blogs.nytimes.com/2012/03/07/idc-sizes-up-the-big-data-market/?_r=0.

OECD (Organisation for Economic Co-operation and Development). 2013. *OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data*. Available at <http://www.oecd.org/internet/ieconomy/oecdguidelinesonthe-protectionofprivacyandtransborderflowsofpersonaldata.htm>.

Polonetsky, J. and O. Tene. 2013. "Privacy and Big Data: Making Ends Meet." 66 *Stanford Law Review* 25, September 3. Available at <http://www.stanfordlawreview.org/sites/default/files/online/topics/PolonetskyTene.pdf>.

Big Data: Balancing the Risks and Rewards of Data-Driven Public Policy

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In June 2013, massive US surveillance of phone records and Internet data was revealed by former National Security Agency (NSA) contractor Edward Snowden, who called these activities the “architecture of oppression.” His disclosures ignited an overdue public debate on the balance between personal privacy and our growing digital capabilities regarding the collection and use of personal data. Finding this balance is an issue of vital and urgent interest to corporations and governments as well as to ordinary citizens around the world. This chapter will outline both the risks and the rewards of this new age of big data, address policy issues in this area, and provide practical recommendations for a way forward.

Data about human behavior, such as census data, have always been essential for both government and industry to function. In recent years, however, a new methodology for collecting data about human behavior has emerged. By analyzing patterns within the “digital breadcrumbs” that we all leave behind us as we move through the world (call records, credit card transactions, and global positioning system, or GPS, location fixes, for example), scientists are discovering that we can begin to explain many things—such as financial crashes, revolutions, panics—that previously appeared to be random events. These new tools, with the perspective they provide on life in all its complexity, shape the future of social science and public policy. Just as the microscope and telescope revolutionized the study of biology and astronomy, “socioscopes” have the potential to revolutionize regulation and public policy.

The risk of deploying this sort of data-driven policy and regulation comes from the danger of putting so much personal data into the hands of either companies or governments. Fortunately, new approaches to regulation and technology that can help protect personal privacy from exploitation have been developed. These approaches can mitigate the problem of government overreach as well. Both regulation and technology must continue to evolve in order to provide more scientific, real-time public policy while protecting citizens from the dangers of exploitative companies or an all-knowing authoritarian government. This chapter will provide practical recommendations to achieve these goals.

A BIG DATA TAXONOMY

It is probably hopeless to try to provide a detailed taxonomy of data types and uses because the technology is progressing so quickly. But it is possible to provide a broad taxonomy framed in terms of control. The three main divisions within the spectrum of data control are: (1) *data commons*, which are available to all, with at most minor limitations on use; (2) *personal or proprietary data*, which are typically controlled by individuals or companies, and for which legal and technology infrastructure must provide strict control and auditing of use; and (3) the *secret data of governments*,

which typically has less direct public oversight and more stringent controls. The issues of data commons will be addressed first, followed by concerns about personal and proprietary data, and, finally, issues of secret government data.

The preferred lens for examining these issues is experimentation in the real world rather than arguments from theory or first principles, because using massive, live data to design institutions and policies is outside of our traditional way of managing things. In this new digital era we cannot rely only on existing policy, tradition, or even laboratory science, because the strengths and weaknesses of big data analysis are very different from those obtained through standard information sources. To begin to manage our society in a data-driven manner requires us to move beyond academic debate and laboratory question-and-answer processes. Instead, we need to try out new policy ideas within living laboratories—real, diverse communities that are willing to try a new way of doing things—in order to test and prove our ideas. This is new territory and so it is important for us to constantly try out new ideas in the real world in order to see what works and what does not (see Box 1).

Data commons

The first entry in the data taxonomy is the *data commons*. A key insight is that our data are worth more when shared because they can inform improvements in systems such as public health, transportation, and government. Using a “digital data commons” can potentially give us unprecedented ability to measure how our policies are performing so we can know when to act quickly and effectively to address a situation.

We already have many data commons available: maps, census data, and financial indices, for example. With the advent of big data, we can potentially develop many more types of data commons; these commons can be both accessible in real time and far more detailed than previous, hand-built data commons (e.g., census data, etc.). This is because the new digital commons depend mostly on data that are already produced as a side effect of ongoing daily life (e.g., digital transaction records, cell phone location fixes, road toll records, etc.), and because they can be produced automatically by computers without human intervention.

One major concern with these new data commons is that they can endanger personal privacy. Another, secondary, concern involves the tension between proprietary interests, both commercial and personal, and the goal of putting data in the commons. Acceding to these proprietary interests might tend to reduce the richness of such a commons, which would diminish the ability of such a data commons to enable significant public goods.

To explore the viability of a big data commons, what is perhaps the world’s first true big data commons was unveiled on May 1, 2013. In this Data for Development

(D4D) initiative, 90 research organizations from around the world reported hundreds of results from their analysis of data describing the mobility and call patterns of the citizens of the entire African country Côte d’Ivoire.¹ The data were donated by the mobile carrier Orange, with help from the University of Louvain (Belgium) and the MIT Human Dynamics Laboratory (United States), along with collaboration from Bouake University (Côte d’Ivoire), the United Nation’s Global Pulse, the World Economic Forum, and the GSMA (the mobile carriers’ international trade association). The D4D program was led by Nicolas De Cordes (Orange), Vincent Blondel (Louvain), Alex Pentland (MIT), Robert Kirkpatrick (UN Global Pulse), and Bill Hoffman (World Economic Forum).

The research projects conducted by the 90 participating organizations explored the use of this data commons, covering many different aspects of better governance. An example of using the D4D data to improve social equality was highlighted by work done by researchers at the University College of London, who developed a method for mapping poverty from the diversity of cell phone usage. As people have more disposable income, they explore or sample their environment more, and their patterns of movement and patterns of phone calls become increasingly diverse. Measurement of this additional exploration allows us to make a surprisingly accurate estimate of their disposable income. Another example of using the D4D data to enhance social equality is the mapping of ethnic boundaries by researchers from the University of California, San Diego. This method relies on the fact that ethnic and language groups communicate far more within their own group than they communicate with other groups. This project is significant because, while we know that ethnic violence often erupts along such boundaries, the government and aid agencies are usually uncertain about the geography of these social fault zones.

The D4D data were also utilized to understand and promote operational efficiency through an analysis of Côte d’Ivoire’s public transportation system by IBM’s Dublin laboratory. This analysis showed that, for very little cost, the average commute time in Abidjan—Côte d’Ivoire’s biggest city—could be cut by 10 percent. Other research groups demonstrated similar potential for operational improvements in the areas of government, commerce, agriculture, and finance.

Finally, examples of using D4D data to improve social resiliency include analysis of disease spread by groups from Novi Sad University (Serbia), École Polytechnique Fédérale de Lausanne (EPFL, Switzerland), and Birmingham (United Kingdom). These research groups showed that small changes in the public health system could potentially cut the spread of flu by 20 percent as well as significantly reduce the spread of HIV and malaria.

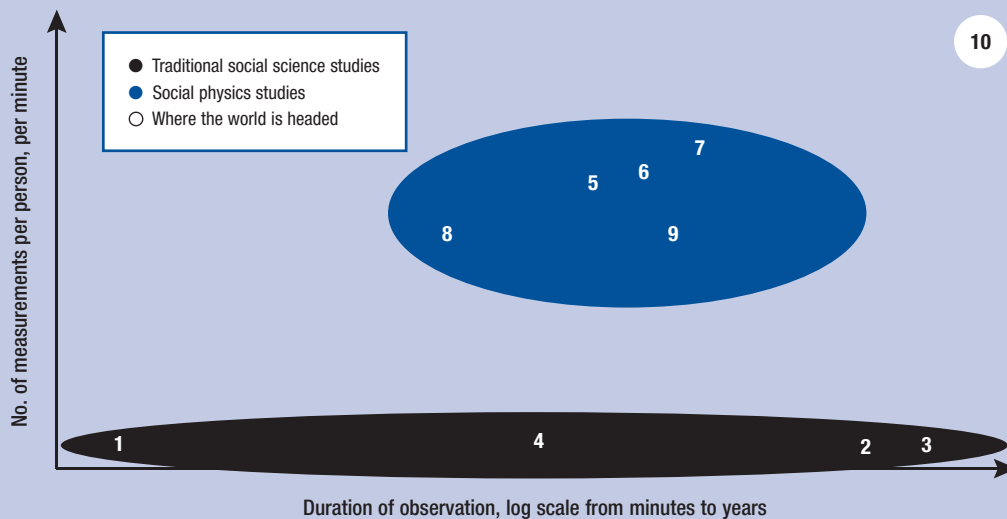
Box 1: The future of big data and governance

The Data for Development (D4D) data commons is only a small first step toward improving governance by using big data. Much more can be accomplished because our current understanding of policy and human society is based on very limited data resources. Currently, most social science is based either on analysis of laboratory experiments or on survey data. These approaches miss the critical fact that it is the details of which people you interact with, and how you interact with them, that truly matter. Social phenomena are made up of billions of small transactions between individuals—people trading not only goods and money but also information, ideas, or just gossip. There are patterns in those individual transactions that drive phenomena such as financial crashes and Arab Springs. We need to understand these micro-patterns because they do not just average out to the classical way of understanding society. Big data gives us—for the first time—a chance to view society in all its complexity, composed of millions of networks of person-to-person exchanges.

Figure A compares social science living labs with traditional experiments. The horizontal axis presents the duration of the data collection; the vertical axis shows the richness of the information collected.

If we had an all-seeing view, we could potentially arrive at a true understanding of how society works and develop scientifically proven methods to fix our problems. Unfortunately, as illustrated in Figure A, almost all data from traditional social science (labeled “1” in the figure) are near the (0,0) coordinate, meaning that these datasets represent information gathered from under a hundred people and for only for a few hours. The studies labeled “2” and “3” are some of the largest social science studies to date.¹ In the last decade, computational social scientists have begun to discover how to leverage big data and have been using datasets from companies such as cell phone carriers and social media firms. Typical examples of these studies are labeled “4.”

Figure A: Qualitative overview of social science living labs and traditional experiments



Note: Datasets identified in the figure are derived from the following: 1 = most social science experiments, 2 = the Midwest Field Station Study, 3 = the Framingham heart study, 4 = large call record datasets, 5 = reality mining, 6 = social evolution, 7 = friends and family, 8 = sociometric badge studies, 9 = the D4D dataset, and 10 = where the world is headed (see text for explanation).

Unfortunately, even these large datasets are impoverished because they measure only a few variables at a time, thus providing only a very limited view of human nature. Recently data scientists have developed living lab technologies for harvesting digital breadcrumbs, and are now obtaining much richer descriptions of human behavior. The studies labeled “5,” “6,” “7,” and “8” are living lab studies that use smart phones or electronic name badges (sociometers) to collect data.² The point labeled “9” is the D4D dataset that covers the entire country of Côte d'Ivoire.³

Just a brief examination of Figure A makes it easy to see that these living lab datasets are many orders of magnitude richer than previous social science datasets. These large, digital datasets contain extraordinary amounts of objective, continuous, dense data that allow us to build quantitative, predictive models of human behavior in complex, everyday situations.

Importantly, the point labeled “10” shows where the world is headed. In just a few short years we are likely to have available incredibly rich data about the behavior of virtually all of humanity on a continuous basis. The data mostly already exist in cell phone networks, credit card databases, and elsewhere, but currently only technical gurus have access to them. As these digital data become more widely available for scientific inquiry, we will be able to understand and manage ourselves in ways better suited to our complex, interconnected, and networked society.

Notes

- 1 See Barker 1968; Dawber 1980.
- 2 For details about these living lab studies, see Pentland 2014; Mobile Territorial Lab (MTL), available at <http://www.mobileterritoriallab.eu/>.
- 3 See the D4D challenge, available at <http://www.d4d.orange.com/home>.

These selected results are just a small sample of the impressive work that is made possible by this rich and unique data commons. These results and others like them are available at <http://www.d4d.orange.com/home>. Each of these D4D research projects has demonstrated the great potential of a big data commons for improving people's living conditions. From the point of view of Orange, it also demonstrates the potential for new lines of business that combine this data commons with customers' personal data: imagine phone applications that advise commuters about which bus will get them to work quickest, or that help citizens reduce their risk of catching the flu.

The work of these 90 research groups also suggests that many of the privacy fears associated with the release of data about human behavior may be generally misunderstood. In this data commons, the data were processed by advanced computer algorithms (e.g., sophisticated sampling and the use of aggregated indicators) so that it was unlikely that any individual could be re-identified. In fact, no path to re-identification was discovered even though several of the research groups studied this specific question.

In addition, although the data were freely available for any legitimate research in which a group was interested, the data were distributed under a legal contract that specified that they could be used only for the purpose proposed and only by the specific people making the proposal. A similar technology-legal framework is used in trust networks described in the next section. The use of both advanced computer algorithms and contract law to specify and audit how personal data may be used and shared is the goal of new privacy regulations in the European Union, the United States, and elsewhere.

Personal and proprietary data

The second category in the data taxonomy is *personal and proprietary data*, which are typically controlled by individuals or companies, and for which legal and technology infrastructure that provides strict control and auditing of use is needed. The current best practice is a system of data sharing called *trust networks*.² Trust networks are a combination of a computer network that keeps track of user permissions for each piece of personal data and a legal contract that specifies both what can and cannot be done with the data and what happens if there is a violation of the permissions. This is the model of personal data management that is most frequently proposed within the World Economic Forum Personal Data Initiative.

In such a system, all personal data have attached labels specifying what the data can, and cannot, be used for. These labels are exactly matched by terms in a legal contract between all the participants stating penalties for not obeying the permission labels and giving the right to audit the use of the data. Having

permissions, including the provenance of the data, allows automatic auditing of data use and allows individuals to change their permissions and withdraw their individual data.

Today, long-standing versions of trust networks have proven to be both secure and robust. The best known example is the SWIFT network for inter-bank money transfer; its most distinguishing feature is that it has never been hacked. When asked why he robbed banks, bank robber Willie Sutton famously said, "Because that's where the money is." In today's world, the SWIFT network is where the money is—trillions of dollars are moved through the network each day. This trust network has not only kept the robbers away, but it also makes sure the money reliably goes where it is supposed to go. Until recently, such systems were available only to the "big guys." To give individuals a similarly safe method of managing personal data, the MIT Human Dynamics Laboratory (<http://hd.media.mit.edu>), in partnership with the Institute for Data Driven Design (<http://idcubed.org>), have helped build openPDS (open Personal Data Store)—a consumer version of this type of system. We are now testing it with a variety of industry and government partners.³

A major concern about trust networks is the cost associated with keeping track of permissions and supporting the capability for automated auditing. Since many companies already maintain such data structures in order to support internal compliance and auditing functions, the cost concern does not appear to be a major barrier. Another more serious concern, however, is the extent to which incidental data about human behavior must be included in the permissions and auditing framework. Such data are typically collected in the course of normal operations in order to support those operations (e.g., the location of a cell phone is required to complete phone calls), but without specific informed consent. A final concern is that a trust network system may be too complex for average people to use, or that it will not inspire (or deserve) the sort of user trust that the name suggests.

In order to investigate these concerns, a living lab has been launched with the city of Trento in Italy, supported by Telecom Italia, Telefonica, the MIT Human Dynamics Laboratory, the Fondazione Bruno Kessler, the Institute for Data Driven Design, and local companies within Trento. Importantly, this living lab has the approval and informed consent of all its participants—they know that they are part of a real-world experiment whose goal is to invent a better way of living.⁴

The objective of this living lab is to develop new ways of sharing data to promote greater civic engagement and information diffusion. One specific goal is to build upon and test trust-network software such as the openPDS system by deploying a set of "personal data services" designed to enable users to collect, store, manage, disclose, share, and use data about

themselves. For example, the openPDS system lets the community of young families learn from each other without the work of entering data by hand or the risks associated with sharing through current social media. These data can then be used for the personal self-empowerment of each member, or (when aggregated) for the creation of a data commons that supports improvement of the community—for example, a map that shows disposable income for each neighborhood can stimulate better distribution of community services. The ability to share data safely should enable better idea flow among individuals, companies, and government; we want to see if these tools can in fact increase productivity and creative output at the scale of an entire city.

The Trento living lab will also investigate how to deal with the sensitivities of collecting and using deeply personal data in real-world situations. For example, it will explore different techniques and methodologies to protect the users' privacy while at the same time being able to use personal data—typically mobility, financial, and medical records—to generate a useful data commons. It will also explore different user interfaces for privacy settings, for configuring the data collected, for the data disclosed to applications, and for those data shared with other users, all in the context of a trust framework. Although the Trento experiment is still in its early days, the initial reaction from participating families is that these sorts of data-sharing capabilities are valuable, and they feel safe sharing their data using the openPDS system.

Government data

The third category in the taxonomy is *secret government data*. A major risk of deploying data-driven policies and regulations comes from the danger of putting so much personal data into the hands of governments. But how can it happen that governments, especially authoritarian governments, choose to limit their reach? The answer is that unlimited access to data about the citizen behavior is a great danger to the government as well as to its citizenry. Consider the NSA's response to the recent Snowden leaks:

“This failure originated from two practices that we need to reverse,” Ashton B. Carter, the deputy secretary of defense, said recently. “There was an enormous amount of information concentrated in one place,” he said. “That’s a mistake.” And second, no individual should be given the kind of access Mr. Snowden had, Mr. Carter said.⁵

That is, the government must organize big data resources in a distributed manner, with each different type of data separated and dispersed among many

locations, using many different types of computer systems and encryption. Similarly, human resources should be organized into cells of access and permission that are localized both spatially and by data type. Both computer and human resources should always be redundant and fragmented in order to avoid overly powerful central actors.

The logic behind this observation is that databases that have different types of data that are physically and logically distributed, and that also have heterogeneous computer and encryption systems, are hard to attack, both physically as well as through cyberattack. This is because any single exploit is likely to gain access to only a limited part of the whole database. Similarly, the resilience of organizations with a heterogeneous cell-like human and permissions structure is familiar from intelligence and terrorist organizations. Importantly, resistance to attack by adopting a distributed organization is a particularly pressing issue for authoritarian governments, because unfettered access to data about citizen behavior can be a major aid to organizing a successful coup to overthrow the government.

What does all this have to do with the danger that a big data government will trample individual freedoms? The key insight is that for these types of data systems, each type of data analysis operation has a characteristic pattern of communication between different databases and human operators. As a consequence, it is possible to monitor the functioning of the data analysis process without gaining access to, or endangering, the analysis content. In short, one can use “metadata about metadata” in order to monitor the *use* of metadata, and with some reasonable confidence one can ensure that only normal and usual analysis operations are being conducted without reference to specific content. Governments that structure their data resources in this manner can more easily monitor attacks and misuse of all sorts.

As a concrete example, let us assume a system in which different types of databases are physically distributed. In this case one can observe the amount and pattern of traffic between the different databases. These patterns are characteristic of the analysis being performed, and so deviations from the normal patterns of communication between databases are cause for concern. In this manner, an open civil authority can perform substantial, fairly effective monitoring of the functioning of a classified agency. In most cases it is sufficient that each element of the system monitor only local traffic.

A familiar example of this type of monitoring is the “many eyes” security strategy. When patterns of communication among different departments are visible (as with physical mail), then the patterns of normal operations are also visible to many employees, even though the content of the operations (the content of

the requested records) remains hidden. For example, a health official responsible for maintaining health records will be able to see if those records are suddenly being accessed by the finance records office with unusual frequency, and may inquire if that is proper. In contrast, when copies of all the data types are all in one place (as when all the records are located in one filing cabinet), it is easy for people to conduct unauthorized analyses.

The computer architecture for the type of system that relies on multiple, distributed types of oversight is very similar to that of the trust networks described in the previous section: distributed data stores with permissions, provenance, and auditing for sharing among data stores. In this case, however, the data stores are segmented by their referent—for example, tax records for individuals, tax records for companies, import records from country X to port Y, and so on—rather than having one data store per person. Because the architecture is so similar to the citizen-centric personal data stores, it enables easier and safer sharing of data between citizens and government. For this reason, several states within the United States are beginning to test this architecture for both internal and external data analysis services.

Finally, it should not escape the reader's attention that all of these lessons also apply to companies with large, complex databases. Misbehavior by employees, industrial espionage, and cyberattack are among the greatest dangers that companies face in the big data era. A distributed architecture of databases joined with a network that supports permissions, provenance, and auditing can reduce risk and increase resilience of companies' internal data analysis functions.

SUMMARY

We are entering a big data world, where governance is far more driven by data than it has been in the past. Basic to the success of a data-driven society is the protection of personal privacy and freedom. Discussions at the World Economic Forum have made substantial contributions to altering the privacy and data ownership standards around the world in order to give individuals unprecedented control over data that are about them, while at the same time providing for increased transparency and engagement in both the public and private spheres.

We still face the challenge that large organizations, in particular governments and corporations, may be tempted to abuse the power of the data that they hold. To address this concern, we need to establish best practices that are in the interest of both large organizations and individuals. This chapter has suggested one path that can limit potential abuses of power while at the same time providing greater security for organizations that use big data. The key policy recommendations for all large organizations, commercial or government, are that:

1. Large data systems should store data in a distributed manner, separated by type (e.g., financial vs. health) and real-world categories (e.g., individual vs. corporate). These systems should be managed by a department whose function is focused on those data, with sharing permissions set and monitored by personnel from that department. Best practice would have the custodians of data be regional and use heterogeneous computer systems. With such safeguards in place, it is difficult to attack many different types of data at once, and it is more difficult to combine data types without authentic authorization.
2. Data sharing should always maintain provenance and permissions associated with data, and should support automatic, tamper-proof auditing. Best practice would share answers only to questions about the data (e.g., by using the pre-programmed structured query language, or SQL, queries known as "Database Views") rather than sharing the data themselves, whenever possible. This allows improved internal compliance and auditing and helps to minimize the risk of unauthorized information leakage by providing the minimum amount of information required.
3. Systems controlled by partner organizations, and not just one's own systems, should be secure. External data sharing should take place only between data systems that have similar local control, permissions, provenance, and auditing, and should include the use of standardized legal agreements such as those employed in trust networks, as described earlier. Without such safeguards, data can be siphoned off at either the data source or at the end consumer, without even attacking central system directly.
4. The need for a secure data ecosystem extends to the private data of individuals and the proprietary data of partner companies. As a consequence, best practice for data flows to and from individual citizens and businesses is to require them to have secure personal data stores and be enrolled in a trust network data sharing agreement.⁶
5. All entities should employ secure identity credentials at all times. Best practice is to base these credentials on biometric signatures.⁷
6. Create an "open" data commons that is available to partners under a lightweight legal agreement, such as the trust network agreements. Open data can generate great value by allowing third parties to improve services.

Although these recommendations might seem cumbersome at first glance, they are for the most part easily implemented with the standard protocols already

found within modern computer databases and networks. In many cases, the use of distributed data stores and management are *already* part of current practice, and so the entire system will be simpler and cheaper to implement than a centralized solution: all that is really new is the careful use of provenance, permissions, and auditing within a legal or regulatory framework such as a trust network. Most importantly, these recommendations will result in a data ecosystem that is more secure and resilient, allowing us to safely reap the advantages of using big data to help set and monitor public policy.

NOTES

- 1 See the D4D challenge, available at <http://www.d4d.orange.com/home>.
- 2 For examples of trust networks, see Pentland 2009; World Economic Forum 2011; and the Institute for Data Driven Design, available at <http://idcubed.org>.
- 3 For details about openPDS, see <http://idcubed.org/open-platform/openpds-project/>.
- 4 For information about the Mobile Territorial Lab (MTL), see <http://www.mobileterritoriallab.eu/>.
- 5 Sanger 2013.
- 6 Pentland 2009; World Economic Forum 2011; <http://idcubed.org>.
- 7 See <http://openid.net/connect/>.

REFERENCES

- Barker, R. 1968. *Ecological Psychology: Concepts and Methods for Studying the Environment of Human Behavior*. Palo Alto, CA: Stanford University Press.
- Dawber, T. 1980. *The Framingham Study: The Epidemiology of Atherosclerotic Disease*. Cambridge, MA: Harvard University Press.
- ID3 (Institute for Data Driven Design, or idcubed). Available at <http://idcubed.org>.
- MTL (Mobile Territorial Lab). Available at <http://www.mobileterritoriallab.eu/>.
- OpenID Connect. Available at <http://openid.net/connect/>.
- Orange. *D4D Challenge*. Available at <http://www.d4d.orange.com/home>.
- Pentland, A. 2009. "Reality Mining of Mobile Communications: Toward a New Deal on Data." In *The Global Information Technology Report 2008–2009: Mobility in a Networked World*. Geneva: World Economic Forum. 75–80. Available at www.insead.edu/v1/gitr/wef/main/fullreport/files/Chap1/1.6.pdf.
- . 2014. *Social Physics: How Good Ideas Spread—The Lessons from a New Science*. New York: Penguin Press.
- Sanger, D. E. 2013. "A Washington Riddle: What Is 'Top Secret '?" *The New York Times Sunday Review*, August 3. Available at http://www.nytimes.com/2013/08/04/sunday-review/a-washington-riddle-what-is-top-secret.html?_r=0.
- World Economic Forum. 2011. *Personal Data: The Emergence of a New Asset Class*. Geneva: World Economic Forum. Available at http://www3.weforum.org/docs/WEF_ITTC_PersonalDataNewAsset_Report_2011.pdf.

Managing the Risks and Rewards of Big Data

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One of the biggest challenges of the term *big data* is deciding on a standard definition of what those words really mean. For many companies that have worked in an environment of large datasets, fast-moving information, and data that lack traditional structure, working in an environment of big data is just business as usual. In this chapter we will discuss how managing the growing challenge of data is not new for a regional healthcare organization in the Midwestern United States, a global logistics company, and a major American retailer. But for a majority of organizations, which have neither integrated data nor built a strategy around its use, the term *big data* itself is a way to express the sudden digitization of many things that have been with us forever but were not previously captured and stored as data. For most companies, big data represents a significant challenge to growth and competitive positioning. In some cases, it represents the survival of the business.

BIG DATA: RISKS AND REWARDS

Digitization itself is not new, but the maturation and availability of the Internet; the rapid growth of mobile computing; and, more recently, the addition of sensor data (data derived from devices that sense their environment) to the mix have all pushed the boundaries of how we think about data and its uses. The term *big data* represents the need for a new way of thinking but also implies new tools and new ways of managing data. Like many things, data can be used to do positive things for the world, but it can also be used to manipulate, embarrass, or repress. Data can be highly accurate and efficiently structured or unstructured, fragmented, and highly suspect. Data can also be managed well or carelessly. Big data, in its outsized properties, amplifies those effects. It is in those extremes that the risks and rewards of big data are decided.

THREE KEY BIG DATA TRENDS

As the world becomes more familiar with big data, three key trends that have a significant impact on those risks and rewards are emerging. First and foremost, *big data leverages previously untapped data sources*. Those sources are of several types. The first includes wearable devices that stream data about an individual and his or her surrounding environment on a moment-by-moment basis—such sensors include the applications on a smartphone that sense movement. The sensor in a runner's shoe is a very consumer-facing example, but business-facing sensors, which track all kinds of things, are proliferating very quickly. A pacemaker is a sensor that has been around a while (the newer models give feedback to healthcare workers).

The next type comprises connected sensors that instantly digitize and report what is happening in any moment and in any location. Examples of this type include the global positioning system (GPS) device that reports location back to a central computer or a user,

and devices in the soil of a farm that sense when and how much to irrigate. There are also sensors in trains, for example, that watch for signals that maintenance is necessary before a human could ever see them, such as brake heat, brake wear, movement in the rails, and so on. This new breed of sensors is coming into service and is connected to the Internet, making big data even bigger than human-generated information.

The third type of sensor provides constant reporting by machines that perform the work critical to our security, health, and lifestyle. Machines can be something as large as an aircraft or locomotive or they can be components of one of those things. Some of the most interesting of these sensors are the ones that measure the way an aircraft engine is performing mid-flight. Machines used to be purely mechanical but are increasingly computer controlled. Those computer controls mean not only that data are constantly being fed into machines but that they are also coming out of machines at a quickly increasing rate.

We have reached a point of information discovery that reveals correlation before causation, leaving researchers scratching their heads to find the underlying causes for correlations that data analysis clearly demonstrates. TIBCO's chief executive officer, Vivek Ranadive, is fond of saying that we have reached a point where we may know the "what" without knowing the "why."

The previously untapped information sources create a data ecosystem that can be modeled in a way that blends historical with in-the-moment information and is remarkably useful for anticipating the future. These models accurately predict such diverse outcomes as the spread of disease, the failure rate of aircraft components, and consumer behaviors. Big data's effectiveness is tightly coupled to an organization's ability to bring the right data together in the right moments that allow for the right response and outcome. Whatever we may know today, the continued discovery of previously untapped data sources will continue to change and improve our models, allowing us to better anticipate future events and to continue to increase our ability to affect desired outcomes.

The desire to affect outcomes brings about the second trend of big data: *the need for automation technologies*. Richard Hackathorn wrote about the value-time curve of information back in 2004 in "Real-Time to Real-Value," just as the world was becoming broadly and acutely aware of the explosion of data.¹ Hackathorn's curve describes the decreasing value of data over time as it passes through stages of use (Figure 1).

The challenge of the decreasing value of data over time has become even more meaningful in the age of big data. Today, the volume, velocity, and variety of data continue to push the curve down and to the right as organizations struggle to capture, analyze, and decide in a gradually more difficult environment. Added to this

complexity is the increasing access to real-time data that leaves organizations in some industries attempting to reduce their response time to microseconds, understanding that this is a crucial part of being successful in their business.

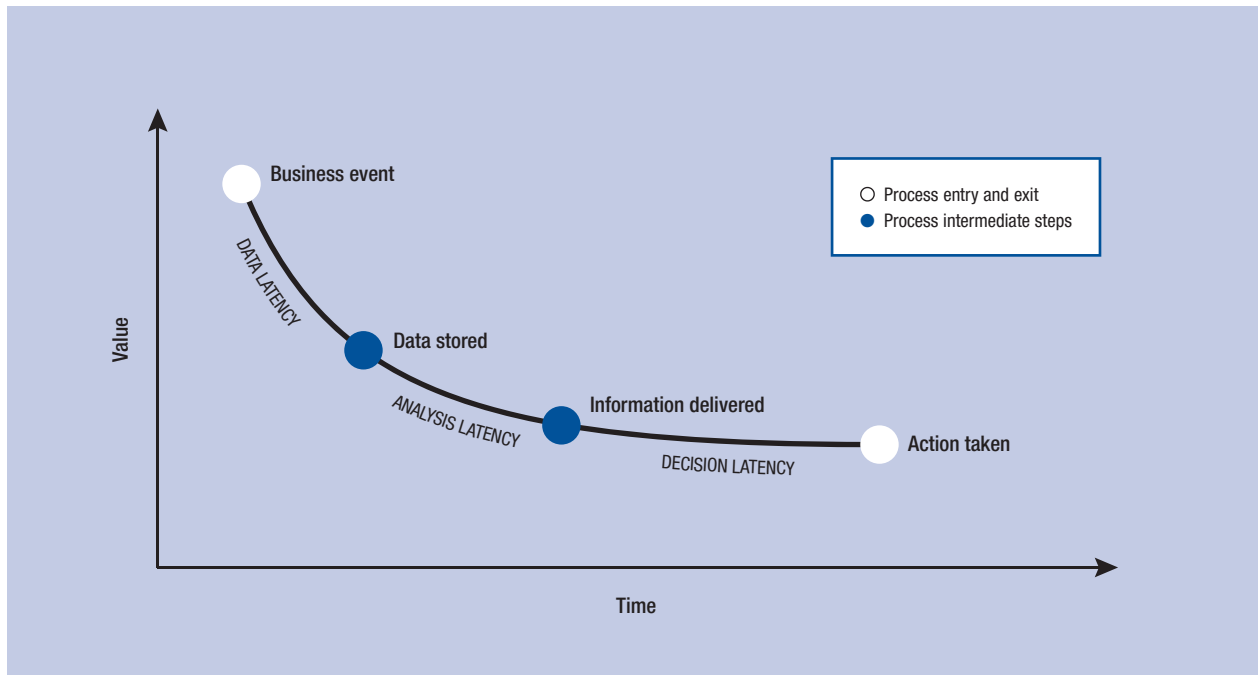
The value-time curve challenge makes big data management a function of creating automation wherever possible. Machines have always been humanity's friend in making work more efficient, and big data follows the same path. Big data's growth in each of its dimensions eliminates the ability for humans to intervene and reprogram processes in real time, opening the door for better and better tools that can manage data far more quickly and efficiently than a human can. Data exist in a moment, ready for decision and action, but there is a higher-level purpose for information. Data comprise the digital representation of events, or things that happen in patterns that occur over time, in conjunction with other events or in isolation, and even with things that may be expected but do not occur (such as when a patient fails to pick up a prescription after being discharged from a hospital, starting a likely string of events that will lead to readmission).

The idea of keeping track of what does *not* occur is a level of complexity higher than the old ways of waiting for data to arrive or change. Automation is especially well suited to the complexity of predicting, and then anticipating, events. In many organizations, automation is also a significant part of the actions that events precipitate.

The big data conversation often centers on the use of machines as the best resource for the storage and analytic processing of vast amounts of data, but this is only a piece of the story. Automation is increasingly a logical response to the need to find, filter, and correlate each piece of data as it flows over the enterprise so that decisions can be made—some through automation and some using a hybrid approach combining human and machine. Once decisions are reached, automation becomes the path for taking action in the shortest time frame possible before the value of data decays further.

The third trend being driven by big data is the *necessity for adaptable, less fragile systems*. For big data to leverage previously untapped sources of information, organizations need to quickly adapt to the opportunities and risks represented by these new sources. Automated systems that manage big data ecosystems cannot be developed around rigid schemas that require redevelopment for each new stream of information. Instead, systems need to absorb new information in an adaptable way that also adds value to existing data that have already been collected. Adaptable systems treat new sources of data coming constantly as the means to improve analytical models, create better decisions, and drive more appropriate actions.

Figure 1: The value-time curve



Source: Hackathorn 2004.

RESOLVING TWO PRIMARY CHALLENGES OF BIG DATA

Most organizations need to overcome two primary challenges before becoming productive with big data. The first is the need for powerful visualization that allows the business to explore data to find questions worth answering. This stands the traditional business intelligence model on its head, as the pre-big data model began with the business asking a question and ended with information technology structuring data to answer those questions in a very repeatable way, typically as dashboards. Visualization instead begins with capturing all data available so that multi-structured and iterative discovery can take place that reveals information with or without having the right question. Visualization lets the data speak for themselves.

Humans are extremely well suited to visual analysis. Our brains are wired to very rapidly assimilate what we see and spot patterns. Using our eyes, we can spot a trend or an outlier in a fraction of a second, far faster than we can by sifting through numbers on a screen. If a picture is worth a thousand words, visualization is worth petabytes, terabytes, and more of raw data. Visualized data and the human mind make for a highly efficient combination. Most importantly, visualized data have the effect of engaging the non-technical but business-savvy human in the iterative process of discovering exploitable insight. This lessens the organization's reliance on technical resources and, specifically, on data scientists.

The second hurdle that organizations face is the need to manage ever-larger amounts of data. Systems scoped for today's needs quickly become insufficient when the data are increasing in size, speed, and

complexity. Unfortunately, when people talk about "big data" they often use the term to compartmentalize it and give it boundaries. This is a natural reaction and harkens to the beginning of computerization when data were processed as batches of transactions that represented a finite amount of information. Thinking of big data in those terms fails to take into account all of the data being created everywhere, every day. This compartmentalized view can also deprecate data that may not appear useful or valuable or may be difficult to process. At a point in the future, organizations will very likely look back and wish they had considered all data when deciding what to store. When we consider data without specific boundaries, we can focus our efforts on linking data together and analyzing them more broadly. We will probably find the data have value for a wider range of people in the organization than originally anticipated.

When we consider all data, we can see the value of discovering the connectivity of data. This brings into consideration different data types that are used to adorn our original data and make them more valuable as a source of visual, predictive, and operational analytics. Why does that matter? We have grown accustomed to having instantaneous answers to our questions. As data grow, they have the very real likelihood of slowing down how decisions are made. Nonlinear growth taxes our systems and creates the scenario that every day we get bogged down more as untapped data sources become newly available, our clever automations become less effective, and our systems seem less adaptable than before. An all-data approach allows the organization to see today's information as the best we have in the moment, knowing that we will continue to layer on more

data—not with the goal of having a larger dataset, but instead with the goal of using all of the data available to gain the best outcome. Rather than slowing down the results, using all available data takes into account data linkages and permits a broad analysis that allows the most organizational clients to constantly arrive at the best possible outcome.

Enabling the organization with visualization and the constantly additive benefits of all data allows experts to be able to explore data to find their value. For a retailer, that means being able to explore diverse data that include historical visits to the website as well as transactions completed or shopping carts abandoned; with the addition of geographical information from a mobile society, the retailer has an ability to understand the ambient circumstances at the time decisions are being made.

ENSURING THAT HUMANS STAY IN THE LOOP

For exactly this reason we need to take a very careful approach to how big data is being used and apply the right level of oversight. There are two specific reasons for having an appropriate governance model, each tackling the problem from the opposite perspective. The first is a need to ensure that data are not being used in a way that goes against the organization's best interests. Such unfortunate (even inappropriate) uses can be the result of rogue individuals with no checks and balances on their access and actions, or it can be the result of individuals acting with the best intentions but incurring unintended consequences that go against the goals of the organization. Data are very powerful, and organizations need to ensure that information is being collected, stored, analyzed, and acted upon in ways that can be audited and that raises alarms when necessary.

The second need for governance is demonstrated by the danger of having machines talking to machines without a human supervising the conversation. Systems need to leave an aperture for control by humans to avoid the problems of passive neglect or runaway processing. Finding the right balance is the challenge, and it involves looking at the value of the decisions being reached and the risk associated with the decision. There is a broad spectrum of judgments that covers small, incremental decisions that have moderate impact on an overall risk profile versus large, occasional decisions that can have enormous impact. Machines are exceptionally good at monitoring and executing detail, but the need for humans to focus on the macro decisions is significant. Consider the car analogy: a human cannot be involved in every firing of every cylinder. The human has absolute responsibility, however, for the speed of the car under the current conditions, monitoring the engine temperature, and a host of other variables.

STRIKING A PRIVACY BALANCE

We have watched the sharing of personal data increase year after year since people first connected across the Internet. Many of the risks and rewards of big data are coupled tightly to the use of all of those data. On the reward side, data can be used to create far better customer service by knowing the customers' needs and histories. They can be used to create more personalized offers based on customers' preferences and their loyalty to a brand. From this perspective, data can be used to engage the customer and to create a better relationship that serves everyone's needs. Healthcare-related personal information improves treatment and saves lives both at the individual level and in aggregate, as clinical trials of sample patients give way to all data about every patient.

Personalization and healthcare offer two standout opportunities for big data to reward us. At the same time, big data comes with privacy concerns that are not simply related to technology but are also about very human things such as privacy, all-knowing "creepiness," and personal security. Given enough personal data, information can be correlated that can be both unsettling and unwanted. Today's public, legislative, and legal sentiments may not be tomorrow's, and these attitudes tend to diverge by government and region of the world. What is standard practice in terms of collecting personal information in the United States is frowned upon in many parts of Europe. Managing the "Facebook Effect," where people willingly share ever-increasing amounts of personal information, is a challenge for individuals and governments as well as for the software companies that sit in the middle, confronted with inconsistent norms and laws across different locations in the world.

Privacy paradigms are in constant flux, but the need for a consistent approach to meet privacy expectations never changes. Protecting privacy has, at its roots, the need to protect data both at a discrete level and, maybe even more importantly, at an aggregate level. Learning a great deal about a person by combining factors that may seem harmless at a discrete level but, when taken together, may give away information that the person would not want generally known is one such example. This could happen, for instance, by combining someone's Facebook status with the location where he or she logged in to pay an electric bill with the home zip code; this could target wealthy people by knowing that they are not at home, making them vulnerable to burglaries. Each discrete piece of information is not meaningful, but in the aggregate can make someone a potential victim.

Systems exist that can manage the access, movement, and dissemination of data, but in our haste to build out the largest datasets and the maximum computational power, the need to put the right controls in place has been consistently overlooked. Some of this has been naiveté, and some has been a deliberate

stretching of the boundaries of individual expectations. Throughout the evolution of big data, the capability to govern data appropriately has existed, but unless organizations make the choice themselves or are pushed by legal or public pressure, the protection of personal privacy remains a low priority.

SHOWING BIG DATA'S SOPHISTICATED SYSTEMS

Gaining benefits from big data while mitigating risks is entirely a matter of data systems sophistication. This section will explore three examples that demonstrate the successful use of big data.

The first example of that sophistication is on display at a major network of hospitals in the Midwest to address the problem of sepsis—the systemic infection of the body—which is a constant threat to hospitalized patients. Sepsis is usually acquired in the healthcare facility; it is not the reason a patient arrives. Instead, sepsis appears somewhere between a patient's travel between the emergency room, the laboratory, the radiology department, and any other department where treatment is given. If not treated immediately, sepsis usually results in the death of the patient.

This healthcare company realized that, in order to tackle the sepsis problem, they had to create a sophisticated system that could follow a patient throughout his or her stay. The system needed to track patient data despite that patient's location within the hospital and despite the siloed information technology systems that are all too common in healthcare. Most of all, the system needed to bring data together in a way that allows high-speed correlation, based on prior analysis of sepsis data, so that medical staff can be alerted within life-saving time frames. This company's sophisticated system was successful at significantly shortening time frames for response to sepsis and significantly decreased the mortality rate in their facilities. They were successful enough, in fact, to allow their system to be turned into a Software-as-a-Service and contracted to other facilities.²

The second example is one of logistics. Like healthcare, logistics is an age-old practice undergoing big data transformation. It has become far more complicated in recent years because of the explosion of data that connect the customer's customer and the supplier's supplier. We are able to know significantly more in the form of digital data that not only allow the prediction of outcomes but that also allow us to make operational decisions at any point along the supply chain. For a global package delivery company, knowing their business means being able to access all available data to monitor not just the arrival and departure of aircraft but also the aircraft altimeter and attitude in order to provide additional layers of data that provide better insight on the nuanced status of the flight.³ In a similar fashion, today's complex contracts encompass the global movement of pharmaceuticals and other

sensitive cargos that require constantly monitoring all data. A global logistics company must monitor discrete data such as package temperature, location, and time to delivery that continually describe a shipment's ambient conditions; furthermore, these data must be available alongside expiration data and acceptable data ranges.

Those aggregate data form the basis for ensuring non-stop compliance to local and international standards for moving items that require special handling. Those same data ensure that contract terms are being respected and provide the basis for improving profitability while decreasing waste and inefficiency within a contracted service. It is a gift that keeps on giving, as detailed historical shipment data allow better pricing of potential new contracts, making the logistics carrier more competitive and reducing the risk of negotiating and accepting poor contracts. Without the ability to manage all relevant data, logistics companies and their customers would be unable to effectively move cargoes that bring enormous benefits to all parts of the planet.

The third example is seen in retail markets. In retail, the management of big data supports a brand's ability to predict the best product offering and to establish effective marketing and loyalty programs. It also supports better ways to sell and greatly improves customer service execution.⁴ Big data offers an enormous reward to retail because successful selling is ultimately about having an excellent understanding of customers and the circumstances in which they buy. Even more importantly, successful retail is about creating the circumstances that *turn a customer into a fan*. A fan feels a personal connection to the brand and is much more likely to be an advocate. From a revenue perspective, a fan has a much greater total lifetime value.

But creating a fan is not a simple exercise in better customer service. Predictive analytics, heavily dependent on powerful visualization, form the basis for knowing the best moments and the best ways to engage with the customer. Understanding the past is key to predicting the future, and visualization reveals the meaningful patterns in data that tell us what happened under a host of variables in the past. Visual analytics tell the retailer what can be anticipated in today's real-time situations and set the stage for blending information streaming constantly from the website, store, and logistical systems, along with data coming from mobile devices. That information is vitally important to knowing not only how to provide information and offers to help a customer through a purchase, but also how to best serve a customer's needs after products have been purchased. The brand that knows its customers using this approach is leaps and bounds ahead of the one that lacks these capabilities.

Although the rewards are clear, a risk remains in gaining the customer's favor while requiring access to so much personal information. Loyalty programs are the

ideal way to gain that access and avoid the creepiness factor. Focused customer loyalty management elicits the customer's permission through a system of rewards and exclusive offers that provides benefit back to the customer, mitigating the risk of a brand being perceived as stalking the customer or invading their privacy.

ENSURING THE BENEFITS, MITIGATING THE RISKS

Managing the three key trends of leveraging previously untapped data sources, using automation wherever possible, and creating less fragile data systems are crucial parts of ensuring the benefits of big data while mitigating its risks. Accomplishing these three objectives requires successfully meeting big data's two main challenges: the need to visualize by using analytics tools and the need to systematically discover, capture, govern, and secure ever-larger amounts of data.

Big data has a remarkable ability to change the world. Its benefits need to be considered as a function of how well its risks are managed. Truly expert handling of big data brings the reward of being able to react to world-changing events, both big and small, at an unprecedented rate and scope. Epidemics can be tracked and miracle drugs developed, but at the same time, there is a need to ensure that humans are not cut out of the loop. Organizations need to carefully plan for the right level of oversight that gives an aperture of control to humans—after all, big data should be working for the benefit of humans, not the other way around.

Organizations that manage big data have an obligation to monitor security device, server, and application logs, all of which generate machine data that provide insight into how, when, and why machines are communicating with other machines. Monitoring the activities of machines allows organizations to watch for patterns and avoid runaway transactions or manipulation that can lead to fraud and other unintended results. Server logs also provide indications of who accessed data and how these data were used, affording critical oversight into potential illegal or unethical access and use of data. Machine data are monitored by healthcare organizations to show compliance with Health Insurance Portability and Accountability Act (HIPAA) standards, banks to prevent credit card fraud, and governments and corporations to watch for and prevent data loss.

Today's public, legislative, and legal sentiments may not be tomorrow's; these attitudes will continue to diverge by government and region. Governments and other organizations need to balance the Facebook Effect, which entails the deliberate sharing of more and more personal information, with the requirements of security and what the marketplace can use for better customer service and marketing. Organizations, both public and private, need to proactively take steps to prevent privacy intrusion whether the public demands such measures or not. European governments provide an example with the "right to be forgotten" for minors across the European

Union. Those steps may include obtaining approval, either by asking permission or by gaining permission in exchange for tangible benefits for the collection and use of personal data—a common technique used by customer loyalty programs. Organizations should also consider the use of anonymization techniques to mask personal identities where that is the appropriate path.

Organizations, both public and private, must balance the risks and rewards of big data—especially as big data moves from low impact "experiments" to driving real-time operations and decision-making. Although social acceptance of what data can and will be shared is changing and evolving, its impact on privacy and personal security and the introduction of the creepiness factor are all things to consider. Big data is a fast-moving technology space that will affect all aspects of our lives. Transparency about what, how, and why data will be used will become more important as organizations seek to provide better services and products at both the government and private levels. Taken together, the trends and challenges will shape the path forward for organizations that wish to be deliberate and wise about their use of big data.

NOTES

- 1 Hackathorne 2004.
- 2 The website for the service is <http://mercytelehealth.com/services/safe-watch/>.
- 3 Confidential client example.
- 4 Confidential client example.

REFERENCES

- Hackathorne, R. 2004. "The BI Watch: Real-Time to Real-Value." *DM Review*, January (2004). Available at <http://www.bolder.com/pubs/DMR200401-Real-Time%20to%20Real-Value.pdf>.
- Mercy Services. Telehealth Services, Safe Watch. Available at <http://mercytelehealth.com/services/safe-watch/>.

Rebalancing Socioeconomic Asymmetry in a Data-Driven Economy

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It is more than half a century since economist Fritz Machlup, in his book *The Production and Distribution of Knowledge in the United States*,¹ developed the concept of the *knowledge economy*, a term later popularized by management theorist Peter Drucker.² Both used the phrase to differentiate between an economy based largely on goods and services produced by manual labor and an economy based on the production of new ideas, information, and knowledge.

The wide availability of low-cost information and communication technologies (ICTs)—which started in the early 1980s but gained real traction in the mid-1990s with the advent of the public Internet—drove the economic transformation that Machlup and Drucker envisioned. Research by the Organisation for Economic Co-operation and Development (OECD) shows how rapidly the combination of personal computers, digital telecommunication devices, and the Internet impacted economic growth in the early years of that trioka. A 2004 OECD paper estimates that inflation-adjusted investment in ICTs accounted for an average of 0.5 percentage points of annual growth in real GDP in OECD countries between 1995 and 2001.³ This represents about 20 percent of total growth in real GDP—a significant impact. And a 2002 OECD study demonstrated that corporate investment in networked computer systems is consistently associated with increased labor productivity—for example, productivity was found to be 11 percent higher in US manufacturing plants that have computer networks.⁴ It took about 80 years for steam engines to increase labor productivity by approximately that amount, about 40 years for electricity, and more than 20 years for pre-Internet ICTs.⁵

Yet it could be argued that what we saw in the years from the early to mid-1990s was less the emergence of a *knowledge economy* than an *information economy*. Early Internet-era ICTs enabled more efficient and effective processing and use of data, resulting in information that was, for the most part, used to improve the performance of *existing* processes, businesses, and industries. Although in some cases that information transformed businesses completely (e.g., Amazon), these are still traditional businesses. To describe what was created during this period as a *knowledge economy* would be an exaggeration. Much information has been generated from the raw data collection made possible by advances in ICTs, and significant new knowledge has been created, but neither is yet the *foundation* on which the global economy is built. That honor still belongs to physical goods and services.

The recent emergence of big data, along with what is being called the “data-driven economy,” may finally make possible a *true* knowledge economy—by which we mean entirely new classes of economic activity predicated on insights and value derived from analyzing, contextualizing, and commingling vast datasets in ways that were previously either unknown or impossible. For

companies (and entire economies) to keep growing, the development of such an economy is an imperative: battered by global competition, commoditization, and shrinking product/service cycles, corporations seeking to maintain or grow their profit margins will increasingly rely on creating new (and hard-to-emulate) products and services based on insights derived from the datasets that they own or can gain access to, especially those pertaining to their customers.

Two decades after the emergence of the consumer Internet, the world is awash in data. By one estimate, almost 3 zettabytes (3 billion terabytes) of information had been created by 2012, a digital deluge that is growing at around 50 percent a year.⁶ By the end of 2013, the number of wirelessly connected devices, at an estimated 8 billion, will have exceeded the 7.2 billion people on the planet.⁷ By 2020, as many as 50 billion devices could be wirelessly connected to the Internet,⁸ while the world population is forecast to be fewer than 8 billion people.⁹ At the same time, from 2012 to 2017 machine-to-machine data traffic is set to grow an estimated 24 times, to reach 6×10^{17} bytes per month—an astonishing compound annual growth rate of 89 percent.¹⁰ Indeed, the majority of big data will be collected passively and automatically, via machine-to-machine transactions, and users will not be actively involved in the majority of those transactions.

Big data, analytics, and machine learning promise new solutions to previously intractable problems (e.g., in healthcare, disaster response, the environment, and transportation); new businesses will be able to create innovative services by selecting, combining, and parsing data in groundbreaking ways; and individuals will be empowered because they will be able to draw on a wide range of yet-to-be-invented data-based services and tools to improve the quality of their lives. Big data, then, truly does promise to create new knowledge—and indeed new *kinds* of knowledge—on which an entirely new economy can be founded.

However, the knowledge economy relies on the availability of an adequate supply of data to enable the discovery of new knowledge. This requires policy frameworks that permit data—including personal data—to be collected, analyzed, and exchanged freely, across geopolitical boundaries, while minimizing risks and harms to individuals and enterprises globally. Existing regulatory approaches that are based on the principles of notice and consent to restrict the collection of data pre-designated as *personal* may overly restrict the supply of data available, hampering the foundation for the new economy. Furthermore, what is considered *personal* and *acceptable use* are individual decisions, subject to context, perceived value, and social and cultural norms—all of which are in a constant state of flux.

In reality, it is not the *collection* of data that is the source of potential harm, but its unconstrained use. Moreover, in the world of big data, it would be impractical,

if not impossible, for individuals to give express consent for all the data that may be generated about them.

Together, the above factors necessitate a change in policy approach from a collection-based model toward a use-based model, where individuals give permission for the use of data related to them.

What is increasingly clear about an economy based on the collection, use, and analytics of big data is how little we actually know about it—its potential risks and rewards, as well as its implications for individuals, organizations, policy development, and growth. The rest of this chapter will focus on some core challenges that the authors believe could be particularly problematic—and that may threaten to impede the development of a promising 21st-century knowledge economy.

THE DEMISE OF FAIR VALUE EXCHANGE

All previous economic revolutions have been based on the idea of an explicit (i.e., transparent) fair value exchange. For example, in return for \$850, early 20th-century consumers could obtain a 1909 Ford Model T; \$1,565 bought a base-model 1981 IBM PC; and today, a hardback edition of Adam Smith's *The Wealth of Nations* is available for a price of about \$17. The costs and benefits to those on both sides of this value equation (usually an individual and a corporation) are both clear and easily discoverable. The process by which the transaction is executed is well established in modern economics: rational, self-interested economic actors determine the price they are willing to pay for a good or service based on their subjective perception of its utility—something that is usually quite simple for them to determine. Assuming that the market in which the economic actors are engaging is not subject to monopolistic or other distortions, prices tend to settle at the point where supply equals demand.

Research sponsored by Microsoft and published last year by the International Institute of Communications found that, among other things, users *do* consider fair value exchange in allowing the use of their data.¹¹ They have some expectation of what they will receive in return—for example, discounts, better service, an improved product, or potential benefits to the larger community in which they live.

Retailer loyalty cards are an example of this type of transaction, and they also illustrate one of the challenges of the data-driven economy. Most consumers understand that the discounts they receive via a loyalty card are provided in exchange for data they supply to the retailer. But very few realize that the *primary* value to the retailer is the ability to track and analyze the spending patterns of both individuals and aggregated datasets of groups of consumers. In other words, significant information asymmetries are embedded in the transaction, and the average consumer lacks all the information required to make a rational decision about whether he or she should participate in it.

As the global economy becomes increasingly grounded in the exchange of data, the ways in which those data are collected and analyzed will become even more opaque to the consumer and the value exchange even harder to discern; trust will decrease correspondingly. An individual may have only a vague idea of what data exist about him or her and what is being done with these data. Some will have been actively volunteered by the consumer; some will have been obtained passively, with or without his or her explicit knowledge; and yet more may have been inferred by commingling a range of public and private, personal and non-personal datasets in ways that might expose new information or knowledge about each consumer's habits, lifestyle, health, or financial situation. Although the individual may receive something in return for this information, the real values of both the data provided and the service returned (in other words, the underlying exchange of value) may be almost impossible to determine.

Today little agreement exists about how best to value online data. The most comprehensive survey of valuation methodologies was presented in a recent OECD study (on which the authors of this chapter consulted) that identified numerous ways in which data *might* be valued in the market (refer to Box 1).¹² However, each of these methods has significant flaws, and none addresses the potential social and economic benefits of personal data. For example, corporate revenues per record/user are problematic because revenues contribute to economic growth only insofar as they generate added value (or surplus). Revenue of \$4 per record/user with near-zero profitability is very different from \$4 per record/user with 40 percent net profit. Similarly, the vast amount of personal data on Facebook have a relatively low per-person value because the company, while making significant profits from the sheer scale of its data holdings, has yet to find the Holy Grail of social-media data monetization. Amazon, by contrast, collects far less personal information from individuals, but its business model is predicated on advanced purchase analytics. Thus, on a per-user level, its inferred personal data (which are at present mostly outside the user's control) are more valuable than Facebook's volunteered personal data (which the user has painstakingly assembled, and over which she or he has at least nominal control).

Distinguishing personally beneficial uses of data from socially beneficial uses is a further challenge because each creates separate and significant value. For example, the *personal* value of using an electronic health record is improved treatment for the patient—and this undoubtedly has direct monetary value in the form of reduced costs, better outcomes, and so on. But *socially beneficial* uses also create (or could create) value—for example, by facilitating research into new drugs, identifying new epidemiological trends, or improving

Box 1: Potential approaches for estimating the value of personal data

The following methods for valuing personal data have been identified, but each has important drawbacks. Possible approaches include:

- determining the market capitalizations of firms with business models predicated on personal data;
- ascertaining the revenues or net income per data record;
- establishing the market prices at which personal data are offered or sold;
- establishing the economic cost of a data breach;
- determining prices for personal data in illegal markets;
- reviewing economic experiments and surveys that attempt to establish the price companies would need to pay for individuals to give up some of their personal information; and
- ascertaining how much individuals would be willing to pay to protect their data.

Source: OECD 2013.

medical protocols. However, because the value created does not involve explicit market transactions, attributing this benefit directly to data involves some inspired approximation. And even though one estimate puts the savings in this case at up to US\$300 billion,¹³ most of the ways in which data are valued today would consider such benefits an externality to be ignored.

For many people, however, the various ways in which data *might* be valued are largely irrelevant today, because they have already given away their digital crown jewels for free. Individuals are passing massive amounts of personal and other data to large corporations with little or no thought to its potential monetary value—and those corporations are making significant profits as a result, because their cost of materials is essentially zero. The concept of fair value exchange no longer exists, at least not in any conventional sense. Facebook users, for example, provide it with data that have the potential to generate immense long-term value for the company; in return they receive a “free” service, but the transaction is wholly asymmetrical. As the computer scientist Jaron Lanier has observed, “[T]he dominant principle of the new economy, the information economy, has lately been to conceal the value of information.... We've decided not to pay most people for performing the new roles that are valuable in relation to the latest technologies. Ordinary people 'share,' while elite network presences generate unprecedented fortunes.” And if an individual's information is not valued in economic terms, Lanier adds, “a massive disenfranchisement will take place.”¹⁴

In other words, under the current model, the greater the role that data play in the global economy, the less the majority of individuals will be worth. This could mean that a data-driven economy may become a contracting economy. Like Lanier, we believe that if a truly sustainable data-driven economy is to be established, the way in which data are traded between individuals and corporations will require a major reset. For a data-driven economy to thrive, individuals would have to receive fair/appropriate monetary compensation for each specific datum they provide, perhaps with additional payments whenever that datum produces incremental profits for the entity to which it has been given (a concept popularized by Lanier). Such an arrangement would be complex: a specific datum might gain value only when commingled with other data, for example, and any payment/micropayment system would have to be capable of keeping track of such complexities (assuming the individual has given permission for this to happen). And a sustainable data-driven economy might also entail individuals paying fees (likely modest) for services they now consider (erroneously) to be “free.”

Such systems, or similar approaches that address these concerns, will be essential to establish the concept of fair value exchange in the world of big data. The importance to our economic future—to the entire concept of a data-driven economy—of undergoing this evolution cannot be overstated. Without it, the consumers who today are the engine of economic growth will increasingly lose their ability to participate in the economy. Without fair value exchange for data along with inherent trust in the data ecosystem, everyone will ultimately lose—consumers, corporations, and countries alike. Establishing a system of fair value exchange will require new thinking on how technology *and* policy can work in parallel.

DESIGNING A TRUSTWORTHY—AND ECONOMICALLY VIABLE—DATA ECOSYSTEM

We believe that an essential element of the foundation that can enable user trust and fair value exchange is an interoperable metadata-based architecture. In such an architecture, data are logically accompanied by a “metadata tag” that contains references to the permissions and policies associated with the data, along with related provenance information, specified in an extensible and interoperable markup language. The metadata is logically *bound* to the data and cannot legally be unbound or modified for the entire data lifecycle by any parties other than the user or as specified by, for example, a related policy or rules of a “trust framework.” More comprehensive consideration of these issues can be found in *Realizing the Full Potential of Health Information Technology to Improve Healthcare for Americans: The Path Forward* and the *Digital Enlightenment Yearbook 2013*.¹⁵

But the use of metadata does not stop at enabling the enforcement of user permissions and related policies. It can also be utilized to track and capture the *monetary value* produced by personal data, over time, in a decentralized data ecosystem—and consequently provides a foundation for both trustworthy data *and* fair value exchange. Consider: metadata enables individuals to change their personal data preferences and permissions over time, prevent undesirable use of previously collected data, address unanticipated uses, and adjust to changing norms. Thus, if we consider personal data to be the product of an individual’s online “labors,” and if we further consider that, in order to introduce the concept of fair value exchange (and sustainability) into a data-driven economy, those data must be assigned monetary value, then metadata is the mechanism that will enable individuals to “direct” their labors and reap the related benefits for the duration of its existence in the data ecosystem—enabling a more enlightened society in the digital space. How such an approach would incorporate machine-to-machine generation and use of data remains unanswered, however, and requires considerably more research.

Such an approach is technologically non-trivial. A primary challenge is security: although metadata can be logically *bound* to data, it can also be *unbound* by bad actors (a situation similar to the vulnerability of today’s financial systems to hackers). Thus a strong legal and policy framework will be required to ensure that criminals are discouraged from doing this (again analogous to the laws governing today’s financial systems). Another challenge lies in specifying the user permissions and policies that would govern how data can be used within—and shared across—trust boundaries, and how those permissions and policies would be negotiated among the multiple parties with claims on the data or claims to its monetary value.¹⁶ Yet another, highly significant challenge is developing the appropriate interfaces that will enable individuals to specify their permissions, either directly or through other means (such as recommender systems or data intermediaries).

Achieving all this will require the specification of an interoperable metadata-based architecture that can function at Internet scale. The development of such an architecture needs to be a collaboration between multiple data stakeholders to ensure its feasibility and inherent security, as well as its ability to enable alternative policy frameworks.

A metadata-based architecture offers value to all stakeholders in the data ecosystem, not only users. Data controllers and processors can more easily understand and comply with permissions and policies defined for specific data. They can also establish a dynamic, economically viable and sustainable “marketplace” in data that would ideally mirror the way in which fair value exchange is established in the physical world. Solution providers can create applications and services that

produce new business value and track the associated value chain, yet still use data in privacy-preserving ways. Companies can develop metadata schemas that fully describe data use, codes of conduct, and relevant policies to meet industry and regulatory requirements. And regulators can take advantage of greatly improved auditability of data, along with a stronger and better-defined connection between the data and those policies that govern its use.

Although metadata can help facilitate a data-driven economy, it cannot *guarantee* that entities handling the data will honor the permissions and policies associated with them. However, when implemented as part of a principles-based policy framework that provides guidance on trustworthy data practices—supplemented by voluntary but enforceable codes of conduct and underpinned by legal redress—this is a flexible approach that holds the promise of satisfying the interests of regulators, individuals, and industry. In addition, as noted above, the authors believe that metadata could also be a key to establishing a viable and sustainable *economic* ecosystem in a data-driven economy, enabling the monetary value generated by data to be tracked, captured, and realized as payments to and from the ecosystem’s participants.

CONCLUSION AND WAYS FORWARD

There are many challenges here, and today we have more questions than answers. But what is clear is that, in order to create a sustainable data-driven ecosystem, technology and policy must work symbiotically. For that to happen, governments and their regulatory representatives need to partner closely with industry, academic researchers, and consumer groups to gain a better understanding of the issues and to jointly develop innovative and evidence-based approaches to policy frameworks that address the above needs. Similar to evolution of new technologies, such approaches will need to be iterative.

Indeed, our view is that governments are the *only* entities with the ability to convene the broad societal coalition that will be required if the promise of a data-driven knowledge economy is to be fully realized. Such dialogues will, of course, need to be conducted on a global level.

NOTES

- 1 Machlup 1962.
- 2 Drucker 1969.
- 3 Ahmad et al. 2004.
- 4 Astrotic et al. 2002. Data are for value-added labor productivity.
- 5 Bughin and Manyika 2013.
- 6 Gens 2011.
- 7 Cisco 2013.
- 8 Ericsson 2011.
- 9 United Nations, Department of Economic and Social Affairs 2013.

- 10 Cisco 2013.
- 11 International Institute of Communications 2012.
- 12 OECD 2013.
- 13 Manyika et al. 2011.
- 14 Lanier 2013, p. 15.
- 15 See PCAST 2010 and Nguyen et al. 2013. When two or more entities agree to abide by a common set of legal rules, codes of conduct, other business and technical rules, and operational rules, they are generally referred to as belonging to the same trust framework.
- 16 In some respects, this is no more complicated than the agreements that have existed for years among telecommunications carriers—the scale and scope are different, the principles similar.

REFERENCES

- Ahmad, N., P. Schreyer, and A. Wöflf. 2004. “ICT Investment in OECD Countries and its Economic Impacts.” In *The Economic Impact of ICT: Measurement, Evidence and Implications*. Paris: OECD Publishing. 61–83.
- Astrotic, B. K., P. Boegh-Nielsen, K. Motohashi, and S. Nguyen. 2002. *IT, Productivity and Growth in Enterprises: New Results from International Micro Data*. Paper presented at the OECD Workshop on ICT and Business Performance, OECD, Paris, December 9. Available at http://www.rieti.go.jp/it/productivity/docs/DJUS_OECD_.pdf.
- Bughin, J. and J. Manyika. 2013. “Measuring the Full Impact of Digital Capital.” *McKinsey Quarterly*, July. Available at http://www.mckinsey.com/insights/high_tech_telecoms_internet/measuring_the_full_impact_of_digital_capital.
- Cisco. 2013. *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012–2017*, February 6. Cisco. Available at http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf.
- Drucker, P. F. 1969. *The Age of Discontinuity: Guidelines to Our Changing Society*. New York: Harper and Row.
- Ericsson. 2011. *More Than 50 Billion Connected Devices*. Ericsson White Paper 284 23-3149 Uen, February. Available at <http://www.ericsson.com/res/docs/whitepapers/wp-50-billions.pdf>.
- Gens, F. 2011. *IDC Predictions 2012: Competing for 2020*. IDC #231720, Volume 1. Framingham, MA: IDC. Available at <http://cdn.idc.com/research/Predictions12/Main/downloads/IDCTOP10Predictions2012.pdf>.
- International Institute of Communications. 2012. *Personal Data Management: The User’s Perspective*. International Institute of Communications. Available at http://www.iicom.org/open-access-resources/doc_details/226-personal-data-management-the-users-perspective.
- Lanier, J. 2013. *Who Owns the Future?* New York: Simon & Schuster.
- Machlup, F. 1962. *The Production and Distribution of Knowledge in the United States*. Princeton, NJ: Princeton University Press.
- Manyika, J. M. Chui, B. Brown, J. Bughin, R. Dobbs, C. Roxburgh, and A. Hung Byers. 2011. *Big Data: The Next Frontier for Innovation, Competition and Productivity*. McKinsey Global Institute Report, May. Available at http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation.
- Nguyen, M.-H. C., P. Haynes, S. Maguire, and J. Friedberg. 2013. “A User-Centred Approach to the Data Dilemma: Context, Architecture, and Policy.” In *Digital Enlightenment Yearbook 2013*. IOS Press Ebooks. 227–42. Available at <http://ebooks.iospress.nl/publication/35146>.
- OECD (Organisation for Economic Co-operation and Development). 2013. “Exploring the Economics of Personal Data: A Survey of Methodologies for Measuring Monetary Value.” *OECD Digital Economy Papers*, No. 220. OECD Publishing. Available at http://www.oecd-ilibrary.org/science-and-technology/exploring-the-economics-of-personal-data_5k486qtxldmq-en.

PCAST (President's Council of Advisors on Science and Technology).
2010. *Realizing the Full Potential of Health Information Technology to Improve Healthcare for Americans: The Path Forward*, December. Available at <http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-health-it-report.pdf>.

United Nations, Department of Economic and Social Affairs. 2013.
World Population Prospects: The 2012 Revision. Available at <http://esa.un.org/wpp/>.

Building Trust: The Role of Regulation in Unlocking the Value of Big Data

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“Data is a precious thing. . .” and “...that’s why I’ve called data the new oil. Because it’s a fuel for innovation, powering and energizing our economy.”¹ These were the words of Neelie Kroes, Vice-President of the European Commission responsible for the Digital Agenda, when speaking about the value of big data earlier in 2013. As Kroes noted, data comprise a fuel we have only just begun to tap.

This “new oil” is certainly plentiful. Trillions of bytes of data are generated by companies that capture information about their customers, suppliers, and operations. Networked sensors and software embedded in devices and appliances are further energy generators, as are the growing volumes of media content. These sources of data do not even include the billions of individuals around the world generating the same fuel on their smartphones, personal computers, and laptops. And the volumes of data are exploding. McKinsey recently estimated that the data collected globally will grow from some 2,700 exabytes in 2012 to 40,000 exabytes by 2020.² To put this into context, a single exabyte of data equals a hundred thousand times all the printed material of the Library of Congress.

Definitions of big data vary greatly. Rather than put a number on what qualifies as “big,” McKinsey defines it as datasets so large that typical database software tools are unable to capture, store, manage, and analyze them. Such a definition allows for the fact that the size of datasets regarded as “big” will also grow with the advance of technology.³

Whatever the precise definition, big data is widely acknowledged to create value in four ways. It creates greater transparency by making more and better information available more quickly. It helps organizations create highly specific segmentations, enabling them to tailor products and services more precisely. It helps improve decision-making by providing better tools for analysis. And it supports innovation in the form of new products and services.

Big data can create significant value for the whole economy. McKinsey research shows that companies that use big data can deliver productivity and profit gains that are 5 to 6 percent higher than those of competitors. The private sector is not the only beneficiary, however. Big data can also enhance productivity and effectiveness of the public sector and create economic surplus for consumers. For example, the McKinsey Global Institute estimates that US healthcare expenditure could be reduced by 8 percent by using big data to drive efficiency and quality.

No wonder, then, that governments and political institutions are promoting big data on their agendas and adopting initiatives such as the European Union’s open data directive, which aims to give both citizens and member governments access to a raft of government

Please note: The views expressed in this article are those of the authors and do not necessarily represent those of McKinsey and Company.

Figure 1: Consumers' privacy protection concerns



Sources: USC Dornsife/Los Angeles Times 2012; European Commission 2011.

* These data are taken from the Special Eurobarometer poll published in 2011. Respondents were asked to select 4 out of 12 possible responses to the question of what should happen to companies that breach protection rules. We present the top 3 responses here.

data. Governments understand that big data's economic and social potential can grow only alongside continued innovation in the underlying technologies, platforms, and analytic capabilities for handling data, as well as the evolution of behavior among its users. Recent McKinsey research shows that enabling "open data" or "liquid data" across seven domains—education, transportation, consumer products, electricity, oil and gas, healthcare, and consumer finance—can generate more than US\$3 trillion in additional value a year.⁴

There is no guarantee, however, that this potential will be fully realized. Several obstacles lie in the way. The uptake of big data will depend on the adoption of next-generation telecommunications infrastructure, which is still in its early development in many parts of the world. Another prerequisite is a large enough pool of talent with the advanced analytical skills needed to put the data to good use. This workforce will need to be trained. Equally, big data uptake will hinge on whether ways can be found to protect information technology infrastructures and the data they carry from cyberattacks. A further imperative is to build the trust of citizens, who are growing increasingly suspicious about how information about them is being used.

Regulation plays a role in tackling all these obstacles. This chapter focuses only on the need to build trust. It examines the various broad types of regulatory frameworks that are emerging to protect privacy. Furthermore, it identifies the key issues that regulators will need to consider as their policies evolve if their aim is to foster trust while not stifling the enormous potential of big data, and it outlines some actions

companies can take themselves to promote consumer trust.

CONSUMER TRUST AS AN ENABLER OF BIG DATA

Research reveals that consumers are increasingly concerned about how their personal data are used (Figure 1), although the level of concern varies according to the type of data being considered. Consumers care more about their financial transactions and health-related information than about their online habits, for example. The recent revelations by Edward Snowden disclosing US government data collection practices and the extraction of data from a number of large Internet companies have further raised public awareness about privacy issues and data protection in the online world.

If big data is to deliver on its promise, companies will need both to create customer trust in big data applications and their use and to help customers feel safe about the protection of their personal data and privacy. Governments and regulators will need to frame data protection policies that safeguard the privacy of both customers and citizens. At the same time, these policies must not stifle the innovation that big data can deliver, or its attendant economic and social benefits.

DATA PROTECTION ARCHETYPES ACROSS THE WORLD

The protection of personal data has long been viewed as a fundamental right, enabling individuals to be in control of data about their own person and preventing unnecessary listings and discriminatory behavior. Individuals can exercise this control by explicitly giving or withholding consent before their personal data are

used. They have a right to be informed if those data are to be used, and for what purpose. Companies and organizations using their data are also required to protect it from unauthorized use. There are strict measures in place to protect medical data and credit information.

But the issue has become more complicated in the Internet era. Some argue that this right should be safeguarded more strongly than ever when so many companies and organizations are seeking access to personal data and can gain that access more easily. On the other hand, as we have seen, economic, social, and personal benefits can arise from sharing data, and many consumers are perfectly happy to give up some of their privacy in return for certain goods or services.

Data protection laws are evolving not only in an attempt to keep pace with technological developments and new ways of using, collecting, and sharing personal data, but also to keep pace with attitudes toward privacy. To better understand the state of play, McKinsey has conducted extensive research into the data protection regulatory frameworks of more than 20 countries worldwide, identifying the key principles and requirements (Figure 2).

From our research we have identified three main archetypes of the level of regulation imposed around the world: from the least to the most extensive, these are regulations with a light touch, those with a minimum standard, and those with strict ex-ante requirements.

- **Light touch/self-regulation.** This is the approach used in the United States, where there is no general federal data protection law. Instead, different sectors—such as healthcare, telecommunications, and finance—are regulated by specific laws applying only to these sectors. These laws are enforced by sector-specific authorities. Separate states can also stipulate their own general regulations. Generally the onus is on industries and the companies within them to build trust with their customers, either by issuing and following codes of conduct or via contractual arrangements. Companies are responsible for the privacy statements issued to their customers and can face judicial sanctions for non-compliance. Facebook and Google are two recent cases in point.⁵
- **Minimum standard setting.** In Asia, the Asia-Pacific Economic Cooperation (APEC, a forum of 21 Asia-Pacific economies) has developed a self-regulatory framework setting out the principles that economies should implement and companies then follow to ensure a common, minimum level of data protection across member economies. The aim is to enable the easier transfer of data among economies where the level of data protection regulation varies greatly. Although some Asian economies (such as Pakistan) still lack data protection laws entirely

or have recently introduced them (e.g., China and India), others—such as Japan—have well-developed laws. Examples of minimum-level principles are the requirement that individuals (where appropriate) should be able to exercise choice about the collection, use, or disclosure of their data, and that the data collected should be accurate, complete, and up to date.⁶

- **Strict ex-ante requirements.** Ex-ante requirements apply in Europe, where both the Council of Europe and the EU Commission have developed extensive frameworks to protect data and privacy in their respective member countries.⁷ These frameworks not only define what is regarded as personal data and how such data can and cannot be used, but they also set organizational and technological requirements. Companies should, for example, implement technological and organizational measures to protect the data gathered. Furthermore, strict liabilities are in place relating to both companies and cooperation frameworks for regulators. The frameworks stipulate that data from the European Union may be transferred only to countries that have an appropriate level of protection.⁸

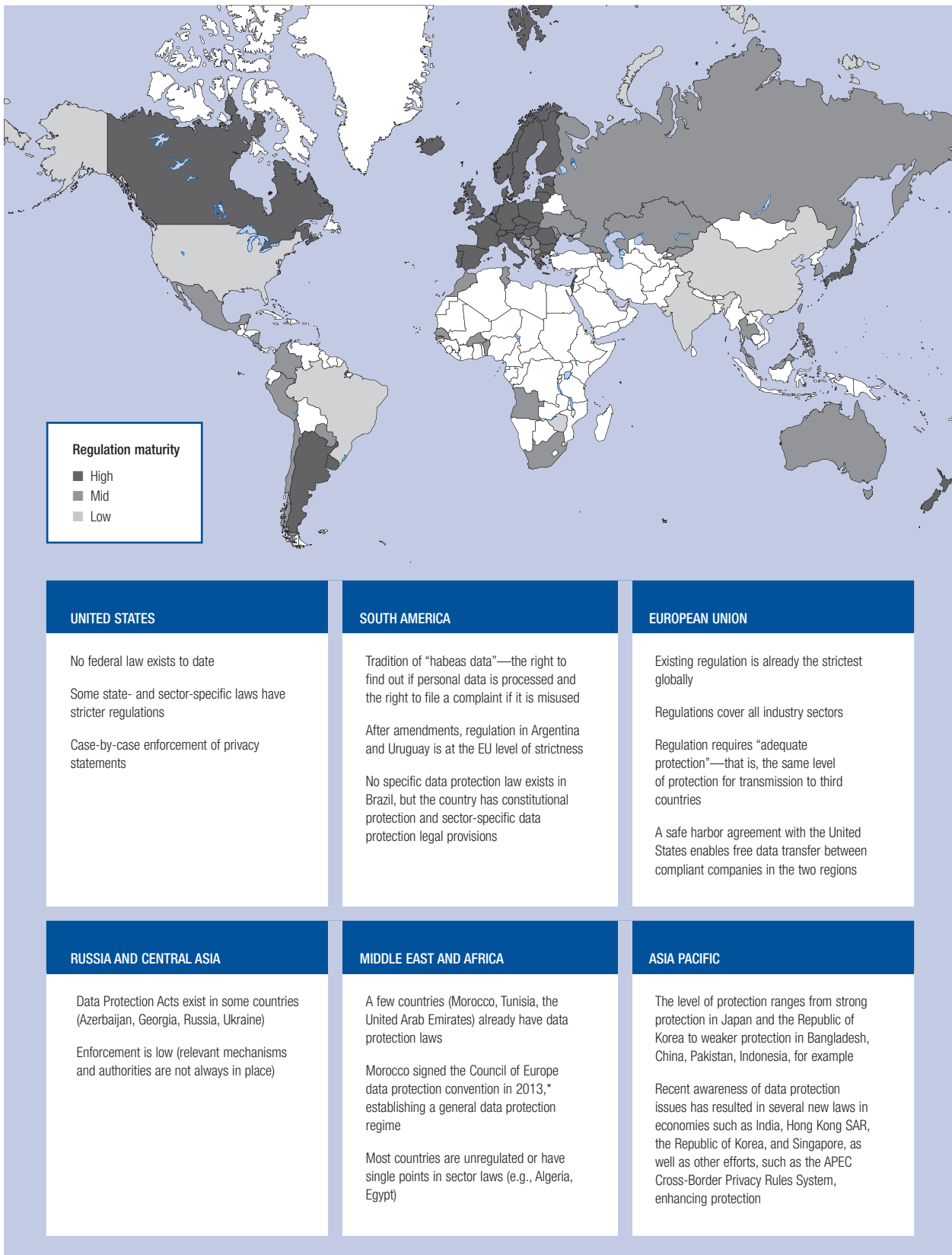
All three regulatory archetypes are constantly evolving. One example of this evolution is that the European Union is currently updating the existing data protection directive from 1995 to better meet the requirements of today's data-intensive world.⁹ In the United States, the Federal Trade Commission (FTC) has increased its focus on data protection issues and has published several reports and recommendations on the topic in the past few years. It has also taken on a stricter role regarding the enforcement of companies' own privacy statements.¹⁰ The APEC framework was set up in 2004 and has evolved over the past 10 years.

Opinions on the best approach to data protection and privacy regulation differ. Some experts argue that it is better to adopt a light-touch approach in a technologically dynamic world because detailed, specific regulation could quickly become obsolete and even hinder technological and business development. Others argue that increasingly powerful technology makes a stricter regulatory approach necessary to protect privacy. Whatever approach is taken, we believe data protection and privacy regulation is becoming more and more important across the world, and countries and companies need to embrace it to create competitive advantages for them in the future.

KEY REGULATORY AREAS FOR BIG DATA UPTAKE

Whatever approach any single government or regulator chooses to adopt, all will need to pay particular attention to key areas that require further clarification to support the kind of innovation and prosperity that big

Figure 2: Variation in data protection regulation across markets



Sources: Council of Europe 2013a, b; European Commission 1995, 2002, 2012; IAPP 2013a, b.

* The convention was initiated and signed by Member States of the Council of Europe in 1981. See Council of Europe, Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data (ETS No. 108), available at <http://conventions.coe.int/Treaty/en/Treaties/Html/108.htm>.

data can drive, while maintaining customer trust and data protection. These areas include: consent before collection, a definition of *personal data*, anonymization, the right to be forgotten, relevant jurisdiction, and liability issues. Each of these key areas is discussed below.

Consent before data collection. A key principle in the European regulatory framework is the need to obtain personal consent before data are gathered. Anyone wanting to use an individual's data must first seek his or her permission. But with so much information now available and being gathered, seeking that approval can be a slow, tedious process for companies and consumers alike and can hinder big data development. Cookies on the Internet are a simple example. Surfing the web would be more convenient without cookie notifications and approvals. The APEC framework recognizes this, and the framework states that “where appropriate, individuals should be provided with . . . mechanisms to exercise choice in relation to the collection, use and disclosure of their personal information.”¹¹ However, determining where such choice is appropriate is open to interpretation.

The definition of personal data. The suggested EU framework defines *personal data* as “any data that can be attributed to an identifiable person either directly or indirectly.” The APEC framework describes *personal data* as “information about an identified or *identifiable* individual.” Both these definitions mean that not only data clearly identifying a person with information such as a name or address is considered to be personal data, but also data that can be attributed to a person indirectly through some other measure, such as via a mobile phone number or an identity code. In a big data world where a lot of data are interlinked, it can be difficult to know exactly when data become “personal.” Is it only data that identify a person with certainty, or does it also include data that identify someone with high probability? How about a person's actions? Performance? Or buying behavior? To give a concrete example, a US retail chain identified new parents as a very lucrative market segment. The chain analyzed their customers via characteristics such as their shopping habits, age, or marital status to spot customers who were pregnant. They then sent those customers direct marketing material for their baby products ahead of their competitors, who sent their material only after the child's birth.¹² However, information on pregnancies is extremely sensitive, and such material could risk disclosing a pregnancy that has not yet been announced. This could clearly be seen by some as an intrusion of privacy, but the issue is not entirely clear from a legal perspective.

Anonymization. Closely linked to the dilemma of how to define which data are personal is the issue of data anonymization or sanitization. Traditionally, anonymous data have not been subject to data protection laws. However, in a big data world where anonymized data can easily be linked up, it is not very

hard to build a profile of a person without traditional means of identification such as a name or address. For example, a team at Harvard was able to identify individuals from anonymized data in a genetics database by cross-referencing it with other public databases. The accuracy rate was 42 percent based on the use of only three types of information—zip code, date of birth, and gender—and rose to 97 percent when the first name or nickname was added.¹³ Another example is the use of de-anonymization tools by researchers from Texas University on 500,000 Netflix users who had anonymously voted for their preferred movies back in 2007. In this case, the researchers also managed to identify users by linking the anonymized ratings with another public database with movie ratings.¹⁴ It can therefore be argued that the use of anonymous data can potentially constitute an intrusion of privacy.

Another question related to data anonymization is the right of companies to use the personal data already in their possession and turn them into anonymized data that they sell to others. Some companies are selling their customer data—such as location and application data of telecommunications companies—to other companies in anonymized and aggregated form for marketing purposes. Companies can target their marketing more effectively by using these data to learn about their customers. Internet companies are also matching their customer data and online habits with data from other companies to better target their online advertising.¹⁵ Several questions arise from a privacy perspective. When can data be considered anonymized? Does using a pseudonym make data anonymous? Are companies allowed to use anonymized data without the customer's consent, or must customers give their prior approval? Should that consent be granted before use, or is it enough to allow customers to opt out?

The right to be forgotten. The new EU data protection framework proposes introducing a right for users to request that data controllers remove their personal data from their files. Although on paper it sounds easy to remove personal data relating to an individual upon request, this may not be so easy in the real world. The European Union Agency for Network and Information Security (ENISA) states that a great deal of data are stored in different places in the cloud for security reasons, and these data may have been aggregated or amended into new forms, such as statistical data. Thus removing some specific data from all systems upon request may be entwined with the aggregated data. Clearly this is not such a straightforward task in a virtual environment, and there is no single technical method to enable this easily.¹⁶

Relevant jurisdiction. Data are increasingly used and stored across borders, but regulation is still largely national in its scope and regulators lack jurisdiction in markets outside their own. The uncertainty about jurisdictions creates problems for companies and

consumers alike. Which regulations apply to companies from another country? Which judicial authority has the right to intervene in disputes? What happens in cases where a company breaches laws across many markets? In its recent proposal on the new EU data protection regulation, the European Union extends the applicability of its regulation to companies outside the European Union that are handling data relating to European Union-based individuals.

Liability issues. In today's world, companies often cooperate to produce big data applications and solutions. One company orders software from another, which in turn uses a third company as a contractor, which stores its data within a cloud service operated by yet another. If data are leaked, it can be very difficult to decide which company is liable.

The above remaining gray areas must be considered and clarified so that both consumers and companies using big data clearly know what the rules are in order to ensure a certain environment that is conducive to investment and market growth. In the next sections we propose several options for regulators and companies to make the big data environment more certain.

IMPLICATIONS FOR REGULATORS AND POLICYMAKERS

Regulators will need to address all the above issues when shaping their personal data protection policies. Although not prescribing any single solution, certain principles will help guide regulators in their deliberations and ensure the necessary regulatory balance. These principles include the need to establish regulatory stability, cooperation with members of industries and different countries, and promoting industry self-regulation. Each of these principles is discussed below.

Regulation in any field always works best if it creates a stable environment in which companies and other organizations can operate. When it comes to data protection, companies and other organizations will need regulatory certainty if innovation is to be encouraged. Providing that stability is likely to be easier if regulators focus not on specific regulations that may quickly become obsolete, but instead on establishing non-discriminatory technology-neutral high-level regulatory principles that last.

Regulators should cooperate with companies and other stakeholders within the industry when revisiting their regulatory frameworks. This will help to understand the business issues and allow them to be at the forefront of developments without hampering industry development.

Regulators should also cooperate internationally to establish common international norms and clarity around applicable legislation. International discussions are already taking place on specific issues. Regulators in the European Union and the United States have a safe harbor framework, for example, that allows US-based

companies to transfer data between the two regions without further approval from EU-based regulators. These safe harbor provisions are currently being revisited. US and Asian regulators are cooperating around the APEC framework; the United States is the first non-APEC market to sign the minimum standard framework. An even a wider take on data protection issues in the big data environment would be beneficial for all parties.

Whatever their approach to regulation, governments should promote industry self-regulation. Self-regulation is the best way to achieve a commonly accepted code of conduct for a specific industry. This has already been done in specific areas—for example, the use of personal data in mobile marketing—but so far efforts have occurred mainly at the country level, in markets such as the United States and the United Kingdom. An international industry standard specifically concerning the use of personal data protection in big data would certainly be beneficial to establish a higher level of trust among consumers and create a clear data protection standard for companies. The weakness of industry self-regulation is obviously enforcement, because self-regulation is not normally legally binding.

By efficiently managing all stakeholders, regulators can establish a transparent legal framework that helps promote industry growth rather than hindering it with unnecessary legal burdens.

IMPLICATIONS FOR COMPANIES

The onus is not just on regulators to build an environment of trust where citizens feel their privacy will be properly protected. Companies also have a key role to play. If they develop an efficient data protection strategy, companies may also gain competitive advantage in the form of cost savings, organizational efficiency, and—importantly—reputational advantage. To maximize the benefits of big data and to build trust, a number of actions could be considered.

The first action a company should take is to assess its regulatory and operational starting point. Understanding customer concerns and regulatory issues early will help companies determine the areas of risk they need to start tackling. It will also outline the company's strengths and determine the best way to leverage those strengths to develop their big data strategy. For example, a company may wish to build on its reputation as a reliable company that safeguards customers' personal data or position itself as an innovative company with cool services based on its users' behavior and habits or preferences.

A company should also build a privacy-by-design mentality. It goes without saying that companies will need to comply with relevant regulations. But gaining consumers' trust is a question of mentality, too. Many companies may find they need to implement changes across the organization as well as in relevant processes and technology applications to protect consumer privacy.

Companies should strive to make data protection part of the company culture. They can avoid costs occurring at a later stage (when compliance measures are needed) by implementing data protection in their processes from the start.

Companies must also cooperate with regulatory authorities. Privacy and data protection regulation is constantly evolving. This means that companies will need to establish a close relationship with national regulators to ensure compliance and to make certain that the regulators and policymakers understand the business issues at hand and the benefits of big data for society.

Furthermore, companies need to cooperate with other industry participants. Cooperating to develop industry-specific norms and standards will help to create an industry norm that enables consumers to have greater trust.

Importantly, companies also should empower customers. Customers' concerns about privacy are often alleviated if they are able to make their own decisions about what data they do or do not share. Providing transparent privacy policies or simply informing the customer of the scope of data handling as well as requesting clear consent declarations from customers also helps create customer trust without sacrificing big data business opportunities. Technological tools help, as they can allow customers to adjust their privacy settings and choose whether to opt in or out of services. One example of this is British Telecom's cookie settings, which allow the customer to set the level of cookies allowed and choose the level of privacy they are ready to sacrifice for better services or service quality.

Companies have a key role to play in creating consumer trust. Success in this area is not only about managing regulators and compliance, but also about creating a reputation as trustworthy and reliable in terms of both secure operations and fair commercial practices. As mentioned in the beginning of this chapter, customers are usually willing to share personal data if the value of the service is attractive enough and the customers feel they get more in return than they give up.

CONCLUSION

Big data offers a wide range of opportunities—not just for individual companies, but also for nations and society as a whole. Both regulators and companies have large roles to play to ensure positive development in this emerging market with such great potential.

Regulators and policymakers should respond swiftly to regulatory and policy concerns regarding big data development. They must enable fast network build-out. They must also ensure the education and training of a qualified workforce and safeguard Internet safety. And they must address consumer disquiet about privacy and the protection of personal data—an area where several issues are unclear and require further consideration and

clarification, ideally in cooperation with players across the industry value chain and at an international level.

Above, a number of suggestions about how companies might respond to these concerns were outlined. Initially companies should conduct an assessment of their regulatory and operational status quo to identify risks and opportunities. They should consider implementing a privacy-by-design mentality to avoid unnecessary costs while ensuring compliance. Companies should also consider cooperating both with regulators and others within their industry to create trust of their specific sector. Key for gaining customer trust will, however, be the empowerment of customers by clearly communicating their privacy policies to them, giving them options for their privacy settings, and requesting consent declarations. Companies need to ensure that their customers understand what choice means in terms of service performance and make sure their services are providing more value to the customer than the loss of privacy is worth.

It is only by addressing customer concerns at different levels within the industry that the big data industry can eventually evolve to its full potential.

NOTES

- 1 Kroes 2013a, b.
- 2 Lund et al. 2013.
- 3 Manyika et al. 2011.
- 4 Manyika et al. 2013.
- 5 FTC 2010–14; see www.ftc.gov/opa/reporter/privacy/privacypromises.shtml.
- 6 APEC 2005.
- 7 Council of Europe 1981; European Commission 1995, 2002.
- 8 European Commission 1995.
- 9 European Commission 2012.
- 10 FTC 2010–2014; see www.ftc.gov/opa/reporter/privacy/privacypromises.shtml.
- 11 APEC 2005.
- 12 Duhigg 2012.
- 13 Sweeney et al. 2013.
- 14 Narayanan and Shmatikov 2008.
- 15 Steel 2012.
- 16 ENISA 2011.

REFERENCES

- APEC (Asia-Pacific Economic Cooperation). 2005. *APEC Privacy Framework*. Available at http://www.apec.org/Groups/Committee-on-Trade-and-Investment/-/media/Files/Groups/ECSCG/05_ecsg_privacyframewk.ashx.
- Beardsley, S., L. Enriquez, W. Torfs, F. Grijpink, S. Newman, S. Sandoval, and M. Strandell-Jansson. 2013. "Re-Establishing the European Union's Competitiveness with the Next Wave of Investment in Telecommunications." In *The Global Information Technology Report: Growth and Jobs in a Hyperconnected World*. Geneva: World Economic Forum, INSEAD, and Cornell University. 93–100.

- Council of Europe. 1981. *Convention for the Protection of Individuals with Regard to Automatic Processing of Personal Data*. Available at <http://conventions.coe.int/Treaty/en/Treaties/Html/108.htm>.
- . 2013a. Human Rights and Rule of Law: Data Protection. Available at http://www.coe.int/t/dghl/standardsetting/DataProtection/default_en.asp.
- . 2013b. Human Rights and Rule of Law: Data Protection: National Laws. Available at http://www.coe.int/t/dghl/standardsetting/dataprotection/National%20laws/National_laws_en.asp.
- Duhigg, C. 2012. "How Companies Learn Your Secrets." *The New York Times*, February 16. Available at http://www.nytimes.com/2012/02/19/magazine/shopping-habits.html?pagewanted=all&_r=1&.
- ENISA (European Union Agency for Network and Information Society). 2011. *The Right To Be Forgotten: Between Expectations and Practice*. Heraklion, Greece: ENISA. Available at <https://www.enisa.europa.eu/activities/identity-and-trust/library/deliverables/the-right-to-be-forgotten/>.
- European Commission. 1995. *Directive 95/46/EC on the Protection of Individuals with Regard to the Processing of Personal Data and on the Free Movement of such Data*. Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31995L0046:en:HTML>.
- . 2002. *Directive 2002/58 on Privacy and Electronic Communications*. Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:201:0037:0037:EN:PDF>.
- . 2011. *Special Eurobarometer 359: Attitudes on Data Protection and Electronic Identity in the European Union*. Brussels: Directorate-General Communication. Available at http://ec.europa.eu/public_opinion/archives/ebs/ebs_359_en.pdf.
- . 2012. *Proposal for a Regulation of the European Parliament and of the Council on the Protection of Individuals with Regard to the Processing of Personal Data and on the Free Movement of such Data (General Data Protection Regulation)*, COM (2012) 11 final. Available at http://ec.europa.eu/justice/data-protection/document/review2012/com_2012_11_en.pdf.
- FTC (Federal Trade Commission). 2010–14. *Protecting Consumer Privacy: Making Sure Companies Keep Their Privacy Promises to Consumers*. Available at www.ftc.gov/opa/reporter/privacy/privacypromises.shtml.
- IAPP (International Association of Privacy Professionals). 2013a. IAPP Home Page. Available at <https://www.privacyassociation.org/>.
- . 2013b. IAPP: Data Protection Authorities. Available at https://www.privacyassociation.org/resource_center/data_protection_authorities.
- Kroes, N. 2013a. "The Big Data Revolution." Speech given by Neelie Kroes, Vice President of the European Commission responsible for the Digital Agenda, March 26. Available at http://europa.eu/rapid/press-release_SPEECH-13-261_en.htm.
- . 2013b. "The Economic and Social Benefits of Big Data." Speech given by Neelie Kroes, Vice President of the European Commission responsible for the Digital Agenda, May 23. Available at http://europa.eu/rapid/press-release_SPEECH-13-450_en.htm.
- Lund, S., J. Manyika, S. Nyquist, L. Mendonca, and S. Ramaswamy. 2013. "Game Changers: Five Opportunities for US Growth and Renewal." *McKinsey Global Institute Report*, July. Available at http://www.mckinsey.com/insights/americas/us_game_changers.
- Manyika, J., M. Chui, B. Brown, J. Bughin, R. Dobbs, C. Roxburgh, and A. Hung Byers. 2011. "Big Data: The Next Frontier for Innovation, Competition and Productivity." *McKinsey Global Institute Report*, May. Available at http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation.
- Manyika, J., M. Chui, D. Farrell, S. Van Kuiken, P. Groves, and E. Almasi Doshi. 2013. "Open Data: Unlocking Innovation and Performance with Liquid Information." *McKinsey Global Institute, McKinsey Center for Government, and McKinsey Business Technology Office Report*, October. Available at http://www.mckinsey.com/insights/business_technology/open_data_unlocking_innovation_and_performance_with_liquid_information.
- Narayanan, A. and V. Shmatikov. 2008. *Robust De-anonymization of Large Datasets*, February 5. The University of Texas at Austin. Available at http://arxiv.org/PS_cache/cs/pdf/0610/0610105v2.pdf.
- Steel, E. 2012. "Datalogix Leads Path in Online Tracking." *The Financial Times*, September 23. Available at <http://www.ft.com/intl/cms/s/2/8b9faecc-0584-11e2-9ebd-00144feabdc0.html#axzz2idgoMkIT>.
- Sweeney, L., A. Abu, and J. Winn. 2013. *Identifying Participants in the Personal Genome Project by Name*. Harvard University. Data Privacy Lab. White Paper 1021-1, April 24. Available at <http://dataprivacylab.org/projects/pgp/>.
- USC Dornsife/Los Angeles Times. 2012. "Voters Across the Political Spectrum Concerned About Tech Companies Invading Their Privacy." Press Release, March 21. Available at <http://dornsife.usc.edu/usc-lat-poll-privacy-march-2012/>.

From Big Data to Big Social and Economic Opportunities: Which Policies Will Lead to Leveraging Data-Driven Innovation's Potential?

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Over the last few years, myriad examples of innovation in data analysis have emerged, creating new business models for data-driven innovation. For example, businesses are developing ways for real-time weather information to be communicated to devices in the field that can advise farmers on pest activity, water supply, and inclement weather.¹ The Royal Netherlands Meteorological Institute has found a way to generate extremely accurate rainfall information using nothing more than existing data from cell-tower installations.² The next phase of the Internet's evolution has us on a clear path toward a "revolution of data."³ Every year, the costs associated with the production, collection, storage, and dissemination of data come down, making those data more readily available. This process is fomented by the increasing migration of many social and economic activities to the web.⁴ More data are generated today than ever before; this is a positive trend that will inevitably continue: 90 percent of the world's information generated through the history of mankind has been generated over the last two years,⁵ while data generated per year is growing at a rate of 40 percent.⁶

In this chapter we will focus on the social and economic value of data, but from the point of view of use and purpose rather than volume. We will therefore talk about data driven-innovation instead of "big data," and will provide case studies from different areas, with a special consideration of how data-driven innovation in the public sector could improve policymaking. We will finish the chapter by describing the main issues that should be addressed by policymakers, who can leverage the potential of data-driven innovation in their communities through forward looking policies.

WHY SPEAK OF DATA-DRIVEN INNOVATION INSTEAD OF BIG DATA?

It has become axiomatic that more data are produced every year, and somehow this phenomenon has driven commentators to call this revolution "the age of big data." However, what is commonly known as big data is not a new concept, as the use of data to build successful products and services, optimize business processes, or make more efficient data-based decisions already has an established history. Innovative uses of data have been key to developing new products and making more efficient decisions for quite a long time, and these activities have become more common and more efficient with the availability of modern computing. Crunching data, statistics, and trends in new ways has always helped change the way that entire sectors operate. Agriculture is one of the first major sectors to have benefitted from the aggregation and analysis of data: in 1793, the *Farmer's Almanac* found a

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niche when it published its first report more to provide landowners with guidance for what they might expect in the coming year and to plan their crops accordingly.⁷ It took 183 years for paper-based, manpower-intensive analysis to become automated, but in 1950, a team of meteorologists used the Electronic Numerical Integrator and Computer (ENIAC) computer to make the first successful numerical weather prediction.⁸

Moreover, the term *big data* is ambiguous, and it sets up data as a negative because of the implication that “big” is “bad.” Indeed, many common definitions of big data usually focus not on size but instead on various characteristics, including the frequency of production, speed, volume, variety, and capacities needed to manage and process information.⁹ McKinsey, for example, describes *big data* as “datasets whose size is beyond the ability of typical database tools to capture, store, manage and analyze.”¹⁰ The implications of this definition are that the main features of big data (quantity, speed, variety) are technical properties that depend not on the data itself, but instead on the evolution of computing, storage, and processing technologies.¹¹ What may look like big data today will not likely be as “big” in the near future.

Thus, what is important about data is not their volume, but how they may contribute to innovation and therefore be used to create value. Data alone do not possess inherent value; instead it is the processing of data in innovative ways that brings new economic and social benefits, and this value creates a virtuous circle to feed into more use of data-based decision-making and analysis.¹² In other words, it is the use of data that really matters.¹³ One way to measure this value is to measure the socioeconomic metrics (or to estimate the future potential) obtained from the use of data. The excitement that we are seeing with new deployments of data to fuel innovation is not just because of the volume of data, nor is it about the data themselves. As pointed out by the Software and Information Industry Association, “transformative data can be big or small or even the ‘needle’ of data found in a giant haystack.”¹⁴

The truth is that data are data, and that has not changed for centuries. When “big data” is no longer a trendy concept, data will continue to drive innovation, and solutions for new problems will come from new ways of analyzing and interpreting data, regardless of volume or our technological capacities to manage it. In the next section, we will address what we see in the future for data-driven innovation.

THE BENEFITS OF DATA-DRIVEN INNOVATION

Many sectors benefit from data-driven innovation: healthcare (e.g., diagnosis and treatment), financial services (e.g., analyzing market trends and economic conditions), and transportation and public administration (e.g., metrics on what citizens want and where

economic development is headed), to name a few. In one example, a philanthropic research center stores and analyzes the cancer genome and the sequences and mutations of more than 10,000 cancer cases to understand the complexity of the disease.¹⁵ In another recent project, a university-based group of academics mined data from 60 years of historical weather records to identify the factors that are most predictive of hurricane activity.¹⁶ In the private sector, PayPal has developed a system that screens payments and combines them with IP addresses, browser information, and other technical data to identify and prevent fraudulent activity in online payments, bolstering trust for commercial exchanges on the Internet.¹⁷ A startup firm has developed a no-cost platform for users that helps travelers predict flight delays using an algorithm that scours data on every domestic flight for the past 10 years and matches it to real-time conditions.¹⁸ Finally, the United Nations is working with governments around the world to understand global trends related to hunger, poverty, disease, and job loss.¹⁹

However, because data-driven innovation takes place across various sectors of the economy and society, it is sometimes difficult to quantify its full economic impact. For example, using any traditional measure of Gross Domestic Product (GDP), Wikipedia does not contribute any economic value.²⁰ This makes no sense in today’s world, as economists are now demonstrating that a fundamental problem exists in our ability to quantify the value of data, and this gap misleads policymakers in their drive to maximize economic surplus.²¹ As Michael Mandel has observed, “economists have been systematically trained to think of the economy as divided into two big categories: ‘goods’ and ‘services.’”²² Data are neither a good nor a service and so they escape traditional economic analysis. This highlights the complication of discussing data: although the value often creates an economic reward, such measurements are not easy to make. The Internet itself has been a strong contributor to economic growth for more than two decades, but only in the past couple of years have economists undertaken serious attempts to quantify the Internet’s impact on the world’s economies.²³

One example of innovative data use that has a difficult-to-quantify economic value proposition is Google’s Flu Trends, which provides near real-time estimates of flu activity for a number of countries around the world. Flu Trends provides its analysis based on aggregated search queries.²⁴ Some of these estimates have been compared with official historic influenza data from relevant countries with surprisingly high levels of accuracy, and in some cases Flu Trends provided information weeks ahead of official records. In the case of H1N1, the world’s citizens were searching online long before official statistics were available.²⁵ Additionally, the data from Flu Trends are open, available for everybody

to download and use. A group of researchers from the Johns Hopkins University, for example, used these data to develop a practical influenza forecast model designed to provide medical centers with advance warning of the expected number of flu cases, thus allowing sufficient time to implement interventions before outbreaks.²⁶ This example illustrates how the openness and accessibility of data are crucial to keeping the wheel of innovation rolling by allowing others to access and manipulate the data in transformative ways.

Similarly, the rapid collection and processing of information has helped in recent natural disasters. After a devastating earthquake hit Haiti in 2010, a group of researchers from the Karolinska Institute and Columbia University analyzed calling data of over 2 million mobile phones to detect the pattern of population movements across the country. This information was then handed to humanitarian agencies to allocate relief resources in a more efficient way.²⁷ The findings of the project, called Flow Minder, suggest that population movements during disasters may be more predictable than had previously been understood.²⁸

These examples show that there are ethical and responsible ways of analyzing big sets of data and equally ethical and responsible ways of using them to provide high-value solutions for citizens, whether or not they have a clear quantifiable economic value at the outset. More efficient preparation for outbreaks and better understanding of post-disaster movement ultimately mean more cost-effective deployment of public services.

High-value products and services and more efficient deployment of resources are not the only outcomes of data-driven innovation. Studies suggest that there is a direct connection between data-driven decision-making in business and improved firm performance. Firms that adopt data-driven decision-making have an output and productivity that is 5 percent to 6 percent higher than would be expected, given their other investments and their information technology (IT) usage.²⁹ Another study has shown that the use of Internet computing tools can also help firms reach decisions more efficiently, across a broad range of industries, as they allow firms of all sizes to leverage data-driven analysis without needing to make huge investments in their IT infrastructure.³⁰

As is the case for businesses, policymakers are entrusted to make decisions for the citizenry with very little information. Politicians recognize the need to base their recommendations on objective information, and they are expected to move quickly, just as business managers are.

In fact, the public sector is one the most data-intensive sectors of all. According to McKinsey, the US government had over 848 petabytes of data stored in 2009—second only to the manufacturing sector.³¹ What is usually known as “data-driven policymaking” involves the collection of information related to how

Box 1: Hong Kong Efficiency Unit

The Hong Kong Efficiency Unit acts as a single point of contact for handling public inquiries and complaints on behalf of many government departments. After collecting thousands of complaints each year, its staff recognized the social messages hidden in the complaints data, which in fact provided important feedback on public service. Using a platform called the “Complaints Intelligence System,” they now use the complaints information collected to gain a better understanding of daily issues by uncovering trends, patterns, and relationships inherent in the complaints.

Source: Government of the Hong Kong Special Administrative Region, Hong Kong Efficiency Unit, 2013.

roads are traveled, to determine trends in utility consumption and the provision of government services (Box 1), and to promote creativity and new ideas within government agencies.³² Statistical agencies inside of governments, such as census departments, have long been established to maintain data about the nation. Thus data-driven policymaking is not new, but the opportunities brought by the advances on information and communication technologies make data-driven policymaking increasingly accessible to government officials. Further, open government initiatives put these data into the hands of the public, facilitating a new kind of transparency and civic engagement for curious and interested citizens. Data can benefit society when they are open.³³

By providing a way to check assumptions, detect problems, clarify choices, prioritize resources, and identify solutions, data-driven policymaking injects data-based rationality into the policymaking process, all of which could also create economic benefits.³⁴ According to the Organisation for Economic Co-operation and Development (OECD), by fully exploiting public data, governments in the European Union could reduce administrative costs by 15 percent to 20 percent, creating the equivalent of €150 billion to €300 billion.³⁵ In other words, data-driven policymaking moves policymaking out of the realm of intuition and dogma by creating a sound evidentiary basis for decisions.

However, studies suggest that the public sector still does not fully exploit the potential of the data it generates and collects, nor does it exploit the potential of data generated elsewhere. The “revolution of data” still needs to make its way within government agencies. Although the government is one of the sectors with the greatest potential to capture value from data-driven innovation, it also has one of the lowest productivity growth rates because it lags behind business and industry in fully embracing data.

Box 2: Harvard Transparency Project

The Transparency Policy Project at Harvard's Kennedy School studied the relationship between transit data format and accessibility and the number of applications for that system. Of the five transit agencies they studied, the TriMet in Portland, Oregon, and the Massachusetts Bay Transit Authority (MBTA) in Boston have generated the highest ratio of applications per transit rider (1 to 7,000 and 1 to 27,000, respectively). Meanwhile, the most reluctant agency to adopt open data, Washington DC's Metro, had only 10 applications serving its customers in 2012 (1 to 121,400).

Source: Rojas, 2012.

SETTING THE STAGE FOR A DATA-DRIVEN ECONOMY

Apart from producing and using data for better policymaking processes, the public sector can also play its part by promoting and fostering data-driven innovation and growth throughout economies. To realize the potential of data-driven innovation, policymakers need to develop coherent policies for the use of data. This could be achieved by: (1) making public data accessible through open data formats, (2) promoting balanced legislation, and (3) supporting education that focuses on data science skills.

Open data initiatives

The use of data across sectors can drive innovation and economic growth. However, many generators of data—including governments—do not share their data. As we have seen, the public sector is one of the main producers and collectors of data. Open data initiatives that make data in the public sector accessible to everyone contribute to data-driven innovation and create value for governments. For example, aggregate public transport data may be used by developers to create useful applications for passengers (see Box 2). This access to real-time information could result in a greater number of passengers and, subsequently, to more income for the transport authorities. In addition, accessible public data usually lead to better data because data users can test structure and help to fix mistakes (see Box 3). Improvements in the quality of data mean better data-based solutions and, ultimately, better policy.

It is important to note that opening up public data does not necessarily lead to the disclosure of personal data. Public data that may contain personal information of citizens should be shared in an aggregate or fully de-identified way to protect citizens' privacy. We will go into more detail around the discussions on privacy and personal data in the following section.

How to get the best of data-driven innovation

The increasing ease of linking and analyzing information usually raises concerns about individual privacy protection. Personal data are the type that has drawn the most attention, from a regulatory point of view, in relation to data-driven innovation. The challenge is to achieve a reasonable balance between individuals' right to privacy and the emerging opportunities in data-driven innovation.

For this reason, in order to capitalize on opportunities for economic growth via innovation, flexible and adaptable policies are needed. We need to focus on using datasets responsibly and ensuring that personally identifiable information is accessible only by those who are authorized to do so, without limiting innovation. In other words, privacy protection frameworks should support secure and reliable data flows while enhancing responsible, risk-reducing behavior regarding the use of personal data.

Legislation should take into account the tension between data-driven innovation and the principle of data minimization. This principle essentially states that the collection of personal data should be limited to what is relevant and necessary to accomplish a specific purpose, and for only as long as necessary. This tension usually materializes in two regulatory discussions: first, the definition of *personal data*; and second, the model of consent by users. These considerations are both critical, but framing things in this way leads to the inevitable conclusion that fewer data are better.

A key dividend of data-driven innovation is the possibility of finding new insights by analyzing existing data and combining them with other data. This can sometimes blur the lines between personal and non-personal data, as well as the uses for which consent may have been given.³⁶ A practical definition of *personal data* should be based on the real possibility of identifying an individual during the treatment of data.³⁷ This is why applying existing approaches to personal data may result in overly broad definitions that can have unintended negative consequences for data-driven innovation.

For the same reason that combining and correlating datasets is a key feature of data-driven innovation, the full potential of data collected may not be clear at the time of collection. A consent model that is appropriate to the data-driven economy should provide a path for individuals to participate in research through informed consent. In this model, they would become aware of the benefits of their participation as well as potential privacy risks. For this reason, the legislative considerations for data collection should not assume that less is always more and should take into consideration the data-intensive direction of some of the economy's growing sectors.

Building skills for the future

An economy where both the public and private actors who base their decisions on data analysis will demand highly skilled workers with backgrounds in

Box 3: Can open data lead to better data?

Moscow's city government published about 170 datasets with geo coordinates at the Moscow opendata portal. After examining the data, Russian members of the OpenStreetMap community found many errors and mistakes, including wrong geo coordinates. After publishing their research, most of the issues were solved by Moscow state officials.

Clinicians from the Imperial College London, while reviewing open statistical data from the United Kingdom's National Health Service, found that records said that 20,000 male patients required midwifery services between 2009 and 2010. After this research was published, data systems were improved.

Source: Open Knowledge Foundation, 2013.

data analysis, information science, metadata and data visualization. The demand for engineers who specialize in technologies such as machine learning and natural language processing will also increase, and a gap between the supply and demand for these types of skills may hinder data-driven innovation's full potential. The United States itself will need up to 190,000 more workers with deep analytical expertise by 2018.³⁸ This clear demand for skilled workers is further evidence of data-driven innovation's potential benefits for economies.

CONCLUSION

We have already begun to see the impact technology has had on the volume and speed at which data may be generated, analyzed, and put to use. Thirty years ago we needed an army of data-entry clerks to feed an information into a system; today, the information is already available in a machine-readable format. We carry devices with sensors that can provide incredible amounts of information in real time. Every day, the world adds petabytes of information into social networks and other Internet platforms.

Talking about this phenomenon as "big data," however, misses the true potential of data. Instead, we should focus our discussion on *data-driven innovation*, as this relates to the results and outcomes of data use—from generating innovative products and service to improving business and government efficiency. Many other examples provided earlier have shown that data-driven solutions have transformative social impact as well.

However, achieving the full potential of data-driven innovation demands challenging the outdated paradigms established in a significantly less data-intensive world. To achieve the maximum benefits from data-driven innovation, policymakers must take into account the possibility that regulation could preclude economic and societal benefits. Decisions that affect data-driven innovation are usually focused on the problems

of privacy and data protection, but fail to consider economic and social benefits that regulation could preclude. It is by looking at the big picture surrounding big data that we can create the right environment for data-driven innovation, and that the individuals, organizations, and economies that may benefit from it can thrive.

NOTES

- 1 Gray 2013.
- 2 The Economist 2013a.
- 3 Mayer-Schonberger and Cukier 2013.
- 4 OECD 2013.
- 5 IBM 2013.
- 6 Manyika et al. 2011.
- 7 The Old Farmer's Almanac, no date, "History of the Farmer's Almanac."
- 8 Platzman 1979.
- 9 Hemerly 2013.
- 10 Manyika et al. 2011.
- 11 OECD 2013.
- 12 According to Hilbert (2013, p. 4), "the crux of the 'Big Data' paradigm is actually not the increasingly large amount of data itself, but its analysis for intelligent decision-making."
- 13 Hemerly 2013.
- 14 SIIA 2013.
- 15 Burke 2012.
- 16 McCormick University 2012. See also Chen 2013.
- 17 Sims 2011.
- 18 See www.flightcaster.com.
- 19 United Nations 2012.
- 20 Tapscott and Williams 2007.
- 21 Péliissié du Rausas et al. 2011.
- 22 Mandel 2012, p. 1.
- 23 A collection of studies that quantify the contribution of the Internet to GDP is available at www.valueoftheweb.com.
- 24 The Economist 2013b.
- 25 The Economist 2011.
- 26 Dugas et al. 2013.
- 27 Lu et al. 2012.
- 28 Talbot 2013.
- 29 Brynjolfsson et al. 2011.
- 30 Cacciola and Gibbons 2012.
- 31 Manyika et al. 2011.
- 32 Esty and Rushing 2007.
- 33 Rojas 2012.
- 34 Esty and Rushing 2007.
- 35 Manyika et al. 2011.
- 36 Hemerly 2013.
- 37 For example, an IP address, by itself, cannot be linked to nor identify an individual, because it identifies only a device connected to a network.
- 38 Manyika et al. 2011.

REFERENCES

- Brynjolfsson, E., L. M. Hitt, and H. H. Kim. 2011. "Strength in Numbers: How Does Data-Driven Decisionmaking Affect Firm Performance?" April 22. <http://dx.doi.org/10.2139/ssrn.1819486>.
- Burke, A. 2012. "Haussler Says Cancer Genomics Needs Tech Geeks." *New York Genome Center Blog*, November 13. Available at <http://nygenome.org/blog/haussler-says-cancer-genomics-needs-tech-geeks>.
- Cacciola, S. and R. Gibbons. 2012. "Coase Meets the Cloud: How and When Can Outsourcing IT Improve Organizational Performance?" White Paper, November 28. Available at http://web.mit.edu/rjgibbons/www/Coase%20Meets%20the%20Cloud_Final.pdf.
- Chen, Z., W. Hendrix, H. Guan, I. K. Tetteh, A. Choudhary, F. Semazzi, and N. F. Samatova. 2013. "Discovery of Extreme Events-Related Communities in Contrasting Groups of Physical System Networks." *Data Mining and Knowledge Discovery* 27 (2): 225–58. Available at <http://link.springer.com/article/10.1007/s10618-012-0289-3?null>.
- Dugas, A.F., M. Jalalpour, Y. Gel, S. Levin, F. Torcaso, T. Igusa, and R. E. Rothman. 2013. "Influenza Forecasting with Google Flu Trends." *PLoS ONE* 8 (2). Available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3572967/pdf/pone.0056176.pdf>.
- The Economist. 2011. "Attention, Citizens!" *The Economist*, November 16. Available at <http://www.economist.com/node/21538656>.
- . 2013a. "Counting Raindrops." *The Economist*, February 9. Available at <http://www.economist.com/news/science-and-technology/21571384-how-use-mobile-phone-networks-weather-forecasting-counting-raindrops>.
- . 2013b. "Have Germs, Will Travel." *The Economist*, January 25. Available at <http://www.economist.com/blogs/gulliver/2013/01/tracking-flu-0>.
- Esty, D. C. and R. Rushing. 2007. *Governing by the Numbers: The Promise of Data-Driven Policymaking in the Information Age*. April. Center for American Progress. Available at http://www.americanprogress.org/wp-content/uploads/issues/2007/04/pdf/data_driven_policy_report.pdf.
- Government of the Hong Kong Special Administrative Region. No date. Hong Kong Efficiency Unit Homepage. Available at <http://www.eu.gov.hk/eindex.html>.
- Gray, J. 2013. "Semios: Big Data and Digitizing the Farm." *Canadian Startup News*, August 7. Available at <http://www.betakit.com/semios-big-data-and-digitizing-the-farm/>.
- Hemerly, J. 2013. "Public Policy Considerations for Data-driven Innovation." *Computer* (IEEE Computer Society) 46 (6): 25–31.
- Hilbert, M. 2013. "Big Data for Development: From Information- to Knowledge Societies." January 15. Available at <http://dx.doi.org/10.2139/ssrn.2205145>.
- IBM. 2013. "The IBM Big Data Platform." New York: IBM Corporation. Available at <http://public.dhe.ibm.com/common/ssi/ecm/en/imb14135usen/IMB14135USEN.PDF>.
- Lu, X., L. Bengtsson, and P. Holme. 2012. "Predictability of Population Displacement after the 2010 Haiti Earthquake." *PNAS* 109 (29), July 17. Available at <http://www.pnas.org/content/early/2012/06/11/1203882109.full.pdf+html>.
- Mandel, M. 2012. "Beyond Goods and Services: The (Unmeasured) Rise of the Data-Driven Economy." Progressive Policy Institute, Policy Memo. October. Available at http://www.progressivepolicy.org/wp-content/uploads/2012/10/10.2012-Mandel_Beyond-Goods-and-Services_The-Unmeasured-Rise-of-the-Data-Driven-Economy.pdf.
- Manyika, J., M. Chui, B. Brown, J. Bughin, R. Dobbs, C. Roxburgh, and A. H. Byers. 2011. "Big Data: The Next Frontier for Innovation, Competition, and Productivity." *McKinsey Global Institute Report*, May. Available at http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation.
- Mayer-Schonberger, V. and K. Cukier. 2013. *Big Data: A Revolution That Will Transform How We Live, Work, and Think*. New York: Houghton Mifflin Harcourt.
- McCormick University. 2012. "Big-Data Approach Leads to More Accurate Hurricane Forecasting." *News from McCormick*, September 25. Available at <http://www.mccormick.northwestern.edu/news/articles/2012/09/more-accurate-hurricane-forecasting-using-big-data.html>.
- OECD (Organisation for Economic Co-operation and Development). 2013. "Exploring Data-Driven Innovation as a New Source of Growth: Mapping the Policy Issues Raised by 'Big Data'." *OECD Digital Economy Papers* 222, June 18. Available at <http://dx.doi.org/10.1787/5k47zw3fcp43-en>.
- The Old Farmer's Almanac. No date. "History of the Farmer's Almanac." Available at <http://www.almanac.com/content/history-old-farmers-almanac>.
- Open Knowledge Foundation. 2013. "How Can Open Data Lead to Better Data Quality?" September 3. Available at <http://blog.okfn.org/2013/09/03/how-can-open-data-lead-to-better-data-quality/>.
- Platzman, G. W. 1979. "The ENIAC Computations of 1950: Gateway to Numerical Weather Prediction." *Bulletin of the American Meteorological Society* 60 (4): 302–12.
- Pélessié du Rausas, P., J. Manyika, E. Hazan, J. Bughin, M. Chui, and R. Said. 2011. *Internet Matters: The Net's Sweeping Impact on Growth, Jobs, and Prosperity*. McKinsey Global Institute, McKinsey & Company, May. Available at http://www.mckinsey.com/insights/high_tech_telecoms_internet/internet_matters.
- Rojas, F. M. 2012. "Transit Transparency: Effective Disclosure through Open Data." Transparency Policy Project, Harvard Kennedy School, June. Available at http://www.transparencypolicy.net/assets/FINAL_UTC_TransitTransparency_8%2028%202012.pdf.
- SIIA (Software and Information Industry Association). 2013. "Data-Driven Innovation: A Guide for Policymakers: Understanding and Enabling the Economic and Social Value of Data." *SIIA White Paper*. Available at <http://goo.gl/QWjGhY>.
- Sims, D. 2011. "Big Data Thwarts Fraud." *O'Reilly Strata*, February 8. Available at <http://strata.oreilly.com/2011/02/big-data-fraud-protection-payment.html>.
- Talbot, D. 2013. "Big Data from Cheap Phones." *MIT Technology Review*, April 23. Available at <http://www.technologyreview.com/featuredstory/513721/big-data-from-cheap-phones/>.
- Tapscott, D. and A. Williams. 2007. *Wikinomics: How Mass Collaboration Changes Everything*. New York: Portfolio Trade Books.
- United Nations. 2012. "Big Data for Development: Challenges & Opportunities." *Global Pulse*, May. Available at <http://www.unglobalpulse.org/sites/default/files/BigDataforDevelopment-UNGlobalPulseJune2012.pdf>.

Making Big Data Something More than the “Next Big Thing”

ANANT GUPTA
HCL Technologies

Big data is the business buzzword du jour. But how can you turn this hot topic into a real source of business value?

You have certainly heard the breathless spiel: The world today is being flooded with digital data, in myriad manifestations and washing over us at such incredible speed that making sense of it is dauntingly difficult. Yet this tidal wave of data—when channeled and filtered by an array of new information technologies—holds untold value for organizations, whether they are small not-for-profits or Fortune 500 companies.

Or so we are told. But despite the sometimes exaggerated hype surrounding “big data,” the fundamental assertion is true: data—and the decisions driven by those data—now represent the next frontier of innovation and productivity.

Estimates of the potential benefits of leveraging big data are indeed staggering: productivity-led savings worth US\$300 billion a year for the US healthcare industry and €250 billion for the European public sector, a 60 percent potential increase in retailers’ operating margins.¹ And technology seems poised to deliver these benefits. One small example: data storage technology has advanced to the point that only US\$600 is all it takes to purchase storage space that can accommodate the entire world’s music!²

Some large companies have indeed used emerging technologies to extract significant value from big data. Visa recently announced that increasing from 40 to 200 the number of attributes it analyzes in each credit card transaction has saved 6 cents in every \$100 worth of transactions.³ Wal-Mart uses a self-teaching semantic search tool that, honed by the monthly clickstream data of 45 million online shoppers, tailors offerings to online shoppers, raising the rate of completed transactions by more than 10 percent.⁴

But for most businesses, the promise of big data is nowhere close to being fulfilled. For one thing, spending on it is polarized. While the telecommunications, travel, retail, life sciences, and financial services industries are making significant strides in big data technologies, other industries, such as manufacturing and government,⁵ are in a wait-and-watch mode.

The lack of major big data initiatives across industries can be seen in the numbers from service providers. In 2012, the global top 20 big data players made *less than 1 percent* of their total revenues from big data. The total market for big data hardware, software, and services in 2012 was US\$11.5 billion, whereas the combined overall revenue of those 20 big data players was more than US\$1.2 trillion.

The disparity between a few success stories and the lack of action elsewhere has created a high level of anxiety within firms that have not yet begun to explore big data. But it is important that they not rush thoughtlessly into the fray. An organization should make

Box 1: A user’s glossary of key big data terms

As an organization plans its big data strategy, the following terms are likely to be used with increasing frequency.

- **Hadoop:** A batch-oriented programming framework that supports the processing of large data sets in a distributed computing environment. Hadoop is written in the Java programming language and is a top-level Apache project (Apache is a decentralized community of developers supporting open-source software).
- **HBase:** A non-relational, column-oriented distributed database written in Java. A column-oriented database stores data tables as sections of columns of data rather than as rows of data, as in most relational databases, providing fast aggregation and computation of large numbers of similar data items.
- **HDFS:** A distributed, scalable, and portable file system written in Java for the Hadoop framework.
- **Hive:** A data warehouse infrastructure built on top of Hadoop, providing data summarization, query, and analysis. It permits queries over the data using a familiar SQL-like syntax.
- **Flume:** A tool for collecting, aggregating, and moving large amounts of log data from applications to Hadoop.
- **Mahout:** A library of Hadoop implementations of common analytical computations.
- **Oozie:** A workflow scheduler system developed to manage Hadoop jobs.
- **Pig:** A platform for analyzing large datasets that consists of a high-level language (Pig Latin) for expressing data analysis programs, coupled with infrastructure for evaluating these programs.
- **R:** R is a free software programming language and software environment for statistical computing and graphics. The R language is widely used among statisticians and data miners for developing statistical software and data analysis.
- **Sqoop:** A tool facilitating the transfer of data from relational databases into Hadoop.
- **Zookeeper:** A centralized service for maintaining configuration information, naming, providing distributed synchronization, and providing group services for distributed applications.

Source: HCL 2013b.

a big data investment only if it has well-defined and realizable business objectives.

We offer here nine steps that companies can take to begin turning big data talk into action, buzz into business benefits.

WHY IS EXTRACTING VALUE FROM BIG DATA SO HARD?

First, though, we examine some of the barriers to realizing big data’s promise.

Volume, velocity, and variety

Big data is often said to be characterized by 3 Vs: its tremendous volume, the velocity at which it needs to be processed, and the variety of data types it encompasses. The first two characteristics are fairly obvious: technology has made it possible to capture increasingly large amounts of information and make it available for analysis in real time.

But mining the value of big data also is difficult because it requires simultaneously analyzing various types of information—transactions, log data, mail documents, social media interactions, machine data, geospatial data, video and audio data, to name just a few—much of which is “unstructured.” Traditional types of business data were available in a format that was structured and could have been automatically analyzed—for example, a spreadsheet quantifying customer returns of different products at different stores over time. However, much of the value in big data exists in unstructured information—for example, the transcript of a chat session between a retail customer and a customer service representative.

Synthesizing unstructured data from numerous sources and extracting relevant information from it can be as much art as science.

Talent scarcity

Much has been said and published about the looming talent gap. Estimates suggest that the United States alone faces a shortage of 140,000 to 190,000 people with deep analytical skills, as well as 1.5 million analysts and managers to analyze big data and make decisions based on those findings.⁶ Another report predicts that only one-third of 4.4 million big data jobs created by 2015 will be filled.⁷ Unlike traditional analytics, mining big data requires an extremely diverse set of skills—deep business insights, data visualization, statistics, machine learning, and computer programming. Policy should work to mitigate this talent shortage through forward-looking education and immigration policies.

Flawed data governance

Big data is not a substitute for—much less a solution for—flawed information management practices. If anything, it requires much more rigorous data governance structures. Without those improvements, information technology (IT) systems that have not been upgraded to handle large volumes of data are likely to collapse under the sheer weight of the data being processed. Surveys suggest that business leaders are often more excited about the potential of big data

than their IT counterparts. That may be because of IT executives’ understanding of the realities on the ground.

Lack of a data-driven mind-set

Because mind-set can be hard to pin down, its power is often underestimated. That is a mistake when it comes to assessing the prerequisites to successful analytics deployment. It is virtually impossible for big data investments to deliver value if business leaders do not have a data-driven mind-set—that is, if they do not believe that it is important for decisions to be based on cold, hard numbers rather than gut feel and experience. But once the right mind-set takes hold, other good things will follow: data-driven business leaders will have a tremendous incentive to treat data, and therefore the IT and analytics professionals who help deliver it in an understandable form, as a strategic asset. And these leaders will make it a priority to ease the flow of data across organizational silos.

Lack of technical know-how

Big data represents a convergence of IT and data science. Technologies include Hadoop (which enables large-scale processing of diverse datasets), R (a programming language for statistics), and in-memory databases (where data reside on main memory as opposed to disk storage). Data science includes, among many other areas, machine learning (systems that learn from data) and data warehousing. Big data professionals are expected to be familiar with both disciplines, but this combination is rare, despite the training courses that are sprouting up globally. (For descriptions of some of the technologies that enable the analysis of big data, see Box 1.)

NINE STEPS TO BIG DATA VALUE CREATION

The barriers to extracting business value from big data can seem daunting. But they can be overcome through a systematic plan, one that breaks down the challenge into a series of nine sequential steps that will enable organizations to take advantage of this valuable and growing asset. We will consider each of these steps individually here.

Step 1: Define responsibilities.

Who collects, who analyzes, and who drives value? The onus of collecting data should be shared by the IT and analytics teams, but analysis must be the sole responsibility of analytics professionals. Similarly, only functional leaders—for example, the Chief Marketing Officer, the Chief Financial Officer, and the Chief Procurement Officer—should be responsible for identifying areas within their respective functions where big data could drive value. However, getting this level of support from functional leaders is not easy, especially if the team—IT and analytics or a dedicated big data center of excellence—reside outside of the business

function. In order to drive the big data program, the team may want to appoint a big data program sponsor for each function and work closely with him or her to discover and locate the types of information that would improve business outcomes. Most importantly, however, the program sponsor would try to get functional buy-in and identify big data opportunities within the function.

Step 2: Get the business functions to ask the right questions.

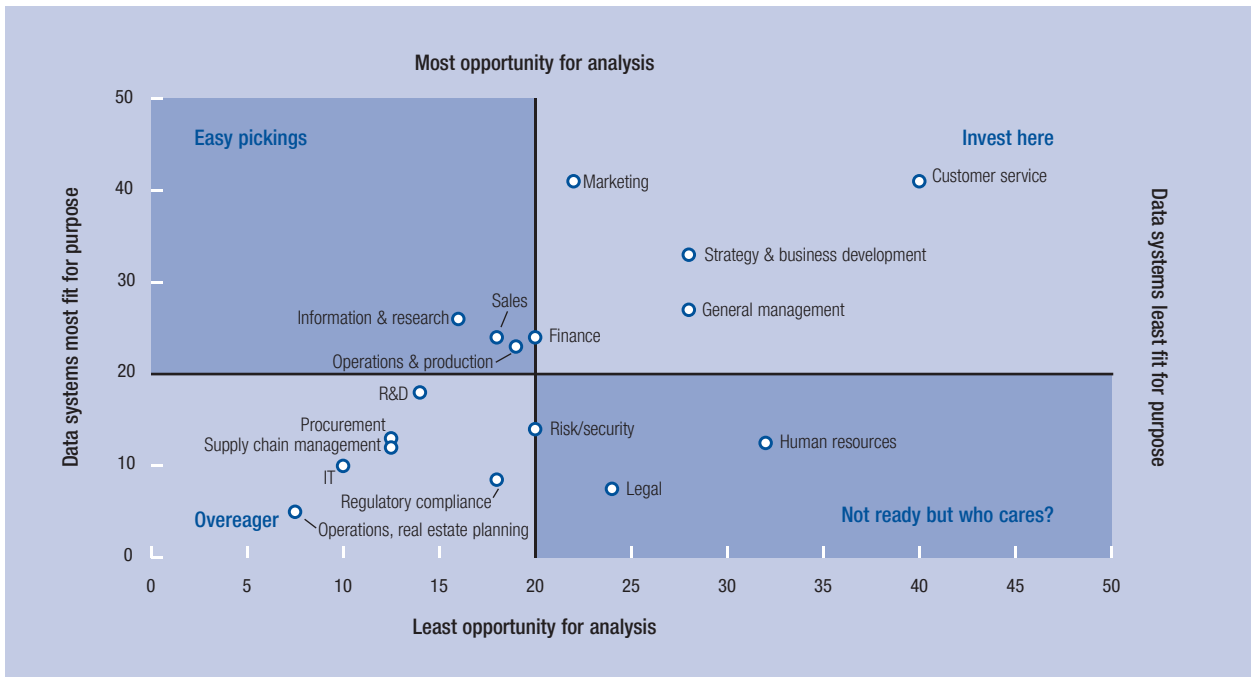
Senior executives will have an easier time winning buy-in from business functions if they demonstrate how big data might be valuable to them. Simple questions such as “What would you really like to know about your business, and how can data help you with it?” are a good place to start. Such questions can spur the functional experts themselves to start asking the more fundamental questions that can unlock the value of data. For instance, marketing professionals could ask, “What is the value of a ‘tweet’ or a ‘like’? Are our investments in customer service paying off? What is the optimal price for our product right now?” The ability to ask the right questions is key to succeeding with big data. It also pays to keep in mind that big data is *not* about data themselves; it is about using data to discover insights that can lead to valuable outcomes.

Step 3: Take stock of all data “worth analyzing.”

Valuable business insight can come from many sources, including social media feeds, activity streams, and “dark data” (data that are currently unused but that have already been captured), machine instrumentation, and operational technology feeds. It is important to explore these sources and to experiment with new ways of capturing information, such as complex-event processing, video search, and text analytics. Organizations’ data typically fit into four buckets:

- Operational data, such as data emanating from smart grid meters, embedded systems (examples include microwave sensors and chips inserted in automobiles), transactions logs (such as payment transactions), radio-frequency identification chips (RFID), navigation and location sensors, networks, and servers.
- Streaming data, such as computer network data, phone conversations, and so on.
- Documents and content, such as PDFs, web content, and legal discovery elements (electronic information exchange in civil litigations).
- Rich media, including audio and video tracks, electronic images, and so on.

Figure 1: Potential payback of big data initiatives



Source: Gartner, 2013.

Step 4: Select the business functions best positioned to lead the way.

It is smart to launch big data initiatives in business functions that are most ready to collect and analyze data and for which the potential payback is high. Functions such as marketing, customer service, supply chain management, and finance are poised for maximum growth. If system readiness is not an issue, these are usually the right places to direct initial investments (see Figure 1).

Step 5: Match big data initiatives with compatible business functions.

Some big data programs can be implemented in a variety of settings, but most are suited to specific functions. For example:

- Customer functions (such as marketing, e-commerce, and customer service) can use big data for targeted advertising that provides personalized offers to consumers based on their socio-demographic characteristics, and for loyalty management that extends channel reach from point of sale, web, and call center to include mobile and social capabilities.
- Finance functions (such as finance, risk, and treasury) can use big data for intraday liquidity management, providing real-time monitoring of price movements in relation to positions, to make trading and rebalancing decisions, and for improved credit risk assessment, through multiple big data-

supported credit risk assessments that factor in hundreds or even thousands of indicators.

- Supply chain and procurement can use big data for dynamic route optimization because big data technologies that are faster than conventional systems allow more iterations and faster route planning in real-time.

Step 6: Determine whether big data will yield valuable information unavailable through traditional business analytics.

Making the business case for a big data initiative clearly will be easier if it can be shown that it creates new value. For instance, if a marketing department is currently segmenting customer profiles using standard demographic indicators, would there be additional benefit in analyzing attitudes and preferences (at a granular level) through text and speech analysis? Similarly, if a traditional business intelligence program is currently analyzing financial market sentiments using structured stock information, would it make the sentiment analysis more refined by including social media feeds, news sites, and so on?

In comparing views of data from a traditional business intelligence perspective versus a big data one, consider the following the questions: What data are we capturing today? What are the limitations of this kind of structured data? What extra value will we get by collecting external, context-specific, and unstructured data? Where will we find data and how will we collect them? Would our business act upon the insights

gained? Is the extra business value worth the additional investment of time, energy, and money?

Step 7: Assess complexities and prioritize accordingly.

All else being equal, an organization should begin its big data experimentation with an initiative that is not too demanding. In assessing possibilities, it is helpful to keep in mind the complexity of both the *type of data* and the *type of analysis* the data will require.

As we mentioned above, much of what is meant by “big data” is unstructured information—data that traditionally have been impossible to break down and categorize as they are collected. Such data are not only difficult to analyze but can also be easily misinterpreted when taken out of context. Thus it makes sense to experiment in the beginning with data that are relatively easy to analyze.

Different types of analysis also present varying degrees of complexity. Generally speaking, descriptive analytics (which answers “what happened?”—for example, an analysis of social media sentiment analysis) are relatively easy to do. However, diagnostic analytics (which answers “why did it happen?”—for example, an analysis of customer defection at the shopping cart stage of the online purchase process); predictive analytics (which answers “what will happen?”—for example, forecasts of customer churn in telecommunications); and prescriptive analytics (which answers “how can we make it happen?”—for example, determining whether personalized offers to customers would make sense), are increasingly complex to conduct.

Step 8: Assess your technology architecture.

An organization’s traditional information architecture may not accommodate massive, high-speed, variable data flows. Many traditional and even state-of-the-art technologies were not designed for today’s or tomorrow’s level of data volume, velocity, and variety. Even as datasets grow exponentially along those dimensions, the investments required for scaling technologies (such as processors, storage, database management systems, and analytics) to perform efficiently grow even faster. To counter these intractable economics, organizations need to consider a variety of methods to upgrade their infrastructure in support of or in anticipation of big data.

In fact, the idea that big data involves negligible cost because it is analyzed using open-source tools and platforms is a myth. “Free” open-source technologies such as Hadoop (which enables large-scale processing of diverse datasets) are typically not immediately usable. You need either to hire and train data scientists and analysts in Hadoop programming, or to buy an enterprise-ready version of Hadoop.

If the outcome of big data analysis is mission-critical for your business, it probably makes sense to use only

purpose-built hardware. Generic servers may be fine for smaller projects and proofs of concept, but specifically designed, enterprise-grade servers, storage, and networking products are best for large-scale-production solutions.

Creating or upgrading to big data-ready technology architecture is no small feat. Building everything from scratch takes time, and buying everything is expensive. Therefore, finding the right combination of insourcing and outsourcing requires careful consideration.

Step 9: Start building a team.

Big data initiatives require multidisciplinary teams of business and technology experts. Every team member—business analyst, programmer, data scientist, and data visualizer—will need to have cross-functional familiarity. Building this team is a five-step process:

- Break down your talent needs into four distinct areas: business analysis, analytics, database technology, and data visualization.
- Scan your internal landscape for the aforementioned skills. Although they may not be in the target department, every organization probably already includes people who know the business, possess data-crunching capabilities, and make data-driven decisions.
- Hire people with needed skills if they are not available or cannot be acquired by cross-training existing employees.
- Hire people with related skills if the needed skills are unavailable within your organization or difficult to acquire through external hires. For instance, consider substituting statisticians for the much less common data scientists.
- Start small and scale up. In the beginning, your needs will be modest. A few hires may be adequate to get started.

Some are even predicting that big data analytics will lead to the emergence of an entirely new set of CXO roles within enterprises—Chief Data Officer, Chief Digital Officer, Chief Analytics Officer, and so on. That said, the structure of most organizations would make it difficult for someone owning the big data portfolio to succeed. Without clear line responsibilities, a CDO (whichever flavor, Data or Digital) or a CAO would have little leverage to execute the important tasks needed to increase the organization’s big data capabilities and optimize its initiatives.

Instead, big data and business analytics expertise should fall within existing functions—for example, finance, human resources, and marketing—with the aim of furthering the strategic initiatives of those functions. The efforts of the big data teams in these areas could be overseen and coordinated by a big data manager, reporting to the Chief Information Officer, who would

Box 2: Organizations already using big data initiatives

A few organizations that have followed frameworks for using big data include:

- A US-based mid- to upscale chain of department stores is gaining new insights from analyzing and combining data on Hadoop with data from traditional databases to turn its marketing staff from “Mad Men” to “Math Men.”
- A US-based provider of business outsourcing solutions has set up an innovation lab where subject experts from different industries and backgrounds work together to tackle big data analytics.
- An Indianapolis-based global pharmaceutical company is using big data to develop an integrated approach to optimizing how clinical trials are conducted and eliminate inefficiencies.
- A US-based document management corporation is applying its decades of expertise in imaging technologies to transportation systems that can benefit from real-time analysis of data.
- Australia-based telecommunications companies use big data to determine which of their customers are less likely to pay their bills, allowing them to focus collection efforts on that group rather than across the whole customer base.
- A global corporation offering computer-assisted legal research services uses a big data technology platform it has developed in house both for its risk management business and for gathering data it sells to its clients. It now also sells this big data platform through its newly established subsidiary.
- A US-based multinational consumer goods company has developed a decision-support environment used by more than 60,000 employees worldwide to see what is happening in the business, to understand why it is happening, and to determine how to respond to changing market conditions. The decision cockpit is focused on forward-looking projections rather than historical reporting, with data visualization showing the relative revenue and profit contribution of each region, country, territory, brand, and product. The company’s performance is also tracked against that of competing brands and products. The company has established about 50 collaborative conference rooms, called Business Spheres, in offices around the globe. The rooms are surrounded by projection screens for displaying the dashboards as well as live video-conferencing sessions, allowing remote executives to attend weekly review meetings in person.
- A California-based multinational energy corporation is using big data to transform the audit function. It runs audit tests on all of its accounts payable transactions instead of only on the small sample it used to analyze before. This enables the finance department to better understand various business risks and adjust audit coverage to the areas that pose the greatest risks. At the same time, it reduces the time spent on auditing by about 15 percent.
- A British multinational music recording and publishing company has created the Million Interview Dataset over the last few years, asking consumers in 24 countries and across 15 languages about their music listening and consumption habits. The Dataset provides rich insights into the interests, attitudes, behaviors, familiarity, and appreciation of music as expressed by music fans.
- A Minnesota-based member-owned agricultural cooperative combines 20 years of satellite imagery with local seed and crop protection data from its test sites to provide a service that generates field performance information for every acre and matches crop inputs and decisions to the potential of each field and each zone.

Source: HCL Technologies.

ensure that best practices were adopted and that initiatives were coordinated.

Following the nine steps described above will help the IT function to assume such responsibilities.

CASE STUDIES

Many global organizations have already begun embarking on deriving value out of big data initiatives. Almost all of them have defined step-by-step frameworks somewhat similar to the one outlined above. The sheer variety of value creation evident—from clinical trials and marketing to risk management and audits, from analyzing crop and seed production to fan listening posts—is also staggering (see Box 2).

RECOMMENDATIONS FOR GOVERNMENT ACTIONS AND POLICIES

In order to take full advantage of the potential of big data in both the public and private sectors, we recommend

that governments create a vision and platform for public-sector open data. We believe that open data will be an *essential characteristic of future public policy*. It is important that such a vision percolate down from the top to garner support from ministries and civil servants alike so that open data initiatives function effectively.

Communicating from the very top that open data is an essential characteristic of public policy is crucial. Furthermore, governments should create an easy-to-use platform for the public to access the data in a form that is easily digestible and ready for analysis. It is also advisable to develop rules and regulations for taxing the commercial use of open data.

Governments should spearhead the effort to ensure the privacy and security of personal data. The appropriate agency should take a leading role in working with all relevant private- and public-sector entities to develop and implement policies for safeguarding personal data and means for enforcement.

Moreover, it is essential to develop and execute a big data plan for all government services and activities. The plan should identify all government data worth analyzing, define data collection responsibilities, outline steps to ensure data quality, and determine where big data technologies and analysis capabilities should be first deployed.

Finally, each government should establish a big data center of excellence (BDCOE). The BDCOE should be the focal point of expertise, long-range thinking and policy formulation, and training and development. It should also be the repository of best practices. It should not only serve as a resource for all government agencies but should also act as the government’s leading authority on all matters related to data management.

CONCLUSION

Big data analytics is not a passing fad. It will be a central means of creating value for the organization of tomorrow—and that is “tomorrow” almost literally. It represents a major change in the way that businesses and other organizations will operate and will require a new mind-set and new capabilities. Given that, many organizations are struggling to know where to start in becoming competent in the realm of big data. A step-by-step approach can make the transition seem less daunting and minimize the stumbles that are bound to occur along the way.

NOTES

- 1 Manyika et al. 2011.
- 2 Manyika et al. 2011.
- 3 Laney 2012.
- 4 Laney 2012.
- 5 HCL Technologies 2013a.
- 6 Manyika et al. 2011.
- 7 Manyika et al. 2011.

REFERENCES

- Gartner. 2013. *What’s the Big Deal with Big Data for Customer Service?* Webinar with Gareth Herschel, Research Director, Gartner and Michael Maoz, VP Distinguished Analyst, Gartner. September 17. Available at <http://my.gartner.com/portal/server.pt?open=512&objID=202&mode=2&PageID=5553&ref=webinar-rss&resId=2569818>.
- HCL Technologies. 2013a. Strategic Intelligence Wing Research on Big Data (the research arm of HCL Technologies).
- . 2013b. *CIO Straight Talk* Issue 3. Quincy, Mass, US and Noida, India: HCL Technologies. Available at <http://magazine.straighttalkonline.com/issue3/>.
- Laney, D. 2012. *Big Data Strategy Components: IT Essentials*. October 15, ID G00238944. Chicago: Gartner.
- Manyika, J., M. Chui, B. Brown, J. Bughin, R. Dobbs, C. Roxburgh, and A. Hung Byers. 2011. “Big Data: The Next Frontier for Innovation, Competition, and Productivity.” *McKinsey Global Institute Report*. May. Available at http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation.

Part 2

Country/Economy Profiles

How to Read the Country/Economy Profiles

The Country/Economy Profiles section presents a profile for each of the 148 economies covered in *The Global Information Technology Report 2014*. Each profile summarizes an economy's performance in the various dimensions of the Networked Readiness Index (NRI).

1 PERFORMANCE HIGHLIGHTS

The first section of the profile presents the economy's overall performance in the NRI, along with its performance in the NRI's four components and 10 pillars. The economy's rank (out of 148 economies) and score (on a 1-to-7 scale) are reported.

On the radar chart to the right of the table, a blue line plots the economy's score on each of the 10 pillars. The black line represents the average score of all economies in the income group to which the economy under review belongs. The country classification by income group is defined by the World Bank and reflects the situation as of December 2013. Note that the two high-income groups in this classification, *High income: OECD* and *High income: non-OECD*, were merged into a single group for the purpose of the analysis.

3 THE NETWORKED READINESS INDEX IN DETAIL

This section presents an economy's performance in each of the 54 indicators composing the NRI. The indicators are organized by pillar. The numbering of the variables matches that of the data tables in the next section of the *Report*, which provide descriptions, rankings, and scores for all the indicators. The indicators derived from the 2012 and 2013 editions of the World Economic Forum's Executive Opinion Survey are identified by an asterisk (*). These indicators are always measured on a 1-to-7 scale (where 1 and 7 correspond to the worst and best possible outcomes, respectively). For more information on the Executive Opinion Survey and a detailed explanation of how scores are computed, please refer to Chapter 1.3 of *The Global Competitiveness Report 2013–2014*, available for free on the World Economic Forum website at www.weforum.org/gcr.

For those indicators not derived from the World Economic Forum's Executive Opinion Survey, the scale is reported next to the title. The Technical Notes and Sources at the end of this *Report* provides further details on each indicator, including its definition, method of computation, and sources.

Note that for the sake of readability, the years were omitted. However, the year of each data point is



indicated in the corresponding data table. For more information on the framework and computation of the NRI, refer to Chapter 1.1.

ONLINE DATA PORTAL

In complement to the analysis presented in this *Report*, an online data portal can be accessed via www.weforum.org/gitr. The platform offers a number of analytical tools and visualizations, including sortable rankings, scatter plots, bar charts, and maps, as well as the possibility of downloading portions of the NRI dataset.

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Albania

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 95..3.7

Networked Readiness Index 2013 (out of 144)..... 83.....3.8

A. Environment subindex..... 95.....3.7

1st pillar: Political and regulatory environment..... 117.....3.1

2nd pillar: Business and innovation environment..... 65.....4.3

B. Readiness subindex 86.....4.6

3rd pillar: Infrastructure and digital content..... 90.....3.5

4th pillar: Affordability 87.....5.1

5th pillar: Skills 62.....5.2

C. Usage subindex 95.....3.4

6th pillar: Individual usage 82.....3.2

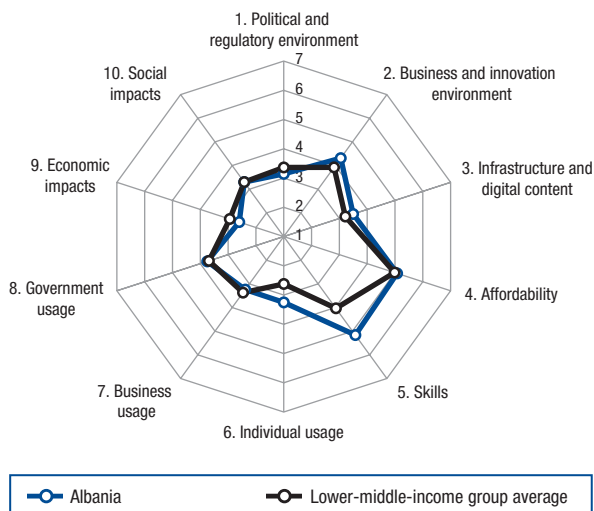
7th pillar: Business usage 107.....3.2

8th pillar: Government usage 93.....3.8

D. Impact subindex..... 108.....2.9

9th pillar: Economic impacts 125.....2.6

10th pillar: Social impacts 97.....3.3



The Networked Readiness Index in detail

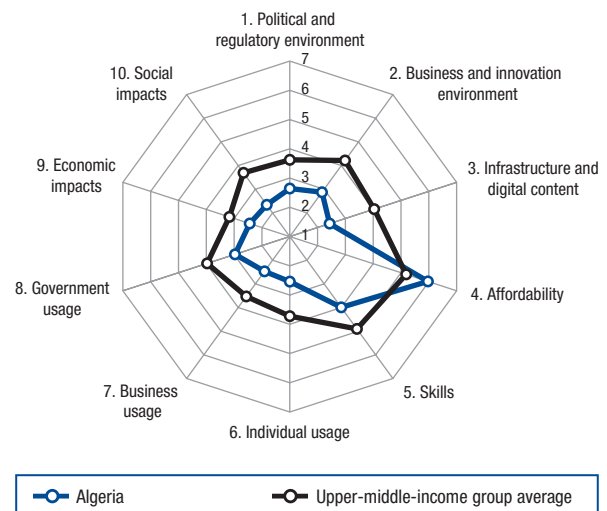
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	105	3.1
1.02 Laws relating to ICTs*	85	3.7
1.03 Judicial independence*	134	2.3
1.04 Efficiency of legal system in settling disputes*	120	3.0
1.05 Efficiency of legal system in challenging regs*	113	2.9
1.06 Intellectual property protection*	114	2.9
1.07 Software piracy rate, % software installed	77	75
1.08 No. procedures to enforce a contract	91	39
1.09 No. days to enforce a contract	69	525
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	119	4.1
2.02 Venture capital availability*	136	1.9
2.03 Total tax rate, % profits	48	31.7
2.04 No. days to start a business	12	5
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	144	3.4
2.07 Tertiary education gross enrollment rate, %	50	54.9
2.08 Quality of management schools*	84	4.1
2.09 Gov't procurement of advanced tech*	52	3.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	93	1,318.7
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	76	17.4
3.04 Secure Internet servers/million pop.	85	19.0
3.05 Accessibility of digital content*	116	4.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	120	0.44
4.02 Fixed broadband Internet tariffs, PPP \$/month	48	26.05
4.03 Internet & telephony competition, 0-2 (best)	92	1.64
5th pillar: Skills		
5.01 Quality of educational system*	52	4.0
5.02 Quality of math & science education*	54	4.3
5.03 Secondary education gross enrollment rate, %	90	82.4
5.04 Adult literacy rate, %	56	96.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	70	110.7
6.02 Individuals using Internet, %	58	54.7
6.03 Households w/ personal computer, %	95	20.0
6.04 Households w/ Internet access, %	87	20.5
6.05 Fixed broadband Internet subs./100 pop.	78	5.1
6.06 Mobile broadband subscriptions/100 pop.	71	18.8
6.07 Use of virtual social networks*	110	5.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	108	4.2
7.02 Capacity for innovation*	121	3.0
7.03 PCT patents, applications/million pop.	85	0.3
7.04 Business-to-business Internet use*	135	3.8
7.05 Business-to-consumer Internet use*	131	3.4
7.06 Extent of staff training*	36	4.4
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	78	3.9
8.02 Government Online Service Index, 0-1 (best)	88	0.42
8.03 Gov't success in ICT promotion*	106	3.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	121	3.6
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	124	3.4
9.04 Knowledge-intensive jobs, % workforce	99	13.7
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	126	3.3
10.02 Internet access in schools*	73	4.2
10.03 ICT use & gov't efficiency*	82	4.0
10.04 E-Participation Index, 0-1 (best)	92	0.11

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Algeria

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	129	3.0
Networked Readiness Index 2013 (out of 144).....	131	2.8
A. Environment subindex	143	2.8
1st pillar: Political and regulatory environment.....	140	2.6
2nd pillar: Business and innovation environment.....	145	2.9
B. Readiness subindex	101	4.1
3rd pillar: Infrastructure and digital content.....	127	2.4
4th pillar: Affordability.....	42	6.0
5th pillar: Skills.....	102	4.0
C. Usage subindex	134	2.7
6th pillar: Individual usage.....	104	2.5
7th pillar: Business usage.....	147	2.5
8th pillar: Government usage.....	134	3.0
D. Impact subindex	137	2.4
9th pillar: Economic impacts.....	133	2.4
10th pillar: Social impacts.....	140	2.3



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	125	2.7
1.02 Laws relating to ICTs*	146	2.1
1.03 Judicial independence*	95	3.2
1.04 Efficiency of legal system in settling disputes*	116	3.1
1.05 Efficiency of legal system in challenging regs*	139	2.3
1.06 Intellectual property protection*	145	2.2
1.07 Software piracy rate, % software installed	95	84
1.08 No. procedures to enforce a contract	131	45
1.09 No. days to enforce a contract	101	630
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	144	3.2
2.02 Venture capital availability*	123	2.0
2.03 Total tax rate, % profits	142	71.9
2.04 No. days to start a business	103	25
2.05 No. procedures to start a business	142	14
2.06 Intensity of local competition*	141	3.6
2.07 Tertiary education gross enrollment rate, %	78	31.5
2.08 Quality of management schools*	135	3.0
2.09 Gov't procurement of advanced tech*	127	2.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	90	1,356.5
3.02 Mobile network coverage, % pop.	124	81.5
3.03 Int'l Internet bandwidth, kb/s per user	99	7.7
3.04 Secure Internet servers/million pop.	128	1.3
3.05 Accessibility of digital content*	144	3.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	49	0.18
4.02 Fixed broadband Internet tariffs, PPP \$/month	28	20.94
4.03 Internet & telephony competition, 0–2 (best)	104	1.33
5th pillar: Skills		
5.01 Quality of educational system*	133	2.7
5.02 Quality of math & science education*	132	2.7
5.03 Secondary education gross enrollment rate, %	46	97.6
5.04 Adult literacy rate, %	117	72.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	94	97.9
6.02 Individuals using Internet, %	113	15.2
6.03 Households w/ personal computer, %	90	24.2
6.04 Households w/ Internet access, %	91	19.4
6.05 Fixed broadband Internet subs./100 pop.	90	2.9
6.06 Mobile broadband subscriptions/100 pop.	140	0.0
6.07 Use of virtual social networks*	104	5.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	147	3.2
7.02 Capacity for innovation*	147	2.3
7.03 PCT patents, applications/million pop.	98	0.1
7.04 Business-to-business Internet use*	147	3.0
7.05 Business-to-consumer Internet use*	145	2.7
7.06 Extent of staff training*	139	3.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	122	3.2
8.02 Government Online Service Index, 0–1 (best)	123	0.25
8.03 Gov't success in ICT promotion*	136	3.2
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	145	2.9
9.02 ICT PCT patents, applications/million pop.	83	0.0
9.03 Impact of ICTs on new organizational models*	140	2.9
9.04 Knowledge-intensive jobs, % workforce	80	19.1
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	138	3.0
10.02 Internet access in schools*	138	2.2
10.03 ICT use & gov't efficiency*	141	2.9
10.04 E-Participation Index, 0–1 (best)	107	0.05

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

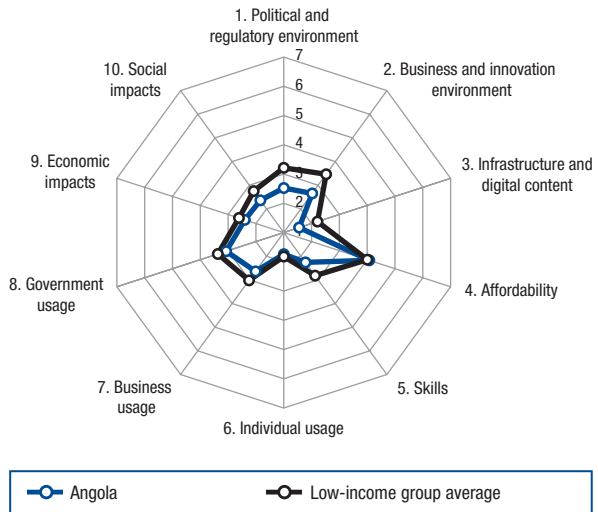
Angola

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 144..2.5

Networked Readiness Index 2013 (out of 144)..... n/a.....n/a

A. Environment subindex	147	2.6
1st pillar: Political and regulatory environment.....	145	2.5
2nd pillar: Business and innovation environment.....	147	2.7
B. Readiness subindex	138	2.6
3rd pillar: Infrastructure and digital content.....	146	1.6
4th pillar: Affordability.....	110	4.1
5th pillar: Skills.....	141	2.3
C. Usage subindex	142	2.5
6th pillar: Individual usage.....	133	1.7
7th pillar: Business usage.....	143	2.6
8th pillar: Government usage.....	131	3.1
D. Impact subindex	138	2.4
9th pillar: Economic impacts.....	137	2.4
10th pillar: Social impacts.....	139	2.4



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	97	3.2
1.02 Laws relating to ICTs*	143	2.3
1.03 Judicial independence*	127	2.4
1.04 Efficiency of legal system in settling disputes*	129	2.7
1.05 Efficiency of legal system in challenging regs*	144	2.2
1.06 Intellectual property protection*	137	2.4
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	134	4.6
1.09 No. days to enforce a contract	140	1,296
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	139	3.5
2.02 Venture capital availability*	119	2.1
2.03 Total tax rate, % profits	124	52.1
2.04 No. days to start a business	137	66
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	148	2.8
2.07 Tertiary education gross enrollment rate, %	128	7.5
2.08 Quality of management schools*	148	2.2
2.09 Gov't procurement of advanced tech*	133	2.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	120	280.0
3.02 Mobile network coverage, % pop.	139	40.0
3.03 Int'l Internet bandwidth, kb/s per user	142	0.6
3.04 Secure Internet servers/million pop.	110	3.5
3.05 Accessibility of digital content*	135	3.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	81	0.28
4.02 Fixed broadband Internet tariffs, PPP \$/month	115	57.22
4.03 Internet & telephony competition, 0-2 (best)	104	1.33
5th pillar: Skills		
5.01 Quality of educational system*	144	2.2
5.02 Quality of math & science education*	147	2.1
5.03 Secondary education gross enrollment rate, %	140	31.5
5.04 Adult literacy rate, %	121	70.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	138	47.1
6.02 Individuals using Internet, %	109	16.9
6.03 Households w/ personal computer, %	118	8.5
6.04 Households w/ Internet access, %	115	7.2
6.05 Fixed broadband Internet subs./100 pop.	124	0.2
6.06 Mobile broadband subscriptions/100 pop.	120	1.5
6.07 Use of virtual social networks*	123	4.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	145	3.3
7.02 Capacity for innovation*	146	2.5
7.03 PCT patents, applications/million pop.	118	0.0
7.04 Business-to-business Internet use*	144	3.2
7.05 Business-to-consumer Internet use*	139	3.0
7.06 Extent of staff training*	124	3.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	137	2.8
8.02 Government Online Service Index, 0-1 (best)	106	0.33
8.03 Gov't success in ICT promotion*	126	3.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	137	3.3
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	137	2.9
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	144	2.7
10.02 Internet access in schools*	127	2.6
10.03 ICT use & gov't efficiency*	138	2.9
10.04 E-Participation Index, 0-1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Argentina

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 100..3.5

Networked Readiness Index 2013 (out of 144)..... 99.....3.5

A. Environment subindex..... 135.....3.2

1st pillar: Political and regulatory environment..... 135.....2.8

2nd pillar: Business and innovation environment..... 122.....3.6

B. Readiness subindex..... 100.....4.1

3rd pillar: Infrastructure and digital content..... 78.....3.9

4th pillar: Affordability..... 121.....3.7

5th pillar: Skills..... 79.....4.9

C. Usage subindex..... 77.....3.6

6th pillar: Individual usage..... 57.....4.3

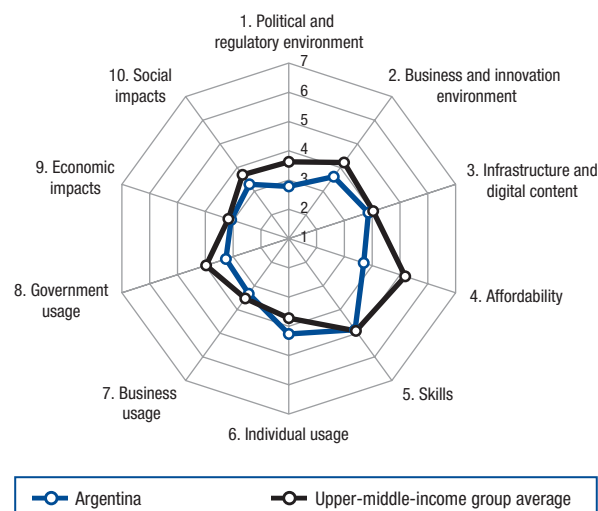
7th pillar: Business usage..... 99.....3.3

8th pillar: Government usage..... 121.....3.3

D. Impact subindex..... 96.....3.2

9th pillar: Economic impacts..... 87.....3.1

10th pillar: Social impacts..... 98.....3.3



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	146	2.1
1.02 Laws relating to ICTs*	127	2.9
1.03 Judicial independence*	132	2.4
1.04 Efficiency of legal system in settling disputes*	133	2.6
1.05 Efficiency of legal system in challenging regs*	147	1.9
1.06 Intellectual property protection*	139	2.3
1.07 Software piracy rate, % software installed	69	69
1.08 No. procedures to enforce a contract	55	36
1.09 No. days to enforce a contract	87	590
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	123	4.0
2.02 Venture capital availability*	142	1.7
2.03 Total tax rate, % profits	147	107.8
2.04 No. days to start a business	103	25
2.05 No. procedures to start a business	142	14
2.06 Intensity of local competition*	134	4.0
2.07 Tertiary education gross enrollment rate, %	17	74.8
2.08 Quality of management schools*	33	4.9
2.09 Gov't procurement of advanced tech*	140	2.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	65	3,180.9
3.02 Mobile network coverage, % pop.	109	94.1
3.03 Int'l Internet bandwidth, kb/s per user	67	22.0
3.04 Secure Internet servers/million pop.	62	41.8
3.05 Accessibility of digital content*	88	4.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	141	0.77
4.02 Fixed broadband Internet tariffs, PPP \$/month	79	33.99
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	104	3.2
5.02 Quality of math & science education*	116	3.2
5.03 Secondary education gross enrollment rate, %	72	90.2
5.04 Adult literacy rate, %	50	97.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	19	151.9
6.02 Individuals using Internet, %	54	55.8
6.03 Households w/ personal computer, %	58	56.0
6.04 Households w/ Internet access, %	58	47.5
6.05 Fixed broadband Internet subs./100 pop.	56	10.9
6.06 Mobile broadband subscriptions/100 pop.	69	20.9
6.07 Use of virtual social networks*	45	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	115	4.1
7.02 Capacity for innovation*	91	3.3
7.03 PCT patents, applications/million pop.	62	1.3
7.04 Business-to-business Internet use*	106	4.4
7.05 Business-to-consumer Internet use*	68	4.6
7.06 Extent of staff training*	100	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	143	2.5
8.02 Government Online Service Index, 0–1 (best)	59	0.53
8.03 Gov't success in ICT promotion*	141	3.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	116	3.7
9.02 ICT PCT patents, applications/million pop.	61	0.3
9.03 Impact of ICTs on new organizational models*	88	3.9
9.04 Knowledge-intensive jobs, % workforce	56	25.0
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	118	3.5
10.02 Internet access in schools*	79	4.0
10.03 ICT use & gov't efficiency*	140	2.9
10.04 E-Participation Index, 0–1 (best)	52	0.29

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Armenia

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 65.. 4.0

Networked Readiness Index 2013 (out of 144)..... 82.....3.8

A. Environment subindex..... 83.....3.8

1st pillar: Political and regulatory environment..... 104.....3.3

2nd pillar: Business and innovation environment..... 67.....4.3

B. Readiness subindex..... 51.....5.1

3rd pillar: Infrastructure and digital content..... 53.....4.6

4th pillar: Affordability..... 63.....5.4

5th pillar: Skills..... 47.....5.4

C. Usage subindex..... 73.....3.7

6th pillar: Individual usage..... 74.....3.5

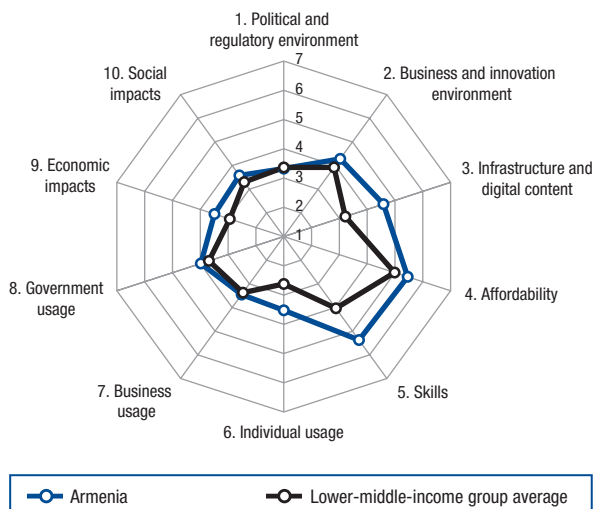
7th pillar: Business usage..... 82.....3.5

8th pillar: Government usage..... 76.....4.0

D. Impact subindex..... 67.....3.5

9th pillar: Economic impacts..... 47.....3.5

10th pillar: Social impacts..... 80.....3.6



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	78	3.5
1.02 Laws relating to ICTs*	42	4.6
1.03 Judicial independence*	110	3.0
1.04 Efficiency of legal system in settling disputes*	74	3.7
1.05 Efficiency of legal system in challenging regs*	76	3.4
1.06 Intellectual property protection*	75	3.6
1.07 Software piracy rate, % software installed	101	88
1.08 No. procedures to enforce a contract	142	49
1.09 No. days to enforce a contract	80	570
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	97	4.5
2.02 Venture capital availability*	93	2.4
2.03 Total tax rate, % profits	77	38.8
2.04 No. days to start a business	9	4
2.05 No. procedures to start a business	3	2
2.06 Intensity of local competition*	102	4.6
2.07 Tertiary education gross enrollment rate, %	59	46.0
2.08 Quality of management schools*	120	3.4
2.09 Gov't procurement of advanced tech*	111	3.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	74	2,507.7
3.02 Mobile network coverage, % pop.	43	99.8
3.03 Int'l Internet bandwidth, kb/s per user	47	40.4
3.04 Secure Internet servers/million pop.	72	26.9
3.05 Accessibility of digital content*	64	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	63	0.22
4.02 Fixed broadband Internet tariffs, PPP \$/month	54	28.13
4.03 Internet & telephony competition, 0–2 (best)	113	1.25
5th pillar: Skills		
5.01 Quality of educational system*	69	3.7
5.02 Quality of math & science education*	67	4.2
5.03 Secondary education gross enrollment rate, %	54	95.9
5.04 Adult literacy rate, %	11	99.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	65	111.9
6.02 Individuals using Internet, %	84	39.2
6.03 Households w/ personal computer, %	79	34.0
6.04 Households w/ Internet access, %	81	25.4
6.05 Fixed broadband Internet subs./100 pop.	74	6.7
6.06 Mobile broadband subscriptions/100 pop.	55	29.1
6.07 Use of virtual social networks*	67	5.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	98	4.4
7.02 Capacity for innovation*	77	3.4
7.03 PCT patents, applications/million pop.	50	3.5
7.04 Business-to-business Internet use*	48	5.2
7.05 Business-to-consumer Internet use*	78	4.4
7.06 Extent of staff training*	114	3.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	47	4.4
8.02 Government Online Service Index, 0–1 (best)	109	0.33
8.03 Gov't success in ICT promotion*	46	4.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	46	4.7
9.02 ICT PCT patents, applications/million pop.	53	0.5
9.03 Impact of ICTs on new organizational models*	36	4.7
9.04 Knowledge-intensive jobs, % workforce	62	24.1
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	64	4.3
10.02 Internet access in schools*	78	4.0
10.03 ICT use & gov't efficiency*	24	5.0
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Australia

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 18..5.4

Networked Readiness Index 2013 (out of 144)..... 18.....5.3

A. Environment subindex..... 14.....5.2

1st pillar: Political and regulatory environment..... 15.....5.2

2nd pillar: Business and innovation environment..... 21.....5.2

B. Readiness subindex..... 9.....6.2

3rd pillar: Infrastructure and digital content..... 8.....6.8

4th pillar: Affordability..... 49.....5.8

5th pillar: Skills..... 20.....5.8

C. Usage subindex..... 19.....5.3

6th pillar: Individual usage..... 15.....5.9

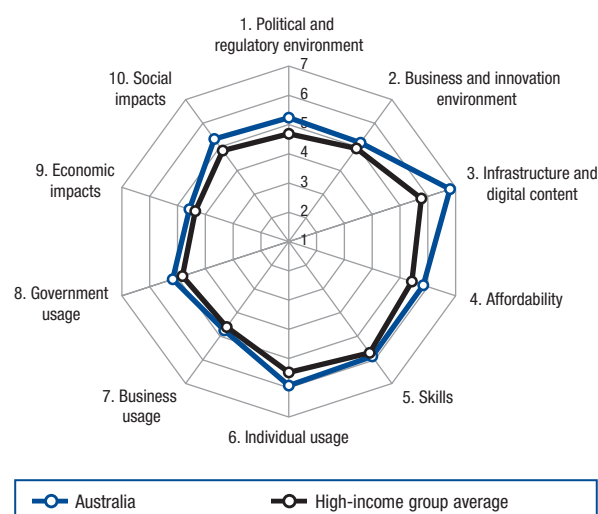
7th pillar: Business usage..... 24.....4.8

8th pillar: Government usage..... 21.....5.2

D. Impact subindex..... 20.....5.0

9th pillar: Economic impacts..... 23.....4.6

10th pillar: Social impacts..... 15.....5.3



The Networked Readiness Index in detail

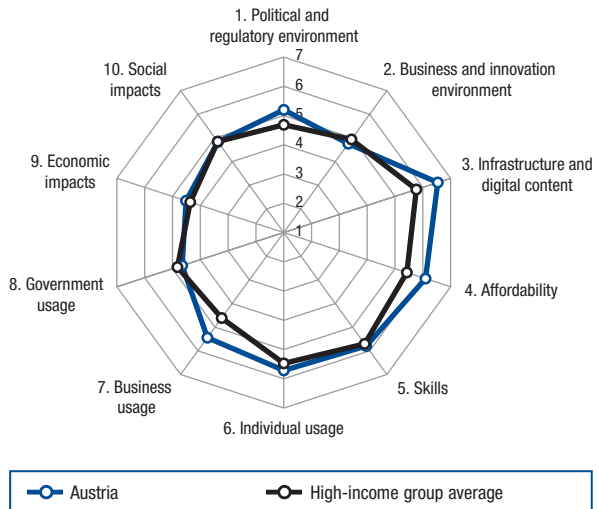
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	25	4.5
1.02 Laws relating to ICTs*	17	5.1
1.03 Judicial independence*	16	5.7
1.04 Efficiency of legal system in settling disputes*	30	4.6
1.05 Efficiency of legal system in challenging regs*	30	4.3
1.06 Intellectual property protection*	21	5.3
1.07 Software piracy rate, % software installed	5	23
1.08 No. procedures to enforce a contract	12	28
1.09 No. days to enforce a contract	26	395
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	23	6.1
2.02 Venture capital availability*	19	3.6
2.03 Total tax rate, % profits	108	47.0
2.04 No. days to start a business	5	3
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	13	5.8
2.07 Tertiary education gross enrollment rate, %	8	83.2
2.08 Quality of management schools*	29	5.1
2.09 Gov't procurement of advanced tech*	57	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	9	11,120.8
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	33	69.1
3.04 Secure Internet servers/million pop.	8	1,724.5
3.05 Accessibility of digital content*	22	6.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	26	0.10
4.02 Fixed broadband Internet tariffs, PPP \$/month	101	41.30
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	23	4.8
5.02 Quality of math & science education*	37	4.6
5.03 Secondary education gross enrollment rate, %	1	133.0
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	84	105.6
6.02 Individuals using Internet, %	18	82.4
6.03 Households w/ personal computer, %	17	85.2
6.04 Households w/ Internet access, %	17	81.4
6.05 Fixed broadband Internet subs./100 pop.	25	24.3
6.06 Mobile broadband subscriptions/100 pop.	7	96.2
6.07 Use of virtual social networks*	10	6.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	14	5.8
7.02 Capacity for innovation*	23	4.5
7.03 PCT patents, applications/million pop.	21	76.2
7.04 Business-to-business Internet use*	27	5.6
7.05 Business-to-consumer Internet use*	12	5.8
7.06 Extent of staff training*	30	4.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	25	4.7
8.02 Government Online Service Index, 0–1 (best)	9	0.86
8.03 Gov't success in ICT promotion*	48	4.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	22	5.1
9.02 ICT PCT patents, applications/million pop.	20	20.1
9.03 Impact of ICTs on new organizational models*	21	4.9
9.04 Knowledge-intensive jobs, % workforce	16	42.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	24	5.3
10.02 Internet access in schools*	17	5.9
10.03 ICT use & gov't efficiency*	51	4.5
10.04 E-Participation Index, 0–1 (best)	8	0.76

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Austria

	Rank (out of 148)	Value (1-7)
Networked Readiness Index 2014	22	5.3
Networked Readiness Index 2013 (out of 144)	19	5.2
A. Environment subindex	23	5.0
1st pillar: Political and regulatory environment	18	5.2
2nd pillar: Business and innovation environment	39	4.8
B. Readiness subindex	11	6.1
3rd pillar: Infrastructure and digital content	10	6.5
4th pillar: Affordability	34	6.1
5th pillar: Skills	22	5.8
C. Usage subindex	20	5.3
6th pillar: Individual usage	20	5.7
7th pillar: Business usage	11	5.4
8th pillar: Government usage	36	4.6
D. Impact subindex	24	4.7
9th pillar: Economic impacts	24	4.5
10th pillar: Social impacts	31	4.8



The Networked Readiness Index in detail

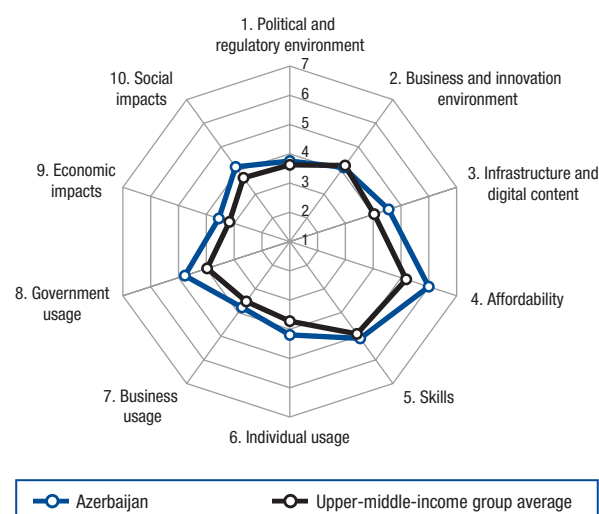
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	35	4.3
1.02 Laws relating to ICTs*	21	5.1
1.03 Judicial independence*	30	5.1
1.04 Efficiency of legal system in settling disputes*	24	4.8
1.05 Efficiency of legal system in challenging regs*	25	4.4
1.06 Intellectual property protection*	17	5.5
1.07 Software piracy rate, % software installed	5	23
1.08 No. procedures to enforce a contract	4	25
1.09 No. days to enforce a contract	29	397
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	24	6.1
2.02 Venture capital availability*	55	2.8
2.03 Total tax rate, % profits	125	52.4
2.04 No. days to start a business	103	25
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	11	5.8
2.07 Tertiary education gross enrollment rate, %	25	71.0
2.08 Quality of management schools*	40	4.7
2.09 Gov't procurement of advanced tech*	47	3.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	26	7,618.2
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	17	108.1
3.04 Secure Internet servers/million pop.	16	1,134.7
3.05 Accessibility of digital content*	15	6.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	20	0.08
4.02 Fixed broadband Internet tariffs, PPP \$/month	87	35.98
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	24	4.8
5.02 Quality of math & science education*	39	4.6
5.03 Secondary education gross enrollment rate, %	41	98.0
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	11	160.5
6.02 Individuals using Internet, %	21	81.0
6.03 Households w/ personal computer, %	22	81.0
6.04 Households w/ Internet access, %	20	79.0
6.05 Fixed broadband Internet subs./100 pop.	23	25.0
6.06 Mobile broadband subscriptions/100 pop.	23	56.3
6.07 Use of virtual social networks*	21	6.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	17	5.8
7.02 Capacity for innovation*	14	5.0
7.03 PCT patents, applications/million pop.	10	159.6
7.04 Business-to-business Internet use*	9	5.9
7.05 Business-to-consumer Internet use*	17	5.6
7.06 Extent of staff training*	16	4.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	69	3.9
8.02 Government Online Service Index, 0-1 (best)	26	0.75
8.03 Gov't success in ICT promotion*	56	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	36	4.9
9.02 ICT PCT patents, applications/million pop.	13	31.0
9.03 Impact of ICTs on new organizational models*	48	4.5
9.04 Knowledge-intensive jobs, % workforce	25	38.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	23	5.3
10.02 Internet access in schools*	25	5.7
10.03 ICT use & gov't efficiency*	22	5.1
10.04 E-Participation Index, 0-1 (best)	41	0.37

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Azerbaijan

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	49	4.3
Networked Readiness Index 2013 (out of 144).....	56.....	4.1
A. Environment subindex	70	3.9
1st pillar: Political and regulatory environment.....	66.....	3.7
2nd pillar: Business and innovation environment.....	77.....	4.1
B. Readiness subindex	49	5.2
3rd pillar: Infrastructure and digital content.....	55.....	4.6
4th pillar: Affordability.....	40.....	6.0
5th pillar: Skills.....	66.....	5.1
C. Usage subindex	44	4.2
6th pillar: Individual usage.....	61.....	4.2
7th pillar: Business usage.....	52.....	3.8
8th pillar: Government usage.....	34.....	4.8
D. Impact subindex	46	3.8
9th pillar: Economic impacts.....	42.....	3.6
10th pillar: Social impacts.....	46.....	4.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	63	3.7
1.02 Laws relating to ICTs*	24	5.1
1.03 Judicial independence*	93	3.3
1.04 Efficiency of legal system in settling disputes*	64	3.8
1.05 Efficiency of legal system in challenging regs*	53	3.7
1.06 Intellectual property protection*	69	3.7
1.07 Software piracy rate, % software installed	100	87
1.08 No. procedures to enforce a contract	98	40
1.09 No. days to enforce a contract	6	237
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	65	5.0
2.02 Venture capital availability*	52	2.9
2.03 Total tax rate, % profits	81	40.0
2.04 No. days to start a business	37	7
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	128	4.2
2.07 Tertiary education gross enrollment rate, %	96	19.6
2.08 Quality of management schools*	134	3.1
2.09 Gov't procurement of advanced tech*	14	4.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	81	2,212.3
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	45	40.6
3.04 Secure Internet servers/million pop.	101	6.5
3.05 Accessibility of digital content*	50	5.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	65	0.22
4.02 Fixed broadband Internet tariffs, PPP \$/month	18	17.99
4.03 Internet & telephony competition, 0–2 (best)	102	1.40
5th pillar: Skills		
5.01 Quality of educational system*	114	3.1
5.02 Quality of math & science education*	110	3.3
5.03 Secondary education gross enrollment rate, %	38	99.5
5.04 Adult literacy rate, %	3	99.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	73	108.8
6.02 Individuals using Internet, %	59	54.2
6.03 Households w/ personal computer, %	67	45.0
6.04 Households w/ Internet access, %	61	46.8
6.05 Fixed broadband Internet subs./100 pop.	46	14.1
6.06 Mobile broadband subscriptions/100 pop.	46	34.8
6.07 Use of virtual social networks*	38	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	59	4.9
7.02 Capacity for innovation*	35	4.1
7.03 PCT patents, applications/million pop.	77	0.6
7.04 Business-to-business Internet use*	47	5.2
7.05 Business-to-consumer Internet use*	51	4.9
7.06 Extent of staff training*	80	3.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	6	5.5
8.02 Government Online Service Index, 0–1 (best)	98	0.37
8.03 Gov't success in ICT promotion*	8	5.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	43	4.8
9.02 ICT PCT patents, applications/million pop.	75	0.1
9.03 Impact of ICTs on new organizational models*	24	4.9
9.04 Knowledge-intensive jobs, % workforce	60	24.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	31	5.2
10.02 Internet access in schools*	72	4.2
10.03 ICT use & gov't efficiency*	11	5.4
10.04 E-Participation Index, 0–1 (best)	82	0.13

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Bahrain

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 29.. 4.9

Networked Readiness Index 2013 (out of 144)..... 29..... 4.8

A. Environment subindex..... 40..... 4.5

1st pillar: Political and regulatory environment..... 48..... 4.1

2nd pillar: Business and innovation environment..... 27..... 5.0

B. Readiness subindex 32..... 5.5

3rd pillar: Infrastructure and digital content..... 39..... 5.0

4th pillar: Affordability 25..... 6.3

5th pillar: Skills 58..... 5.2

C. Usage subindex 25..... 5.1

6th pillar: Individual usage 14..... 6.0

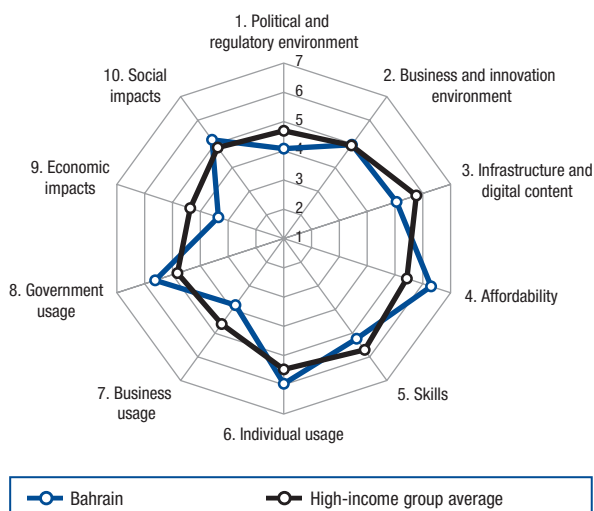
7th pillar: Business usage 49..... 3.8

8th pillar: Government usage 5..... 5.6

D. Impact subindex 35..... 4.3

9th pillar: Economic impacts 63..... 3.4

10th pillar: Social impacts 18..... 5.2



The Networked Readiness Index in detail

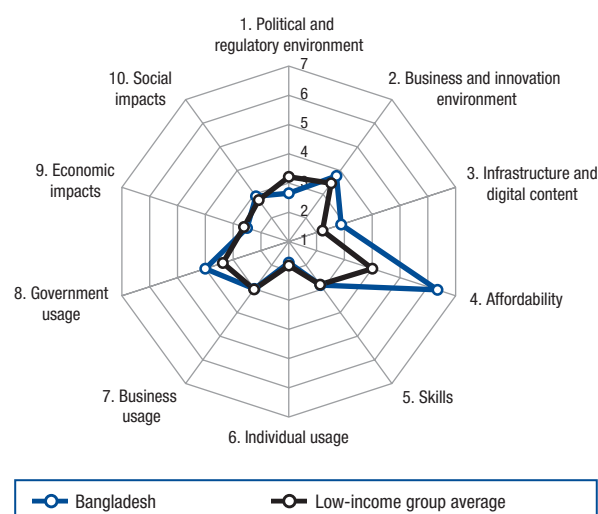
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	85	3.4
1.02 Laws relating to ICTs*	40	4.7
1.03 Judicial independence*	46	4.5
1.04 Efficiency of legal system in settling disputes*	41	4.2
1.05 Efficiency of legal system in challenging regs*	43	3.9
1.06 Intellectual property protection*	32	4.8
1.07 Software piracy rate, % software installed	44	5.4
1.08 No. procedures to enforce a contract	141	4.8
1.09 No. days to enforce a contract	102	6.35
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	26	6.0
2.02 Venture capital availability*	15	3.8
2.03 Total tax rate, % profits	5	13.5
2.04 No. days to start a business	51	9
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	40	5.3
2.07 Tertiary education gross enrollment rate, %	77	33.5
2.08 Quality of management schools*	85	4.1
2.09 Gov't procurement of advanced tech*	24	4.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	12	10,694.9
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	74	18.1
3.04 Secure Internet servers/million pop.	45	135.8
3.05 Accessibility of digital content*	38	5.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	32	0.13
4.02 Fixed broadband Internet tariffs, PPP \$/month	55	28.21
4.03 Internet & telephony competition, 0-2 (best)	63	1.92
5th pillar: Skills		
5.01 Quality of educational system*	48	4.1
5.02 Quality of math & science education*	77	4.0
5.03 Secondary education gross enrollment rate, %	56	95.5
5.04 Adult literacy rate, %	80	91.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	10	161.2
6.02 Individuals using Internet, %	10	88.0
6.03 Households w/ personal computer, %	3	92.7
6.04 Households w/ Internet access, %	20	79.0
6.05 Fixed broadband Internet subs./100 pop.	49	13.2
6.06 Mobile broadband subscriptions/100 pop.	8	91.2
6.07 Use of virtual social networks*	12	6.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	30	5.5
7.02 Capacity for innovation*	82	3.4
7.03 PCT patents, applications/million pop.	69	1.0
7.04 Business-to-business Internet use*	38	5.4
7.05 Business-to-consumer Internet use*	87	4.2
7.06 Extent of staff training*	41	4.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	14	5.2
8.02 Government Online Service Index, 0-1 (best)	9	0.86
8.03 Gov't success in ICT promotion*	12	5.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	49	4.7
9.02 ICT PCT patents, applications/million pop.	52	0.5
9.03 Impact of ICTs on new organizational models*	46	4.5
9.04 Knowledge-intensive jobs, % workforce	74	20.7
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	18	5.4
10.02 Internet access in schools*	45	5.0
10.03 ICT use & gov't efficiency*	13	5.4
10.04 E-Participation Index, 0-1 (best)	19	0.66

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Bangladesh

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	119	3.2
Networked Readiness Index 2013 (out of 144).....	114.....	3.2
A. Environment subindex	132	3.2
1st pillar: Political and regulatory environment.....	138.....	2.7
2nd pillar: Business and innovation environment.....	114.....	3.8
B. Readiness subindex	104	4.0
3rd pillar: Infrastructure and digital content.....	112.....	2.9
4th pillar: Affordability.....	23.....	6.3
5th pillar: Skills.....	128.....	2.8
C. Usage subindex	120	2.9
6th pillar: Individual usage.....	134.....	1.7
7th pillar: Business usage.....	127.....	3.0
8th pillar: Government usage.....	73.....	4.0
D. Impact subindex	127	2.7
9th pillar: Economic impacts.....	130.....	2.5
10th pillar: Social impacts.....	118.....	2.9



The Networked Readiness Index in detail

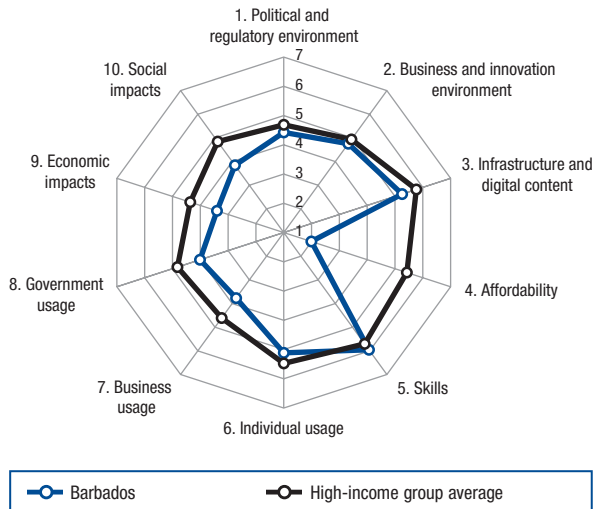
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	101	3.2
1.02 Laws relating to ICTs*	123	3.0
1.03 Judicial independence*	129	2.4
1.04 Efficiency of legal system in settling disputes*	114	3.1
1.05 Efficiency of legal system in challenging regs*	81	3.3
1.06 Intellectual property protection*	130	2.6
1.07 Software piracy rate, % software installed	104	90
1.08 No. procedures to enforce a contract	111	41
1.09 No. days to enforce a contract	147	1,442
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	101	4.4
2.02 Venture capital availability*	125	2.0
2.03 Total tax rate, % profits	62	35.0
2.04 No. days to start a business	57	11
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	74	4.9
2.07 Tertiary education gross enrollment rate, %	109	13.2
2.08 Quality of management schools*	105	3.7
2.09 Gov't procurement of advanced tech*	142	2.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	118	288.2
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	128	3.0
3.04 Secure Internet servers/million pop.	136	0.7
3.05 Accessibility of digital content*	117	4.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	5	0.04
4.02 Fixed broadband Internet tariffs, PPP \$/month	3	10.37
4.03 Internet & telephony competition, 0–2 (best)	113	1.25
5th pillar: Skills		
5.01 Quality of educational system*	98	3.3
5.02 Quality of math & science education*	112	3.3
5.03 Secondary education gross enrollment rate, %	119	50.8
5.04 Adult literacy rate, %	132	57.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	128	62.8
6.02 Individuals using Internet, %	128	6.3
6.03 Households w/ personal computer, %	130	4.8
6.04 Households w/ Internet access, %	133	3.2
6.05 Fixed broadband Internet subs./100 pop.	117	0.4
6.06 Mobile broadband subscriptions/100 pop.	127	0.5
6.07 Use of virtual social networks*	138	4.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	111	4.2
7.02 Capacity for innovation*	120	3.0
7.03 PCT patents, applications/million pop.	117	0.0
7.04 Business-to-business Internet use*	130	4.0
7.05 Business-to-consumer Internet use*	124	3.5
7.06 Extent of staff training*	137	3.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	65	4.1
8.02 Government Online Service Index, 0–1 (best)	84	0.44
8.03 Gov't success in ICT promotion*	76	4.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	112	3.8
9.02 ICT PCT patents, applications/million pop.	92	0.0
9.03 Impact of ICTs on new organizational models*	119	3.5
9.04 Knowledge-intensive jobs, % workforce	109	7.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	96	3.7
10.02 Internet access in schools*	122	2.8
10.03 ICT use & gov't efficiency*	107	3.6
10.04 E-Participation Index, 0–1 (best)	97	0.08

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Barbados

	Rank (out of 148)	Value (1-7)
Networked Readiness Index 2014	55	4.2
Networked Readiness Index 2013 (out of 144)	39	4.5
A. Environment subindex	38	4.6
1st pillar: Political and regulatory environment	35	4.4
2nd pillar: Business and innovation environment	42	4.7
B. Readiness subindex	91	4.4
3rd pillar: Infrastructure and digital content	35	5.3
4th pillar: Affordability	144	2.0
5th pillar: Skills	15	5.9
C. Usage subindex	43	4.3
6th pillar: Individual usage	33	5.1
7th pillar: Business usage	53	3.8
8th pillar: Government usage	72	4.0
D. Impact subindex	58	3.6
9th pillar: Economic impacts	57	3.4
10th pillar: Social impacts	64	3.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	15	5.0
1.02 Laws relating to ICTs*	64	4.1
1.03 Judicial independence*	21	5.5
1.04 Efficiency of legal system in settling disputes*	34	4.5
1.05 Efficiency of legal system in challenging regs*	32	4.2
1.06 Intellectual property protection*	37	4.5
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	78	3.8
1.09 No. days to enforce a contract	143	1,340
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	28	5.9
2.02 Venture capital availability*	98	2.4
2.03 Total tax rate, % profits	87	40.8
2.04 No. days to start a business	86	18
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	50	5.2
2.07 Tertiary education gross enrollment rate, %	37	60.8
2.08 Quality of management schools*	26	5.1
2.09 Gov't procurement of advanced tech*	54	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	60	3,698.3
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	34	67.4
3.04 Secure Internet servers/million pop.	30	374.3
3.05 Accessibility of digital content*	28	6.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	136	0.59
4.02 Fixed broadband Internet tariffs, PPP \$/month	129	80.33
4.03 Internet & telephony competition, 0-2 (best)	118	1.20
5th pillar: Skills		
5.01 Quality of educational system*	6	5.3
5.02 Quality of math & science education*	9	5.5
5.03 Secondary education gross enrollment rate, %	23	104.7
5.04 Adult literacy rate, %	n/a	n/a

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	46	122.5
6.02 Individuals using Internet, %	32	73.3
6.03 Households w/ personal computer, %	41	69.2
6.04 Households w/ Internet access, %	44	62.9
6.05 Fixed broadband Internet subs./100 pop.	30	23.1
6.06 Mobile broadband subscriptions/100 pop.	44	36.0
6.07 Use of virtual social networks*	25	6.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	44	5.2
7.02 Capacity for innovation*	81	3.4
7.03 PCT patents, applications/million pop.	43	6.2
7.04 Business-to-business Internet use*	70	4.8
7.05 Business-to-consumer Internet use*	79	4.4
7.06 Extent of staff training*	32	4.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	53	4.3
8.02 Government Online Service Index, 0-1 (best)	96	0.37
8.03 Gov't success in ICT promotion*	57	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	74	4.3
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	76	4.1
9.04 Knowledge-intensive jobs, % workforce	47	30.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	42	4.8
10.02 Internet access in schools*	38	5.1
10.03 ICT use & gov't efficiency*	60	4.3
10.04 E-Participation Index, 0-1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Belgium

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....27..5.1

Networked Readiness Index 2013 (out of 144).....24.....5.1

A. Environment subindex.....19.....5.1

1st pillar: Political and regulatory environment.....21.....5.0

2nd pillar: Business and innovation environment.....22.....5.1

B. Readiness subindex.....25.....5.7

3rd pillar: Infrastructure and digital content.....22.....6.0

4th pillar: Affordability.....101.....4.6

5th pillar: Skills.....4.....6.3

C. Usage subindex.....27.....5.0

6th pillar: Individual usage.....25.....5.5

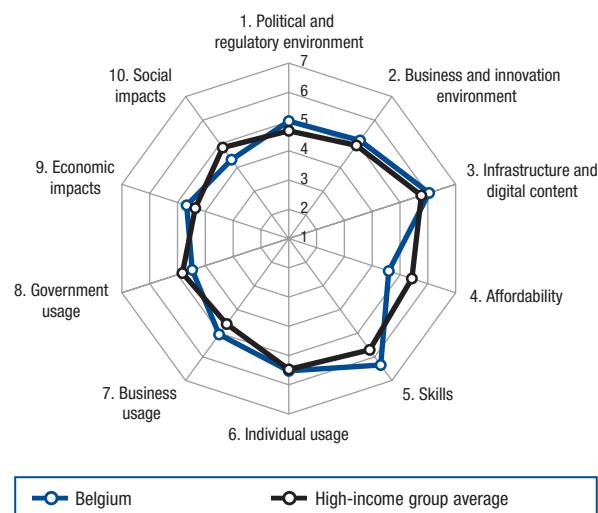
7th pillar: Business usage.....18.....5.1

8th pillar: Government usage.....42.....4.5

D. Impact subindex.....29.....4.5

9th pillar: Economic impacts.....20.....4.7

10th pillar: Social impacts.....40.....4.3



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	49	4.0
1.02 Laws relating to ICTs*	30	4.9
1.03 Judicial independence*	24	5.4
1.04 Efficiency of legal system in settling disputes*	40	4.2
1.05 Efficiency of legal system in challenging regs*	36	4.0
1.06 Intellectual property protection*	22	5.2
1.07 Software piracy rate, % software installed	7	24
1.08 No. procedures to enforce a contract	5	26
1.09 No. days to enforce a contract	58	505
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	12	6.3
2.02 Venture capital availability*	26	3.3
2.03 Total tax rate, % profits	130	57.5
2.04 No. days to start a business	9	4
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	6	6.0
2.07 Tertiary education gross enrollment rate, %	27	69.3
2.08 Quality of management schools*	2	6.0
2.09 Gov't procurement of advanced tech*	45	3.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	31	6,935.1
3.02 Mobile network coverage, % pop.	33	99.9
3.03 Int'l Internet bandwidth, kb/s per user	11	180.4
3.04 Secure Internet servers/million pop.	22	673.6
3.05 Accessibility of digital content*	26	6.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	135	0.59
4.02 Fixed broadband Internet tariffs, PPP \$/month	64	29.39
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	7	5.3
5.02 Quality of math & science education*	3	6.0
5.03 Secondary education gross enrollment rate, %	19	106.5
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	68	111.3
6.02 Individuals using Internet, %	19	82.0
6.03 Households w/ personal computer, %	25	80.0
6.04 Households w/ Internet access, %	23	78.0
6.05 Fixed broadband Internet subs./100 pop.	10	33.3
6.06 Mobile broadband subscriptions/100 pop.	51	33.0
6.07 Use of virtual social networks*	28	6.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	26	5.6
7.02 Capacity for innovation*	10	5.1
7.03 PCT patents, applications/million pop.	16	110.7
7.04 Business-to-business Internet use*	26	5.6
7.05 Business-to-consumer Internet use*	34	5.1
7.06 Extent of staff training*	19	4.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	63	4.1
8.02 Government Online Service Index, 0–1 (best)	39	0.65
8.03 Gov't success in ICT promotion*	68	4.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	30	5.0
9.02 ICT PCT patents, applications/million pop.	17	25.4
9.03 Impact of ICTs on new organizational models*	30	4.8
9.04 Knowledge-intensive jobs, % workforce	11	44.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	19	5.4
10.02 Internet access in schools*	26	5.7
10.03 ICT use & gov't efficiency*	52	4.5
10.04 E-Participation Index, 0–1 (best)	82	0.13

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Benin

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 135..2.8

Networked Readiness Index 2013 (out of 144)..... 123.....3.0

A. Environment subindex 127.....3.3

1st pillar: Political and regulatory environment 107.....3.2

2nd pillar: Business and innovation environment 131.....3.4

B. Readiness subindex 134.....2.8

3rd pillar: Infrastructure and digital content..... 122.....2.7

4th pillar: Affordability 134.....2.8

5th pillar: Skills 130.....2.8

C. Usage subindex 137.....2.6

6th pillar: Individual usage 124.....2.0

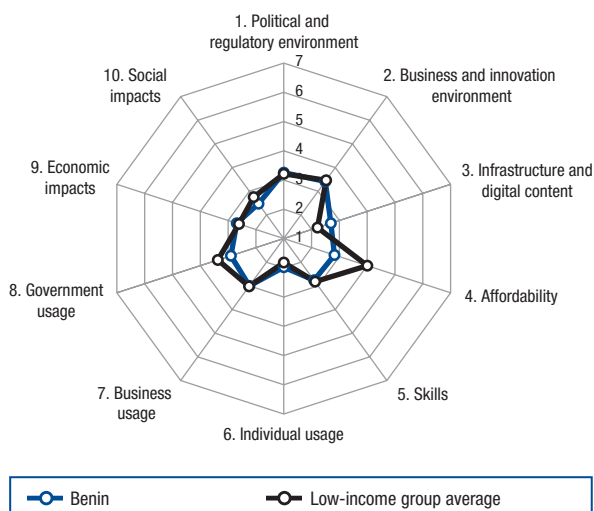
7th pillar: Business usage 128.....3.0

8th pillar: Government usage 137.....2.9

D. Impact subindex 132.....2.6

9th pillar: Economic impacts 119.....2.7

10th pillar: Social impacts 136.....2.5



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	45	4.1
1.02 Laws relating to ICTs*	135	2.6
1.03 Judicial independence*	116	2.7
1.04 Efficiency of legal system in settling disputes*	104	3.3
1.05 Efficiency of legal system in challenging regs*	91	3.2
1.06 Intellectual property protection*	101	3.1
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	116	4.2
1.09 No. days to enforce a contract	119	7.95
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	131	3.8
2.02 Venture capital availability*	113	2.2
2.03 Total tax rate, % profits	139	65.9
2.04 No. days to start a business	76	15
2.05 No. procedures to start a business	22	4
2.06 Intensity of local competition*	89	4.7
2.07 Tertiary education gross enrollment rate, %	111	12.4
2.08 Quality of management schools*	73	4.3
2.09 Gov't procurement of advanced tech*	100	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	146	15.7
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	126	3.2
3.04 Secure Internet servers/million pop.	137	0.7
3.05 Accessibility of digital content*	141	3.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	72	0.24
4.02 Fixed broadband Internet tariffs, PPP \$/month	132	101.41
4.03 Internet & telephony competition, 0-2 (best)	139	0.50
5th pillar: Skills		
5.01 Quality of educational system*	101	3.2
5.02 Quality of math & science education*	66	4.2
5.03 Secondary education gross enrollment rate, %	123	47.7
5.04 Adult literacy rate, %	142	42.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	110	83.7
6.02 Individuals using Internet, %	136	3.8
6.03 Households w/ personal computer, %	131	4.2
6.04 Households w/ Internet access, %	139	2.4
6.05 Fixed broadband Internet subs./100 pop.	134	0.1
6.06 Mobile broadband subscriptions/100 pop.	129	0.4
6.07 Use of virtual social networks*	125	4.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	122	4.0
7.02 Capacity for innovation*	114	3.0
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	129	4.0
7.05 Business-to-consumer Internet use*	112	3.7
7.06 Extent of staff training*	136	3.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	124	3.1
8.02 Government Online Service Index, 0-1 (best)	130	0.20
8.03 Gov't success in ICT promotion*	129	3.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	99	4.0
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	132	3.1
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	131	3.2
10.02 Internet access in schools*	140	2.0
10.03 ICT use & gov't efficiency*	127	3.2
10.04 E-Participation Index, 0-1 (best)	97	0.08

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Bhutan

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....94...3.7

Networked Readiness Index 2013 (out of 144).....n/a.....n/a

A. Environment subindex.....76....3.9

1st pillar: Political and regulatory environment.....43....4.2

2nd pillar: Business and innovation environment.....123....3.6

B. Readiness subindex.....84....4.6

3rd pillar: Infrastructure and digital content.....67....4.2

4th pillar: Affordability.....45....5.9

5th pillar: Skills.....114....3.6

C. Usage subindex.....110....3.1

6th pillar: Individual usage.....114....2.3

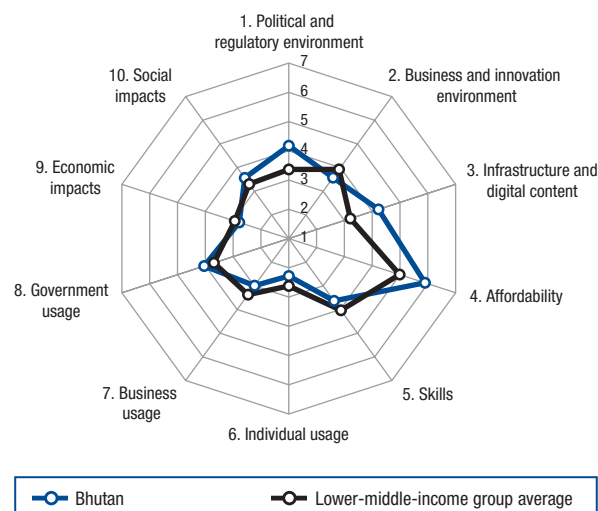
7th pillar: Business usage.....130....3.0

8th pillar: Government usage.....70....4.0

D. Impact subindex.....97....3.2

9th pillar: Economic impacts.....112....2.8

10th pillar: Social impacts.....81....3.6



The Networked Readiness Index in detail

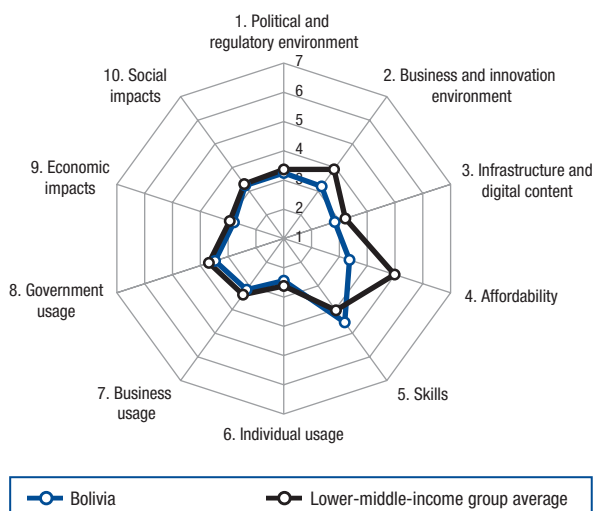
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	22	4.7
1.02 Laws relating to ICTs*	96	3.5
1.03 Judicial independence*	38	4.8
1.04 Efficiency of legal system in settling disputes*	51	4.0
1.05 Efficiency of legal system in challenging regs*	87	3.3
1.06 Intellectual property protection*	44	4.1
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	138	4.7
1.09 No. days to enforce a contract	3	2.25
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	135	3.7
2.02 Venture capital availability*	107	2.2
2.03 Total tax rate, % profits	87	40.8
2.04 No. days to start a business	114	3.2
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	96	4.7
2.07 Tertiary education gross enrollment rate, %	124	8.7
2.08 Quality of management schools*	111	3.6
2.09 Gov't procurement of advanced tech*	48	3.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	15	9,688.6
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	124	3.3
3.04 Secure Internet servers/million pop.	88	12.1
3.05 Accessibility of digital content*	90	4.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	38	0.14
4.02 Fixed broadband Internet tariffs, PPP \$/month	44	25.66
4.03 Internet & telephony competition, 0–2 (best)	104	1.33
5th pillar: Skills		
5.01 Quality of educational system*	41	4.3
5.02 Quality of math & science education*	71	4.1
5.03 Secondary education gross enrollment rate, %	101	73.9
5.04 Adult literacy rate, %	137	52.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	118	75.6
6.02 Individuals using Internet, %	100	25.4
6.03 Households w/ personal computer, %	101	16.4
6.04 Households w/ Internet access, %	102	11.6
6.05 Fixed broadband Internet subs./100 pop.	93	2.3
6.06 Mobile broadband subscriptions/100 pop.	115	2.5
6.07 Use of virtual social networks*	106	5.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	138	3.7
7.02 Capacity for innovation*	78	3.4
7.03 PCT patents, applications/million pop.	82	0.4
7.04 Business-to-business Internet use*	134	3.8
7.05 Business-to-consumer Internet use*	141	3.0
7.06 Extent of staff training*	119	3.4
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	33	4.5
8.02 Government Online Service Index, 0–1 (best)	102	0.35
8.03 Gov't success in ICT promotion*	61	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	110	3.9
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	114	3.6
9.04 Knowledge-intensive jobs, % workforce	90	16.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	50	4.5
10.02 Internet access in schools*	88	3.8
10.03 ICT use & gov't efficiency*	43	4.7
10.04 E-Participation Index, 0–1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Bolivia

	Rank (out of 148)	Value (1-7)
Networked Readiness Index 2014	120	3.2
Networked Readiness Index 2013 (out of 144).....	119.....	3.0
A. Environment subindex	131	3.2
1st pillar: Political and regulatory environment.....	109.....	3.2
2nd pillar: Business and innovation environment.....	139.....	3.2
B. Readiness subindex	115	3.6
3rd pillar: Infrastructure and digital content.....	114.....	2.8
4th pillar: Affordability.....	126.....	3.4
5th pillar: Skills.....	93.....	4.5
C. Usage subindex	116	3.0
6th pillar: Individual usage.....	108.....	2.4
7th pillar: Business usage.....	118.....	3.2
8th pillar: Government usage.....	115.....	3.5
D. Impact subindex	104	3.0
9th pillar: Economic impacts.....	111.....	2.8
10th pillar: Social impacts.....	101.....	3.2



The Networked Readiness Index in detail

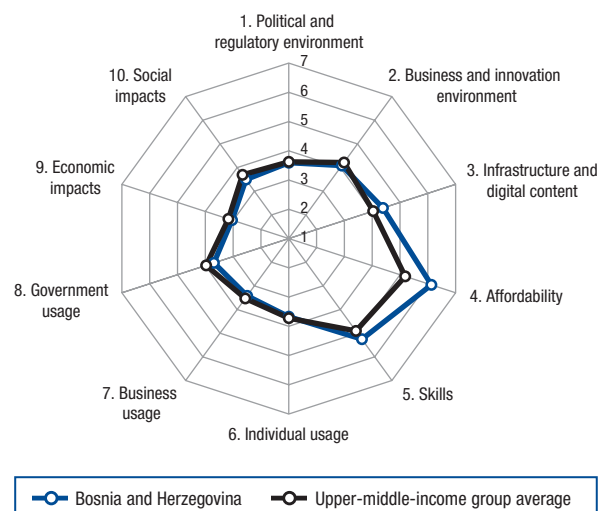
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	86	3.3
1.02 Laws relating to ICTs*	118	3.1
1.03 Judicial independence*	102	3.1
1.04 Efficiency of legal system in settling disputes*	82	3.6
1.05 Efficiency of legal system in challenging regs*	88	3.3
1.06 Intellectual property protection*	98	3.2
1.07 Software piracy rate, % software installed	83	79
1.08 No. procedures to enforce a contract	98	40
1.09 No. days to enforce a contract	88	591
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	130	3.8
2.02 Venture capital availability*	32	3.2
2.03 Total tax rate, % profits	145	83.4
2.04 No. days to start a business	132	49
2.05 No. procedures to start a business	144	15
2.06 Intensity of local competition*	137	3.8
2.07 Tertiary education gross enrollment rate, %	72	37.7
2.08 Quality of management schools*	126	3.3
2.09 Gov't procurement of advanced tech*	74	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	106	699.5
3.02 Mobile network coverage, % pop.	101	95.0
3.03 Int'l Internet bandwidth, kb/s per user	113	5.2
3.04 Secure Internet servers/million pop.	94	9.7
3.05 Accessibility of digital content*	130	3.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	126	0.51
4.02 Fixed broadband Internet tariffs, PPP \$/month	111	49.63
4.03 Internet & telephony competition, 0-2 (best)	136	0.80
5th pillar: Skills		
5.01 Quality of educational system*	89	3.4
5.02 Quality of math & science education*	98	3.6
5.03 Secondary education gross enrollment rate, %	95	77.3
5.04 Adult literacy rate, %	84	91.2

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	104	90.4
6.02 Individuals using Internet, %	91	34.2
6.03 Households w/ personal computer, %	88	25.9
6.04 Households w/ Internet access, %	107	10.0
6.05 Fixed broadband Internet subs./100 pop.	107	1.1
6.06 Mobile broadband subscriptions/100 pop.	98	6.6
6.07 Use of virtual social networks*	145	3.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	125	3.9
7.02 Capacity for innovation*	70	3.5
7.03 PCT patents, applications/million pop.	99	0.1
7.04 Business-to-business Internet use*	137	3.7
7.05 Business-to-consumer Internet use*	108	3.9
7.06 Extent of staff training*	112	3.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	112	3.4
8.02 Government Online Service Index, 0-1 (best)	92	0.41
8.03 Gov't success in ICT promotion*	119	3.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	107	3.9
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	100	3.7
9.04 Knowledge-intensive jobs, % workforce	95	15.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	99	3.7
10.02 Internet access in schools*	100	3.5
10.03 ICT use & gov't efficiency*	115	3.4
10.04 E-Participation Index, 0-1 (best)	63	0.21

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Bosnia and Herzegovina

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	68	4.0
Networked Readiness Index 2013 (out of 144).....	78.....	3.8
A. Environment subindex	80	3.8
1st pillar: Political and regulatory environment.....	76.....	3.6
2nd pillar: Business and innovation environment.....	83.....	4.1
B. Readiness subindex	46	5.2
3rd pillar: Infrastructure and digital content.....	63.....	4.4
4th pillar: Affordability.....	30.....	6.1
5th pillar: Skills.....	57.....	5.3
C. Usage subindex	79	3.6
6th pillar: Individual usage.....	70.....	3.7
7th pillar: Business usage.....	92.....	3.4
8th pillar: Government usage.....	99.....	3.7
D. Impact subindex	87	3.3
9th pillar: Economic impacts.....	88.....	3.0
10th pillar: Social impacts.....	85.....	3.5



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	73	3.6
1.02 Laws relating to ICTs*	67	4.0
1.03 Judicial independence*	64	3.9
1.04 Efficiency of legal system in settling disputes*	85	3.5
1.05 Efficiency of legal system in challenging regs*	54	3.7
1.06 Intellectual property protection*	135	2.5
1.07 Software piracy rate, % software installed	62	66
1.08 No. procedures to enforce a contract	67	37
1.09 No. days to enforce a contract	90	595
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	76	4.9
2.02 Venture capital availability*	131	1.9
2.03 Total tax rate, % profits	24	25.5
2.04 No. days to start a business	124	37
2.05 No. procedures to start a business	129	11
2.06 Intensity of local competition*	143	3.4
2.07 Tertiary education gross enrollment rate, %	71	37.7
2.08 Quality of management schools*	41	4.7
2.09 Gov't procurement of advanced tech*	89	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	57	3,979.9
3.02 Mobile network coverage, % pop.	43	99.8
3.03 Int'l Internet bandwidth, kb/s per user	65	23.9
3.04 Secure Internet servers/million pop.	74	25.8
3.05 Accessibility of digital content*	36	5.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	88	0.31
4.02 Fixed broadband Internet tariffs, PPP \$/month	15	15.85
4.03 Internet & telephony competition, 0–2 (best)	74	1.86
5th pillar: Skills		
5.01 Quality of educational system*	132	2.7
5.02 Quality of math & science education*	13	5.4
5.03 Secondary education gross enrollment rate, %	75	89.3
5.04 Adult literacy rate, %	49	98.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	105	87.6
6.02 Individuals using Internet, %	40	65.4
6.03 Households w/ personal computer, %	73	39.8
6.04 Households w/ Internet access, %	70	39.7
6.05 Fixed broadband Internet subs./100 pop.	58	10.6
6.06 Mobile broadband subscriptions/100 pop.	83	12.2
6.07 Use of virtual social networks*	44	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	93	4.4
7.02 Capacity for innovation*	108	3.1
7.03 PCT patents, applications/million pop.	57	2.0
7.04 Business-to-business Internet use*	101	4.5
7.05 Business-to-consumer Internet use*	88	4.2
7.06 Extent of staff training*	58	4.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	86	3.7
8.02 Government Online Service Index, 0–1 (best)	96	0.37
8.03 Gov't success in ICT promotion*	89	4.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	91	4.1
9.02 ICT PCT patents, applications/million pop.	64	0.2
9.03 Impact of ICTs on new organizational models*	81	4.0
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	65	4.3
10.02 Internet access in schools*	61	4.5
10.03 ICT use & gov't efficiency*	64	4.2
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Botswana

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 103..3.4

Networked Readiness Index 2013 (out of 144)..... 96.....3.5

A. Environment subindex 61 4.1

1st pillar: Political and regulatory environment 40 4.3

2nd pillar: Business and innovation environment 107 3.8

B. Readiness subindex 118 3.3

3rd pillar: Infrastructure and digital content 109 3.0

4th pillar: Affordability 142 2.4

5th pillar: Skills 92 4.6

C. Usage subindex 88 3.5

6th pillar: Individual usage 79 3.3

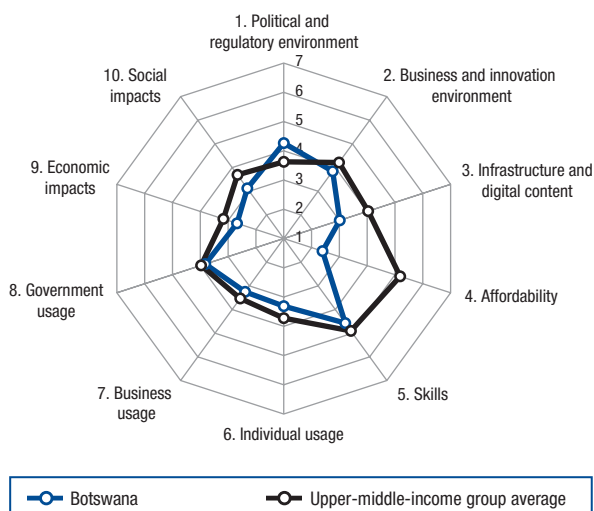
7th pillar: Business usage 106 3.2

8th pillar: Government usage 86 3.8

D. Impact subindex 110 2.9

9th pillar: Economic impacts 120 2.7

10th pillar: Social impacts 107 3.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	17	4.9
1.02 Laws relating to ICTs*	101	3.4
1.03 Judicial independence*	26	5.3
1.04 Efficiency of legal system in settling disputes*	25	4.8
1.05 Efficiency of legal system in challenging regs*	23	4.4
1.06 Intellectual property protection*	47	4.1
1.07 Software piracy rate, % software installed	87	80
1.08 No. procedures to enforce a contract	12	28
1.09 No. days to enforce a contract	100	625
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	91	4.6
2.02 Venture capital availability*	57	2.8
2.03 Total tax rate, % profits	23	25.4
2.04 No. days to start a business	135	60
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	93	4.7
2.07 Tertiary education gross enrollment rate, %	130	7.4
2.08 Quality of management schools*	97	3.8
2.09 Gov't procurement of advanced tech*	67	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	124	187.2
3.02 Mobile network coverage, % pop.	97	96.0
3.03 Int'l Internet bandwidth, kb/s per user	104	6.5
3.04 Secure Internet servers/million pop.	89	11.5
3.05 Accessibility of digital content*	103	4.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	125	0.47
4.02 Fixed broadband Internet tariffs, PPP \$/month	137	114.48
4.03 Internet & telephony competition, 0-2 (best)	112	1.27
5th pillar: Skills		
5.01 Quality of educational system*	65	3.7
5.02 Quality of math & science education*	92	3.8
5.03 Secondary education gross enrollment rate, %	92	81.7
5.04 Adult literacy rate, %	102	85.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	17	153.8
6.02 Individuals using Internet, %	121	11.5
6.03 Households w/ personal computer, %	109	12.3
6.04 Households w/ Internet access, %	110	9.1
6.05 Fixed broadband Internet subs./100 pop.	108	0.9
6.06 Mobile broadband subscriptions/100 pop.	14	74.9
6.07 Use of virtual social networks*	88	5.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	101	4.3
7.02 Capacity for innovation*	102	3.2
7.03 PCT patents, applications/million pop.	94	0.2
7.04 Business-to-business Internet use*	119	4.2
7.05 Business-to-consumer Internet use*	122	3.5
7.06 Extent of staff training*	87	3.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	61	4.1
8.02 Government Online Service Index, 0-1 (best)	101	0.36
8.03 Gov't success in ICT promotion*	84	4.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	120	3.6
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	126	3.4
9.04 Knowledge-intensive jobs, % workforce	86	17.1
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	93	3.8
10.02 Internet access in schools*	104	3.4
10.03 ICT use & gov't efficiency*	78	4.1
10.04 E-Participation Index, 0-1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Brazil

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....69..4.0

Networked Readiness Index 2013 (out of 144).....60.....4.0

A. Environment subindex.....116.....3.4

1st pillar: Political and regulatory environment.....78.....3.6

2nd pillar: Business and innovation environment.....135.....3.3

B. Readiness subindex.....76.....4.7

3rd pillar: Infrastructure and digital content.....56.....4.5

4th pillar: Affordability.....91.....5.0

5th pillar: Skills.....91.....4.6

C. Usage subindex.....47.....4.1

6th pillar: Individual usage.....59.....4.2

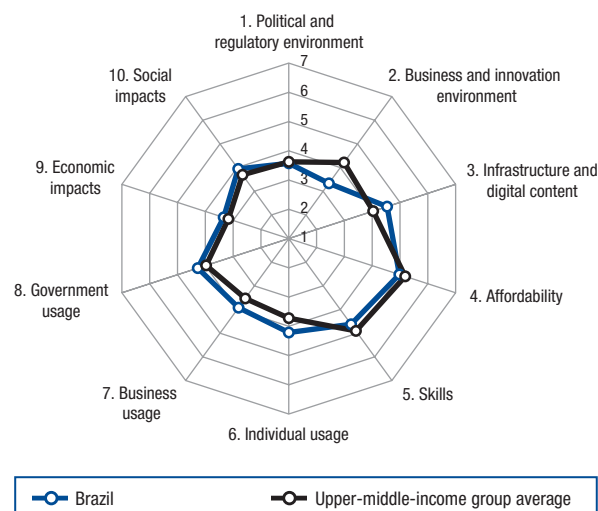
7th pillar: Business usage.....41.....3.9

8th pillar: Government usage.....54.....4.3

D. Impact subindex.....57.....3.6

9th pillar: Economic impacts.....64.....3.3

10th pillar: Social impacts.....58.....3.9



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	133	2.6
1.02 Laws relating to ICTs*	60	4.2
1.03 Judicial independence*	65	3.9
1.04 Efficiency of legal system in settling disputes*	101	3.3
1.05 Efficiency of legal system in challenging regs*	68	3.5
1.06 Intellectual property protection*	80	3.5
1.07 Software piracy rate, % software installed	40	5.3
1.08 No. procedures to enforce a contract	126	4.4
1.09 No. days to enforce a contract	114	7.31
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	63	5.1
2.02 Venture capital availability*	61	2.7
2.03 Total tax rate, % profits	141	68.3
2.04 No. days to start a business	146	108
2.05 No. procedures to start a business	137	13
2.06 Intensity of local competition*	70	5.0
2.07 Tertiary education gross enrollment rate, %	86	25.6
2.08 Quality of management schools*	49	4.5
2.09 Gov't procurement of advanced tech*	69	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	73	2,700.2
3.02 Mobile network coverage, % pop.	28	100.0
3.03 Int'l Internet bandwidth, kb/s per user	41	44.8
3.04 Secure Internet servers/million pop.	59	54.3
3.05 Accessibility of digital content*	92	4.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	140	0.65
4.02 Fixed broadband Internet tariffs, PPP \$/month	14	15.77
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	121	3.0
5.02 Quality of math & science education*	136	2.6
5.03 Secondary education gross enrollment rate, %	20	105.8
5.04 Adult literacy rate, %	85	90.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	43	125.0
6.02 Individuals using Internet, %	65	49.8
6.03 Households w/ personal computer, %	65	49.9
6.04 Households w/ Internet access, %	62	45.4
6.05 Fixed broadband Internet subs./100 pop.	65	9.2
6.06 Mobile broadband subscriptions/100 pop.	49	33.7
6.07 Use of virtual social networks*	37	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	51	5.0
7.02 Capacity for innovation*	36	4.0
7.03 PCT patents, applications/million pop.	53	3.0
7.04 Business-to-business Internet use*	54	5.1
7.05 Business-to-consumer Internet use*	30	5.2
7.06 Extent of staff training*	44	4.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	93	3.7
8.02 Government Online Service Index, 0–1 (best)	32	0.67
8.03 Gov't success in ICT promotion*	88	4.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	51	4.7
9.02 ICT PCT patents, applications/million pop.	58	0.4
9.03 Impact of ICTs on new organizational models*	43	4.5
9.04 Knowledge-intensive jobs, % workforce	75	20.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	88	3.9
10.02 Internet access in schools*	98	3.6
10.03 ICT use & gov't efficiency*	61	4.2
10.04 E-Participation Index, 0–1 (best)	31	0.50

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Brunei Darussalam

Rank Value
(out of 148) (1-7)

Networked Readiness Index 2014 45.. 4.3

Networked Readiness Index 2013 (out of 144) 57 4.1

A. Environment subindex 54 4.2

1st pillar: Political and regulatory environment 46 4.2

2nd pillar: Business and innovation environment 69 4.2

B. Readiness subindex 78 4.7

3rd pillar: Infrastructure and digital content 37 5.2

4th pillar: Affordability 129 3.1

5th pillar: Skills 30 5.7

C. Usage subindex 41 4.4

6th pillar: Individual usage 50 4.5

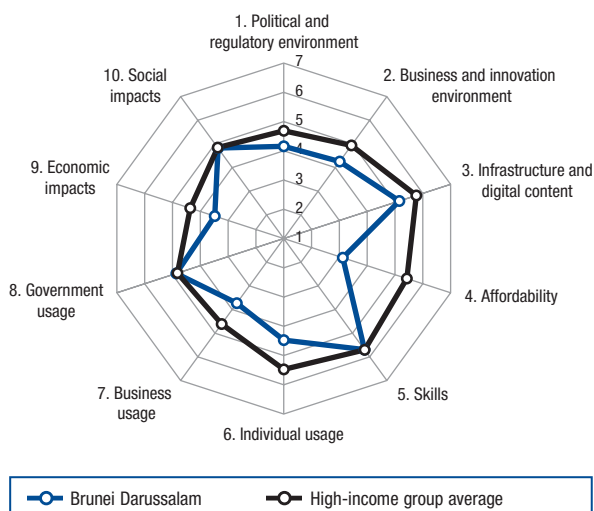
7th pillar: Business usage 56 3.7

8th pillar: Government usage 30 4.9

D. Impact subindex 38 4.2

9th pillar: Economic impacts 51 3.5

10th pillar: Social impacts 32 4.8



The Networked Readiness Index in detail

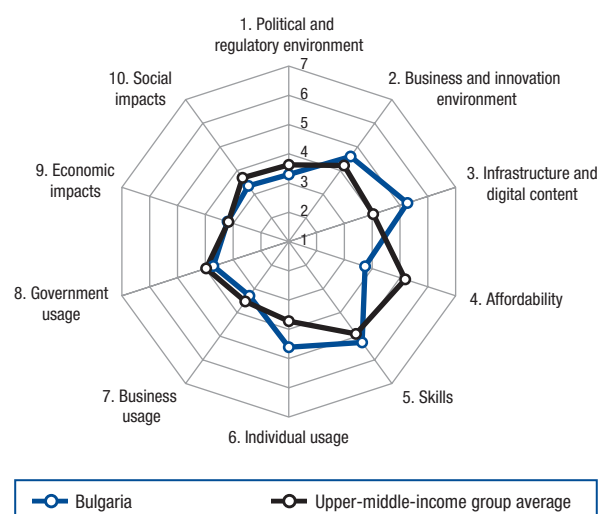
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	26	4.5
1.02 Laws relating to ICTs*	49	4.3
1.03 Judicial independence*	34	5.0
1.04 Efficiency of legal system in settling disputes*	19	5.0
1.05 Efficiency of legal system in challenging regs*	80	3.3
1.06 Intellectual property protection*	39	4.4
1.07 Software piracy rate, % software installed	65	67
1.08 No. procedures to enforce a contract	138	47
1.09 No. days to enforce a contract	73	540
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	50	5.2
2.02 Venture capital availability*	24	3.4
2.03 Total tax rate, % profits	10	16.1
2.04 No. days to start a business	144	101
2.05 No. procedures to start a business	144	15
2.06 Intensity of local competition*	62	5.1
2.07 Tertiary education gross enrollment rate, %	90	24.3
2.08 Quality of management schools*	52	4.5
2.09 Gov't procurement of advanced tech*	10	4.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	16	9,163.3
3.02 Mobile network coverage, % pop.	n/a	n/a
3.03 Int'l Internet bandwidth, kb/s per user	48	39.9
3.04 Secure Internet servers/million pop.	50	111.6
3.05 Accessibility of digital content*	48	5.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	111	0.38
4.02 Fixed broadband Internet tariffs, PPP \$/month	122	66.38
4.03 Internet & telephony competition, 0-2 (best)	134	0.88
5th pillar: Skills		
5.01 Quality of educational system*	32	4.4
5.02 Quality of math & science education*	29	4.8
5.03 Secondary education gross enrollment rate, %	15	107.8
5.04 Adult literacy rate, %	62	95.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	62	114.0
6.02 Individuals using Internet, %	48	60.3
6.03 Households w/ personal computer, %	14	86.9
6.04 Households w/ Internet access, %	30	72.4
6.05 Fixed broadband Internet subs./100 pop.	81	4.8
6.06 Mobile broadband subscriptions/100 pop.	94	7.6
6.07 Use of virtual social networks*	19	6.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	63	4.8
7.02 Capacity for innovation*	67	3.5
7.03 PCT patents, applications/million pop.	58	1.8
7.04 Business-to-business Internet use*	59	5.0
7.05 Business-to-consumer Internet use*	75	4.5
7.06 Extent of staff training*	26	4.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	17	5.0
8.02 Government Online Service Index, 0-1 (best)	44	0.59
8.03 Gov't success in ICT promotion*	21	5.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	66	4.5
9.02 ICT PCT patents, applications/million pop.	41	1.2
9.03 Impact of ICTs on new organizational models*	54	4.4
9.04 Knowledge-intensive jobs, % workforce	51	28.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	30	5.2
10.02 Internet access in schools*	32	5.5
10.03 ICT use & gov't efficiency*	39	4.8
10.04 E-Participation Index, 0-1 (best)	34	0.47

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Bulgaria

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	73	4.0
Networked Readiness Index 2013 (out of 144).....	71.....	3.9
A. Environment subindex	71	3.9
1st pillar: Political and regulatory environment.....	105.....	3.3
2nd pillar: Business and innovation environment.....	50.....	4.6
B. Readiness subindex	75	4.8
3rd pillar: Infrastructure and digital content.....	34.....	5.3
4th pillar: Affordability.....	119.....	3.7
5th pillar: Skills.....	56.....	5.3
C. Usage subindex	65	3.9
6th pillar: Individual usage.....	47.....	4.6
7th pillar: Business usage.....	104.....	3.3
8th pillar: Government usage.....	97.....	3.7
D. Impact subindex	86	3.3
9th pillar: Economic impacts.....	73.....	3.2
10th pillar: Social impacts.....	93.....	3.4



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	117	2.8
1.02 Laws relating to ICTs*	66	4.0
1.03 Judicial independence*	123	2.6
1.04 Efficiency of legal system in settling disputes*	125	2.9
1.05 Efficiency of legal system in challenging regs*	122	2.8
1.06 Intellectual property protection*	104	3.0
1.07 Software piracy rate, % software installed	61	64
1.08 No. procedures to enforce a contract	78	38
1.09 No. days to enforce a contract	77	564
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	99	4.4
2.02 Venture capital availability*	65	2.7
2.03 Total tax rate, % profits	31	27.7
2.04 No. days to start a business	86	18
2.05 No. procedures to start a business	22	4
2.06 Intensity of local competition*	101	4.6
2.07 Tertiary education gross enrollment rate, %	41	59.6
2.08 Quality of management schools*	112	3.6
2.09 Gov't procurement of advanced tech*	90	3.3
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	32	6,807.4
3.02 Mobile network coverage, % pop.	28	100.0
3.03 Int'l Internet bandwidth, kb/s per user	25	85.4
3.04 Secure Internet servers/million pop.	43	164.1
3.05 Accessibility of digital content*	65	5.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	142	0.82
4.02 Fixed broadband Internet tariffs, PPP \$/month	33	22.36
4.03 Internet & telephony competition, 0–2 (best)	104	1.33
5th pillar: Skills		
5.01 Quality of educational system*	90	3.4
5.02 Quality of math & science education*	59	4.3
5.03 Secondary education gross enrollment rate, %	61	93.2
5.04 Adult literacy rate, %	46	98.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	21	148.1
6.02 Individuals using Internet, %	55	55.1
6.03 Households w/ personal computer, %	61	52.0
6.04 Households w/ Internet access, %	55	51.0
6.05 Fixed broadband Internet subs./100 pop.	38	17.9
6.06 Mobile broadband subscriptions/100 pop.	34	48.5
6.07 Use of virtual social networks*	79	5.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	113	4.2
7.02 Capacity for innovation*	103	3.2
7.03 PCT patents, applications/million pop.	48	4.8
7.04 Business-to-business Internet use*	78	4.8
7.05 Business-to-consumer Internet use*	64	4.7
7.06 Extent of staff training*	127	3.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	110	3.4
8.02 Government Online Service Index, 0–1 (best)	70	0.49
8.03 Gov't success in ICT promotion*	111	3.8
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	104	3.9
9.02 ICT PCT patents, applications/million pop.	43	1.1
9.03 Impact of ICTs on new organizational models*	102	3.7
9.04 Knowledge-intensive jobs, % workforce	49	29.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	91	3.8
10.02 Internet access in schools*	51	4.7
10.03 ICT use & gov't efficiency*	100	3.7
10.04 E-Participation Index, 0–1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Burkina Faso

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 136..2.8

Networked Readiness Index 2013 (out of 144)..... 130.....2.8

A. Environment subindex 126.....3.3

1st pillar: Political and regulatory environment 108.....3.2

2nd pillar: Business and innovation environment 128.....3.5

B. Readiness subindex 147.....2.2

3rd pillar: Infrastructure and digital content..... 147.....1.4

4th pillar: Affordability 131.....3.1

5th pillar: Skills 144.....2.1

C. Usage subindex 127.....2.7

6th pillar: Individual usage 139.....1.7

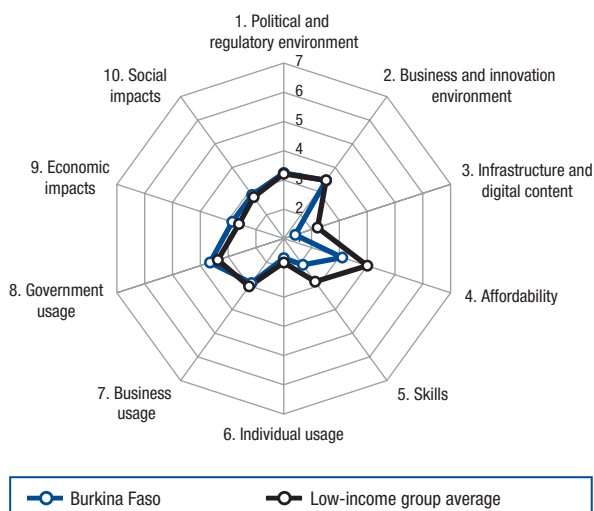
7th pillar: Business usage 135.....2.9

8th pillar: Government usage 101.....3.7

D. Impact subindex 118.....2.8

9th pillar: Economic impacts 108.....2.9

10th pillar: Social impacts 120.....2.8



The Networked Readiness Index in detail

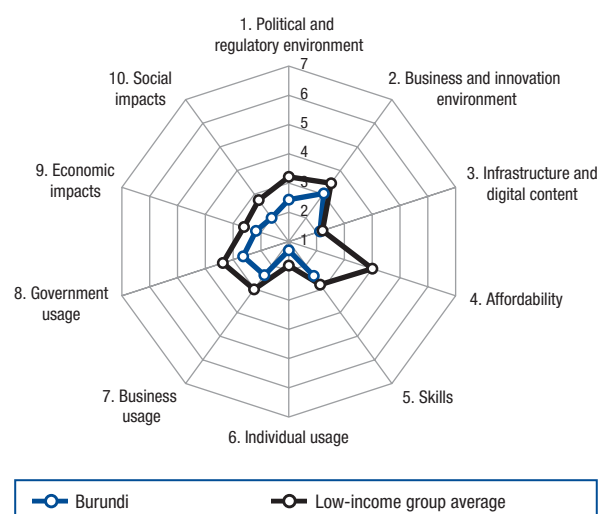
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	116	2.9
1.02 Laws relating to ICTs*	124	3.0
1.03 Judicial independence*	142	2.1
1.04 Efficiency of legal system in settling disputes*	103	3.3
1.05 Efficiency of legal system in challenging regs*	106	3.0
1.06 Intellectual property protection*	88	3.4
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	67	3.7
1.09 No. days to enforce a contract	47	4.6
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	145	3.2
2.02 Venture capital availability*	147	1.7
2.03 Total tax rate, % profits	99	43.9
2.04 No. days to start a business	68	13
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	116	4.4
2.07 Tertiary education gross enrollment rate, %	138	4.6
2.08 Quality of management schools*	110	3.6
2.09 Gov't procurement of advanced tech*	94	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	142	44.0
3.02 Mobile network coverage, % pop.	137	61.1
3.03 Int'l Internet bandwidth, kb/s per user	139	1.8
3.04 Secure Internet servers/million pop.	139	0.6
3.05 Accessibility of digital content*	147	2.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	100	0.34
4.02 Fixed broadband Internet tariffs, PPP \$/month	131	101.12
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	127	2.7
5.02 Quality of math & science education*	97	3.7
5.03 Secondary education gross enrollment rate, %	145	25.9
5.04 Adult literacy rate, %	147	28.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	129	60.6
6.02 Individuals using Internet, %	138	3.7
6.03 Households w/ personal computer, %	135	3.4
6.04 Households w/ Internet access, %	134	2.8
6.05 Fixed broadband Internet subs./100 pop.	129	0.1
6.06 Mobile broadband subscriptions/100 pop.	139	0.0
6.07 Use of virtual social networks*	142	4.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	140	3.7
7.02 Capacity for innovation*	119	3.0
7.03 PCT patents, applications/million pop.	110	0.0
7.04 Business-to-business Internet use*	117	4.3
7.05 Business-to-consumer Internet use*	129	3.4
7.06 Extent of staff training*	142	2.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	68	4.0
8.02 Government Online Service Index, 0-1 (best)	120	0.29
8.03 Gov't success in ICT promotion*	80	4.2
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	89	4.1
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	120	3.5
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	105	3.6
10.02 Internet access in schools*	147	1.6
10.03 ICT use & gov't efficiency*	69	4.1
10.04 E-Participation Index, 0-1 (best)	77	0.16

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Burundi

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	147 ..	2.3
Networked Readiness Index 2013 (out of 144).....	144	2.3
A. Environment subindex	144	2.7
1st pillar: Political and regulatory environment.....	146	2.4
2nd pillar: Business and innovation environment.....	142	3.0
B. Readiness subindex	145	2.3
3rd pillar: Infrastructure and digital content.....	133	2.1
4th pillar: Affordability.....	n/a	n/a
5th pillar: Skills.....	137	2.4
C. Usage subindex	148	2.1
6th pillar: Individual usage.....	148	1.3
7th pillar: Business usage.....	148	2.4
8th pillar: Government usage.....	144	2.6
D. Impact subindex	146	2.1
9th pillar: Economic impacts.....	144	2.2
10th pillar: Social impacts.....	147	2.0



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	136	2.4
1.02 Laws relating to ICTs*	141	2.3
1.03 Judicial independence*	147	1.7
1.04 Efficiency of legal system in settling disputes*	136	2.6
1.05 Efficiency of legal system in challenging regs*	135	2.5
1.06 Intellectual property protection*	142	2.3
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	126	4.4
1.09 No. days to enforce a contract	121	832
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	143	3.2
2.02 Venture capital availability*	137	1.9
2.03 Total tax rate, % profits	122	51.6
2.04 No. days to start a business	15	5
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	146	3.3
2.07 Tertiary education gross enrollment rate, %	143	3.2
2.08 Quality of management schools*	142	2.6
2.09 Gov't procurement of advanced tech*	138	2.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	147	14.2
3.02 Mobile network coverage, % pop.	122	83.0
3.03 Int'l Internet bandwidth, kb/s per user	123	3.5
3.04 Secure Internet servers/million pop.	144	0.3
3.05 Accessibility of digital content*	146	2.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	n/a	n/a
4.02 Fixed broadband Internet tariffs, PPP \$/month	n/a	n/a
4.03 Internet & telephony competition, 0–2 (best)	96	1.54
5th pillar: Skills		
5.01 Quality of educational system*	143	2.3
5.02 Quality of math & science education*	103	3.4
5.03 Secondary education gross enrollment rate, %	142	28.5
5.04 Adult literacy rate, %	123	67.2

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	146	22.8
6.02 Individuals using Internet, %	146	1.2
6.03 Households w/ personal computer, %	147	0.1
6.04 Households w/ Internet access, %	146	0.1
6.05 Fixed broadband Internet subs./100 pop.	145	0.0
6.06 Mobile broadband subscriptions/100 pop.	138	0.0
6.07 Use of virtual social networks*	148	3.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	143	3.5
7.02 Capacity for innovation*	148	2.2
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	146	3.0
7.05 Business-to-consumer Internet use*	147	2.6
7.06 Extent of staff training*	147	2.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	127	3.0
8.02 Government Online Service Index, 0–1 (best)	137	0.15
8.03 Gov't success in ICT promotion*	145	3.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	144	2.9
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	147	2.6
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	148	2.6
10.02 Internet access in schools*	144	1.8
10.03 ICT use & gov't efficiency*	146	2.6
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

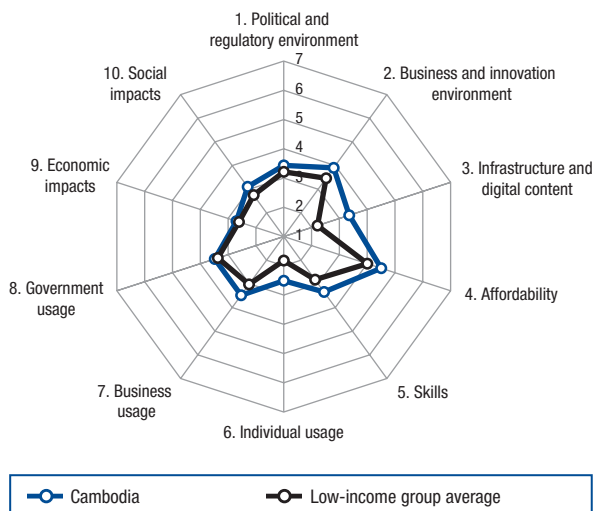
Cambodia

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 108..3.4

Networked Readiness Index 2013 (out of 144)..... 106.....3.3

- A. Environment subindex..... 98.....3.7**
 - 1st pillar: Political and regulatory environment..... 95.....3.4
 - 2nd pillar: Business and innovation environment..... 98.....3.9
- B. Readiness subindex 113.....3.7**
 - 3rd pillar: Infrastructure and digital content..... 97.....3.3
 - 4th pillar: Affordability 105.....4.5
 - 5th pillar: Skills 119.....3.3
- C. Usage subindex 107.....3.2**
 - 6th pillar: Individual usage 105.....2.5
 - 7th pillar: Business usage 78.....3.5
 - 8th pillar: Government usage 114.....3.5
- D. Impact subindex 111.....2.9**
 - 9th pillar: Economic impacts 117.....2.7
 - 10th pillar: Social impacts 110.....3.1



The Networked Readiness Index in detail

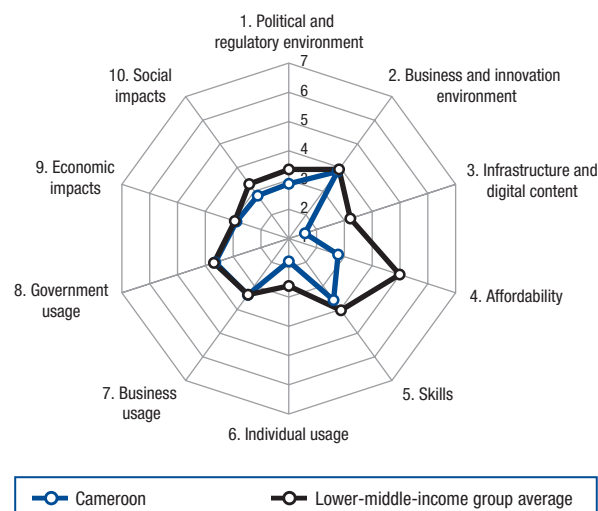
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	67	3.6
1.02 Laws relating to ICTs*	98	3.5
1.03 Judicial independence*	115	2.8
1.04 Efficiency of legal system in settling disputes*	83	3.5
1.05 Efficiency of legal system in challenging regs*	72	3.5
1.06 Intellectual property protection*	99	3.2
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	126	4.4
1.09 No. days to enforce a contract	54	4.83
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	82	4.7
2.02 Venture capital availability*	43	3.0
2.03 Total tax rate, % profits	15	21.4
2.04 No. days to start a business	145	10.4
2.05 No. procedures to start a business	129	1.1
2.06 Intensity of local competition*	78	4.9
2.07 Tertiary education gross enrollment rate, %	104	15.8
2.08 Quality of management schools*	108	3.7
2.09 Gov't procurement of advanced tech*	46	3.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	138	72.1
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	89	13.6
3.04 Secure Internet servers/million pop.	113	3.0
3.05 Accessibility of digital content*	86	4.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	55	0.19
4.02 Fixed broadband Internet tariffs, PPP \$/month	116	61.54
4.03 Internet & telephony competition, 0-2 (best)	65	1.88
5th pillar: Skills		
5.01 Quality of educational system*	76	3.6
5.02 Quality of math & science education*	102	3.5
5.03 Secondary education gross enrollment rate, %	128	45.0
5.04 Adult literacy rate, %	112	73.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	36	128.5
6.02 Individuals using Internet, %	131	4.9
6.03 Households w/ personal computer, %	128	5.4
6.04 Households w/ Internet access, %	127	3.9
6.05 Fixed broadband Internet subs./100 pop.	121	0.2
6.06 Mobile broadband subscriptions/100 pop.	97	6.7
6.07 Use of virtual social networks*	108	5.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	82	4.6
7.02 Capacity for innovation*	71	3.5
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	82	4.7
7.05 Business-to-consumer Internet use*	107	3.9
7.06 Extent of staff training*	66	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	85	3.8
8.02 Government Online Service Index, 0-1 (best)	131	0.19
8.03 Gov't success in ICT promotion*	52	4.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	77	4.3
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	62	4.3
9.04 Knowledge-intensive jobs, % workforce	118	2.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	87	3.9
10.02 Internet access in schools*	89	3.8
10.03 ICT use & gov't efficiency*	99	3.7
10.04 E-Participation Index, 0-1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Cameroon

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	131 ..	2.9
Networked Readiness Index 2013 (out of 144).....	124	2.9
A. Environment subindex	125	3.3
1st pillar: Political and regulatory environment.....	132	2.9
2nd pillar: Business and innovation environment.....	111	3.8
B. Readiness subindex	137	2.6
3rd pillar: Infrastructure and digital content.....	143	1.6
4th pillar: Affordability.....	136	2.8
5th pillar: Skills.....	116	3.6
C. Usage subindex	119	2.9
6th pillar: Individual usage.....	130	1.8
7th pillar: Business usage.....	95	3.4
8th pillar: Government usage.....	102	3.6
D. Impact subindex	116	2.8
9th pillar: Economic impacts.....	103	2.9
10th pillar: Social impacts.....	123	2.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	113	2.9
1.02 Laws relating to ICTs*	128	2.9
1.03 Judicial independence*	136	2.3
1.04 Efficiency of legal system in settling disputes*	102	3.3
1.05 Efficiency of legal system in challenging regs*	103	3.0
1.06 Intellectual property protection*	100	3.2
1.07 Software piracy rate, % software installed	93	83
1.08 No. procedures to enforce a contract	116	42
1.09 No. days to enforce a contract	120	800
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	111	4.2
2.02 Venture capital availability*	112	2.2
2.03 Total tax rate, % profits	112	48.8
2.04 No. days to start a business	76	15
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	92	4.7
2.07 Tertiary education gross enrollment rate, %	115	11.9
2.08 Quality of management schools*	48	4.6
2.09 Gov't procurement of advanced tech*	38	3.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	119	283.4
3.02 Mobile network coverage, % pop.	138	58.0
3.03 Int'l Internet bandwidth, kb/s per user	146	0.3
3.04 Secure Internet servers/million pop.	130	1.2
3.05 Accessibility of digital content*	129	3.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	103	0.35
4.02 Fixed broadband Internet tariffs, PPP \$/month	135	112.53
4.03 Internet & telephony competition, 0–2 (best)	116	1.22
5th pillar: Skills		
5.01 Quality of educational system*	60	3.9
5.02 Quality of math & science education*	72	4.1
5.03 Secondary education gross enrollment rate, %	121	50.4
5.04 Adult literacy rate, %	118	71.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	130	60.4
6.02 Individuals using Internet, %	129	5.7
6.03 Households w/ personal computer, %	119	8.3
6.04 Households w/ Internet access, %	129	3.5
6.05 Fixed broadband Internet subs./100 pop.	113	0.6
6.06 Mobile broadband subscriptions/100 pop.	137	0.0
6.07 Use of virtual social networks*	121	4.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	94	4.4
7.02 Capacity for innovation*	105	3.1
7.03 PCT patents, applications/million pop.	104	0.1
7.04 Business-to-business Internet use*	68	4.8
7.05 Business-to-consumer Internet use*	104	4.0
7.06 Extent of staff training*	78	3.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	82	3.8
8.02 Government Online Service Index, 0–1 (best)	116	0.30
8.03 Gov't success in ICT promotion*	72	4.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	97	4.0
9.02 ICT PCT patents, applications/million pop.	87	0.0
9.03 Impact of ICTs on new organizational models*	108	3.6
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	100	3.7
10.02 Internet access in schools*	135	2.3
10.03 ICT use & gov't efficiency*	77	4.1
10.04 E-Participation Index, 0–1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Canada

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 17..5.4

Networked Readiness Index 2013 (out of 144)..... 12.....5.4

A. Environment subindex..... 10.....5.4

1st pillar: Political and regulatory environment..... 12.....5.3

2nd pillar: Business and innovation environment..... 3.....5.5

B. Readiness subindex 13.....6.1

3rd pillar: Infrastructure and digital content..... 7.....6.8

4th pillar: Affordability 65.....5.4

5th pillar: Skills 8.....6.1

C. Usage subindex 26.....5.0

6th pillar: Individual usage 27.....5.5

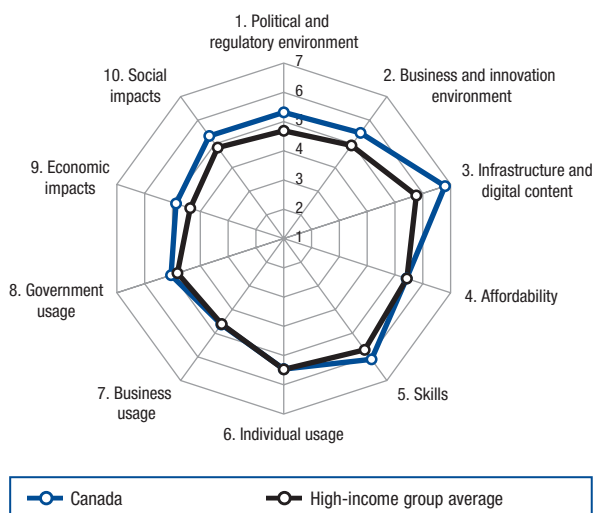
7th pillar: Business usage 25.....4.6

8th pillar: Government usage 25.....5.0

D. Impact subindex 17.....5.1

9th pillar: Economic impacts 17.....4.9

10th pillar: Social impacts 16.....5.3



The Networked Readiness Index in detail

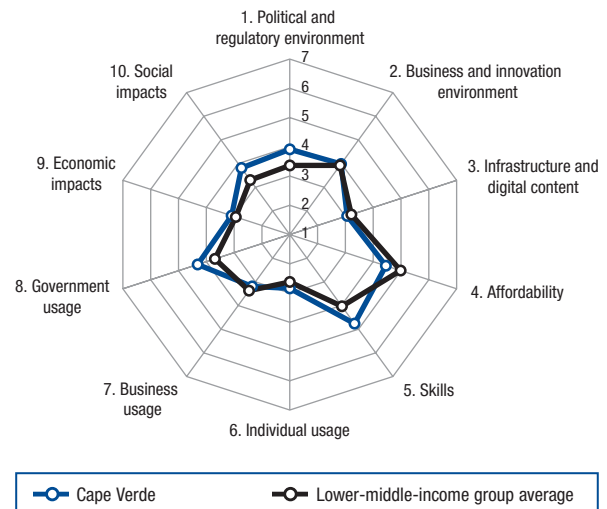
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	10	5.2
1.02 Laws relating to ICTs*	19	5.1
1.03 Judicial independence*	10	6.2
1.04 Efficiency of legal system in settling disputes*	11	5.4
1.05 Efficiency of legal system in challenging regs*	15	4.8
1.06 Intellectual property protection*	13	5.6
1.07 Software piracy rate, % software installed	14	27
1.08 No. procedures to enforce a contract	55	36
1.09 No. days to enforce a contract	80	570
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	19	6.1
2.02 Venture capital availability*	23	3.4
2.03 Total tax rate, % profits	21	24.3
2.04 No. days to start a business	15	5
2.05 No. procedures to start a business	1	1
2.06 Intensity of local competition*	33	5.4
2.07 Tertiary education gross enrollment rate, %	43	58.9
2.08 Quality of management schools*	7	5.7
2.09 Gov't procurement of advanced tech*	55	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	3	18,510.4
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	18	100.5
3.04 Secure Internet servers/million pop.	15	1,233.4
3.05 Accessibility of digital content*	21	6.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	93	0.33
4.02 Fixed broadband Internet tariffs, PPP \$/month	75	32.57
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	10	5.2
5.02 Quality of math & science education*	17	5.2
5.03 Secondary education gross enrollment rate, %	26	102.3
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	116	80.1
6.02 Individuals using Internet, %	12	86.8
6.03 Households w/ personal computer, %	15	86.6
6.04 Households w/ Internet access, %	16	83.0
6.05 Fixed broadband Internet subs./100 pop.	11	32.5
6.06 Mobile broadband subscriptions/100 pop.	39	42.1
6.07 Use of virtual social networks*	13	6.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	34	5.4
7.02 Capacity for innovation*	27	4.3
7.03 PCT patents, applications/million pop.	19	82.4
7.04 Business-to-business Internet use*	31	5.5
7.05 Business-to-consumer Internet use*	21	5.5
7.06 Extent of staff training*	34	4.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	56	4.2
8.02 Government Online Service Index, 0-1 (best)	6	0.89
8.03 Gov't success in ICT promotion*	51	4.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	28	5.1
9.02 ICT PCT patents, applications/million pop.	12	31.4
9.03 Impact of ICTs on new organizational models*	13	5.1
9.04 Knowledge-intensive jobs, % workforce	13	43.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	26	5.2
10.02 Internet access in schools*	11	6.1
10.03 ICT use & gov't efficiency*	32	4.8
10.04 E-Participation Index, 0-1 (best)	15	0.68

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Cape Verde

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	89	3.7
Networked Readiness Index 2013 (out of 144).....	81.....	3.8
A. Environment subindex	69	3.9
1st pillar: Political and regulatory environment.....	58.....	3.9
2nd pillar: Business and innovation environment.....	93.....	4.0
B. Readiness subindex	102	4.1
3rd pillar: Infrastructure and digital content.....	107.....	3.1
4th pillar: Affordability.....	106.....	4.5
5th pillar: Skills.....	82.....	4.8
C. Usage subindex	92	3.4
6th pillar: Individual usage.....	97.....	2.8
7th pillar: Business usage.....	115.....	3.2
8th pillar: Government usage.....	50.....	4.3
D. Impact subindex	73	3.5
9th pillar: Economic impacts.....	83.....	3.1
10th pillar: Social impacts.....	69.....	3.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	44	4.1
1.02 Laws relating to ICTs*	82	3.8
1.03 Judicial independence*	53	4.1
1.04 Efficiency of legal system in settling disputes*	72	3.7
1.05 Efficiency of legal system in challenging regs*	64	3.5
1.06 Intellectual property protection*	105	3.0
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	67	3.7
1.09 No. days to enforce a contract	39	4.25
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	78	4.8
2.02 Venture capital availability*	100	2.3
2.03 Total tax rate, % profits	74	37.2
2.04 No. days to start a business	53	10
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	122	4.3
2.07 Tertiary education gross enrollment rate, %	94	20.6
2.08 Quality of management schools*	116	3.5
2.09 Gov't procurement of advanced tech*	41	3.8
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	111	570.3
3.02 Mobile network coverage, % pop.	97	96.0
3.03 Int'l Internet bandwidth, kb/s per user	106	6.3
3.04 Secure Internet servers/million pop.	75	24.3
3.05 Accessibility of digital content*	104	4.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	122	0.46
4.02 Fixed broadband Internet tariffs, PPP \$/month	98	40.41
4.03 Internet & telephony competition, 0–2 (best)	77	1.83
5th pillar: Skills		
5.01 Quality of educational system*	61	3.9
5.02 Quality of math & science education*	100	3.5
5.03 Secondary education gross enrollment rate, %	64	92.7
5.04 Adult literacy rate, %	105	84.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	108	86.0
6.02 Individuals using Internet, %	89	34.7
6.03 Households w/ personal computer, %	87	26.5
6.04 Households w/ Internet access, %	97	13.7
6.05 Fixed broadband Internet subs./100 pop.	86	4.0
6.06 Mobile broadband subscriptions/100 pop.	66	23.0
6.07 Use of virtual social networks*	97	5.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	85	4.5
7.02 Capacity for innovation*	126	2.9
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	100	4.5
7.05 Business-to-consumer Internet use*	110	3.8
7.06 Extent of staff training*	118	3.4
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	32	4.6
8.02 Government Online Service Index, 0–1 (best)	85	0.44
8.03 Gov't success in ICT promotion*	38	4.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	79	4.3
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	84	4.0
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	61	4.4
10.02 Internet access in schools*	91	3.8
10.03 ICT use & gov't efficiency*	42	4.7
10.04 E-Participation Index, 0–1 (best)	59	0.24

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Chad

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 148..2.2

Networked Readiness Index 2013 (out of 144)..... 142.....2.5

A. Environment subindex 148.....2.4

1st pillar: Political and regulatory environment 147.....2.4

2nd pillar: Business and innovation environment 148.....2.4

B. Readiness subindex 146.....2.2

3rd pillar: Infrastructure and digital content..... 148.....1.4

4th pillar: Affordability 123.....3.4

5th pillar: Skills 148.....1.9

C. Usage subindex 147.....2.2

6th pillar: Individual usage 147.....1.3

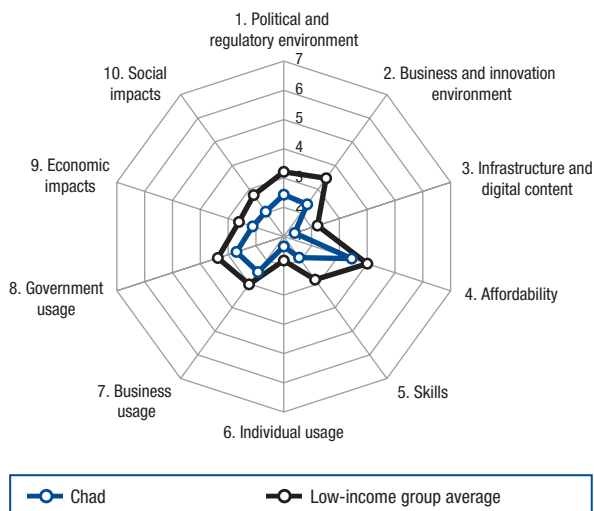
7th pillar: Business usage 146.....2.5

8th pillar: Government usage 142.....2.7

D. Impact subindex 147.....2.1

9th pillar: Economic impacts 146.....2.1

10th pillar: Social impacts 146.....2.0



The Networked Readiness Index in detail

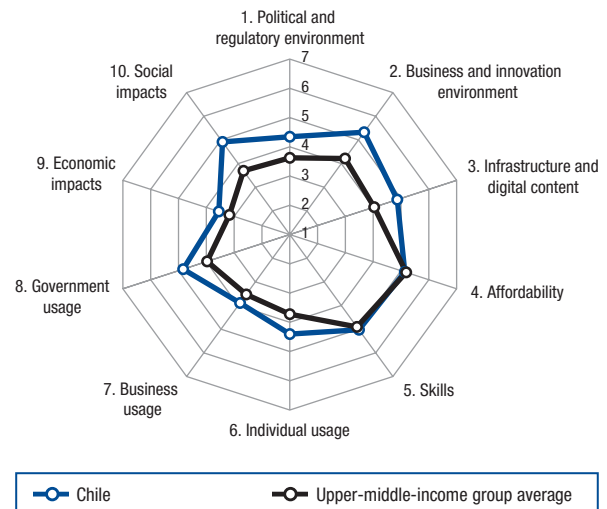
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	142	2.1
1.02 Laws relating to ICTs*	145	2.1
1.03 Judicial independence*	144	2.0
1.04 Efficiency of legal system in settling disputes*	142	2.4
1.05 Efficiency of legal system in challenging regs*	145	2.2
1.06 Intellectual property protection*	144	2.2
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	111	4.1
1.09 No. days to enforce a contract	116	7.43
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	147	2.9
2.02 Venture capital availability*	143	1.7
2.03 Total tax rate, % profits	143	73.8
2.04 No. days to start a business	136	62
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	145	3.3
2.07 Tertiary education gross enrollment rate, %	145	2.3
2.08 Quality of management schools*	140	2.7
2.09 Gov't procurement of advanced tech*	126	2.8
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	148	8.4
3.02 Mobile network coverage, % pop.	140	36.1
3.03 Int'l Internet bandwidth, kb/s per user	144	0.5
3.04 Secure Internet servers/million pop.	n/a	n/a
3.05 Accessibility of digital content*	148	2.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	143	0.88
4.02 Fixed broadband Internet tariffs, PPP \$/month	52	26.28
4.03 Internet & telephony competition, 0-2 (best)	98	1.50
5th pillar: Skills		
5.01 Quality of educational system*	131	2.7
5.02 Quality of math & science education*	127	2.9
5.03 Secondary education gross enrollment rate, %	147	22.8
5.04 Adult literacy rate, %	145	35.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	144	35.4
6.02 Individuals using Internet, %	141	2.1
6.03 Households w/ personal computer, %	139	2.5
6.04 Households w/ Internet access, %	140	2.3
6.05 Fixed broadband Internet subs./100 pop.	123	0.2
6.06 Mobile broadband subscriptions/100 pop.	140	0.0
6.07 Use of virtual social networks*	146	3.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	144	3.4
7.02 Capacity for innovation*	139	2.6
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	148	2.9
7.05 Business-to-consumer Internet use*	148	2.5
7.06 Extent of staff training*	145	2.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	121	3.2
8.02 Government Online Service Index, 0-1 (best)	141	0.10
8.03 Gov't success in ICT promotion*	130	3.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	147	2.8
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	148	2.6
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	146	2.6
10.02 Internet access in schools*	148	1.3
10.03 ICT use & gov't efficiency*	131	3.0
10.04 E-Participation Index, 0-1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Chile

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	35	4.6
Networked Readiness Index 2013 (out of 144).....	34	4.6
A. Environment subindex	29	4.8
1st pillar: Political and regulatory environment.....	38	4.3
2nd pillar: Business and innovation environment.....	11	5.3
B. Readiness subindex	60	5.0
3rd pillar: Infrastructure and digital content.....	44	4.9
4th pillar: Affordability.....	81	5.1
5th pillar: Skills.....	71	5.0
C. Usage subindex	39	4.4
6th pillar: Individual usage.....	52	4.4
7th pillar: Business usage.....	45	3.9
8th pillar: Government usage.....	32	4.8
D. Impact subindex	37	4.2
9th pillar: Economic impacts.....	43	3.5
10th pillar: Social impacts.....	29	4.9



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	62	3.7
1.02 Laws relating to ICTs*	36	4.8
1.03 Judicial independence*	27	5.3
1.04 Efficiency of legal system in settling disputes*	29	4.7
1.05 Efficiency of legal system in challenging regs*	24	4.4
1.06 Intellectual property protection*	60	3.8
1.07 Software piracy rate, % software installed	53	61
1.08 No. procedures to enforce a contract	55	36
1.09 No. days to enforce a contract	53	480
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	34	5.8
2.02 Venture capital availability*	31	3.3
2.03 Total tax rate, % profits	31	27.7
2.04 No. days to start a business	19	6
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	37	5.4
2.07 Tertiary education gross enrollment rate, %	26	70.5
2.08 Quality of management schools*	16	5.3
2.09 Gov't procurement of advanced tech*	27	4.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	58	3,915.6
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	46	40.5
3.04 Secure Internet servers/million pop.	54	82.2
3.05 Accessibility of digital content*	46	5.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	98	0.34
4.02 Fixed broadband Internet tariffs, PPP \$/month	90	37.16
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	74	3.6
5.02 Quality of math & science education*	107	3.4
5.03 Secondary education gross enrollment rate, %	74	89.9
5.04 Adult literacy rate, %	43	98.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	29	138.2
6.02 Individuals using Internet, %	45	61.4
6.03 Households w/ personal computer, %	60	53.7
6.04 Households w/ Internet access, %	63	45.3
6.05 Fixed broadband Internet subs./100 pop.	52	12.4
6.06 Mobile broadband subscriptions/100 pop.	58	28.0
6.07 Use of virtual social networks*	26	6.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	45	5.1
7.02 Capacity for innovation*	63	3.5
7.03 PCT patents, applications/million pop.	41	6.3
7.04 Business-to-business Internet use*	35	5.5
7.05 Business-to-consumer Internet use*	35	5.1
7.06 Extent of staff training*	46	4.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	40	4.4
8.02 Government Online Service Index, 0–1 (best)	24	0.75
8.03 Gov't success in ICT promotion*	54	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	29	5.0
9.02 ICT PCT patents, applications/million pop.	51	0.5
9.03 Impact of ICTs on new organizational models*	38	4.7
9.04 Knowledge-intensive jobs, % workforce	63	24.1
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	38	5.0
10.02 Internet access in schools*	48	4.9
10.03 ICT use & gov't efficiency*	28	4.9
10.04 E-Participation Index, 0–1 (best)	19	0.66

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

China

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 62.. 4.1

Networked Readiness Index 2013 (out of 144)..... 58..... 4.0

A. Environment subindex..... 77..... 3.9

1st pillar: Political and regulatory environment..... 56..... 4.0

2nd pillar: Business and innovation environment..... 115..... 3.8

B. Readiness subindex 73..... 4.8

3rd pillar: Infrastructure and digital content..... 86..... 3.5

4th pillar: Affordability 60..... 5.6

5th pillar: Skills 59..... 5.2

C. Usage subindex 61..... 3.9

6th pillar: Individual usage 80..... 3.3

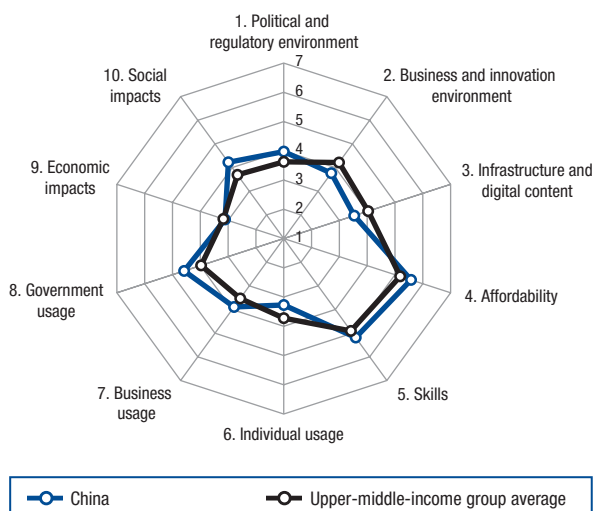
7th pillar: Business usage 44..... 3.9

8th pillar: Government usage 38..... 4.6

D. Impact subindex 56..... 3.7

9th pillar: Economic impacts 81..... 3.1

10th pillar: Social impacts 44..... 4.2



The Networked Readiness Index in detail

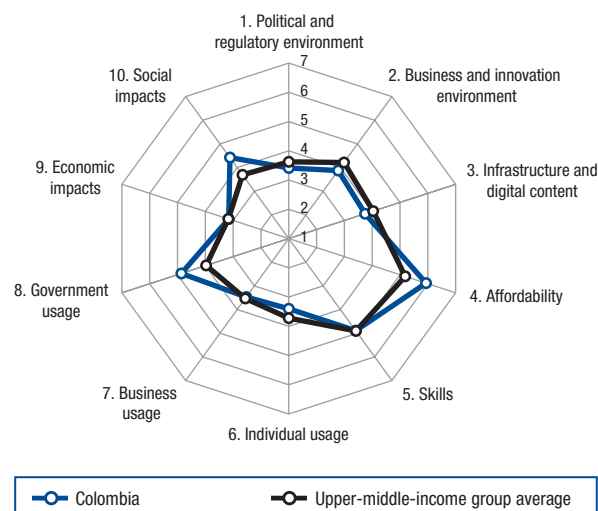
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	39	4.2
1.02 Laws relating to ICTs*	52	4.3
1.03 Judicial independence*	57	4.0
1.04 Efficiency of legal system in settling disputes*	43	4.2
1.05 Efficiency of legal system in challenging regs*	47	3.8
1.06 Intellectual property protection*	53	3.9
1.07 Software piracy rate, % software installed	80	77
1.08 No. procedures to enforce a contract	67	37
1.09 No. days to enforce a contract	32	406
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	105	4.4
2.02 Venture capital availability*	16	3.8
2.03 Total tax rate, % profits	135	63.7
2.04 No. days to start a business	118	33
2.05 No. procedures to start a business	137	13
2.06 Intensity of local competition*	46	5.3
2.07 Tertiary education gross enrollment rate, %	91	24.3
2.08 Quality of management schools*	83	4.1
2.09 Gov't procurement of advanced tech*	13	4.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	61	3,508.4
3.02 Mobile network coverage, % pop.	54	99.5
3.03 Int'l Internet bandwidth, kb/s per user	125	3.3
3.04 Secure Internet servers/million pop.	111	3.1
3.05 Accessibility of digital content*	67	5.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	13	0.07
4.02 Fixed broadband Internet tariffs, PPP \$/month	84	35.44
4.03 Internet & telephony competition, 0-2 (best)	110	1.29
5th pillar: Skills		
5.01 Quality of educational system*	54	4.0
5.02 Quality of math & science education*	48	4.4
5.03 Secondary education gross enrollment rate, %	82	86.6
5.04 Adult literacy rate, %	66	94.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	115	80.8
6.02 Individuals using Internet, %	78	42.3
6.03 Households w/ personal computer, %	70	40.9
6.04 Households w/ Internet access, %	72	37.4
6.05 Fixed broadband Internet subs./100 pop.	51	12.7
6.06 Mobile broadband subscriptions/100 pop.	76	16.9
6.07 Use of virtual social networks*	126	4.7
7th pillar: Business usage		
7.01 Firm-level technology absorption*	71	4.7
7.02 Capacity for innovation*	30	4.2
7.03 PCT patents, applications/million pop.	32	11.5
7.04 Business-to-business Internet use*	66	4.9
7.05 Business-to-consumer Internet use*	41	5.1
7.06 Extent of staff training*	48	4.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	24	4.8
8.02 Government Online Service Index, 0-1 (best)	59	0.53
8.03 Gov't success in ICT promotion*	37	4.8
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	52	4.6
9.02 ICT PCT patents, applications/million pop.	28	4.9
9.03 Impact of ICTs on new organizational models*	35	4.7
9.04 Knowledge-intensive jobs, % workforce	108	7.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	45	4.7
10.02 Internet access in schools*	35	5.3
10.03 ICT use & gov't efficiency*	47	4.6
10.04 E-Participation Index, 0-1 (best)	63	0.21

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Colombia

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	63	4.0
Networked Readiness Index 2013 (out of 144).....	66.....	3.9
A. Environment subindex	101	3.6
1st pillar: Political and regulatory environment.....	96.....	3.4
2nd pillar: Business and innovation environment.....	104.....	3.9
B. Readiness subindex	70	4.9
3rd pillar: Infrastructure and digital content.....	80.....	3.7
4th pillar: Affordability.....	44.....	5.9
5th pillar: Skills.....	76.....	4.9
C. Usage subindex	62	3.9
6th pillar: Individual usage.....	77.....	3.4
7th pillar: Business usage.....	79.....	3.5
8th pillar: Government usage.....	31.....	4.9
D. Impact subindex	49	3.8
9th pillar: Economic impacts.....	75.....	3.2
10th pillar: Social impacts.....	39.....	4.4



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	124	2.7
1.02 Laws relating to ICTs*	55	4.2
1.03 Judicial independence*	106	3.0
1.04 Efficiency of legal system in settling disputes*	95	3.4
1.05 Efficiency of legal system in challenging regs*	93	3.2
1.06 Intellectual property protection*	95	3.2
1.07 Software piracy rate, % software installed	40	5.3
1.08 No. procedures to enforce a contract	42	3.4
1.09 No. days to enforce a contract	139	1,288
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	96	4.5
2.02 Venture capital availability*	75	2.6
2.03 Total tax rate, % profits	144	76.0
2.04 No. days to start a business	76	15
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	64	5.1
2.07 Tertiary education gross enrollment rate, %	60	45.0
2.08 Quality of management schools*	70	4.3
2.09 Gov't procurement of advanced tech*	49	3.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	94	1,313.2
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	68	20.4
3.04 Secure Internet servers/million pop.	70	28.4
3.05 Accessibility of digital content*	91	4.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	79	0.27
4.02 Fixed broadband Internet tariffs, PPP \$/month	45	25.85
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	86	3.5
5.02 Quality of math & science education*	108	3.4
5.03 Secondary education gross enrollment rate, %	63	92.8
5.04 Adult literacy rate, %	71	93.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	86	102.9
6.02 Individuals using Internet, %	66	49.0
6.03 Households w/ personal computer, %	74	38.4
6.04 Households w/ Internet access, %	75	32.1
6.05 Fixed broadband Internet subs./100 pop.	69	8.2
6.06 Mobile broadband subscriptions/100 pop.	103	5.0
6.07 Use of virtual social networks*	80	5.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	97	4.4
7.02 Capacity for innovation*	83	3.4
7.03 PCT patents, applications/million pop.	68	1.0
7.04 Business-to-business Internet use*	62	4.9
7.05 Business-to-consumer Internet use*	56	4.8
7.06 Extent of staff training*	93	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	57	4.2
8.02 Government Online Service Index, 0–1 (best)	16	0.84
8.03 Gov't success in ICT promotion*	74	4.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	62	4.5
9.02 ICT PCT patents, applications/million pop.	76	0.1
9.03 Impact of ICTs on new organizational models*	56	4.4
9.04 Knowledge-intensive jobs, % workforce	89	16.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	70	4.2
10.02 Internet access in schools*	82	3.9
10.03 ICT use & gov't efficiency*	68	4.1
10.04 E-Participation Index, 0–1 (best)	11	0.74

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

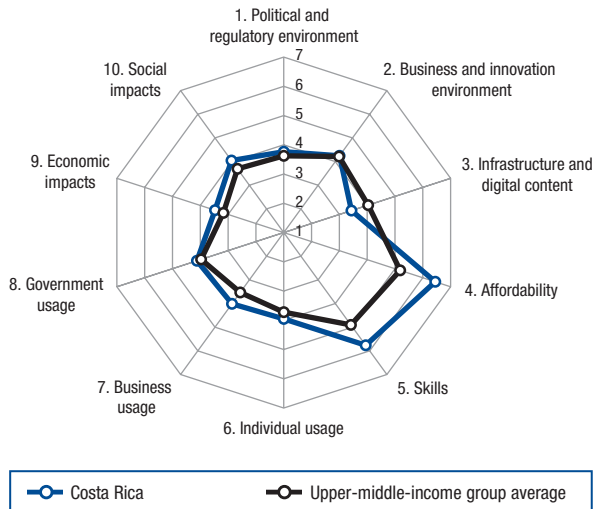
Costa Rica

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 53..4.2

Networked Readiness Index 2013 (out of 144)..... 53.....4.1

- A. Environment subindex..... 64.....4.0**
 - 1st pillar: Political and regulatory environment..... 63.....3.8
 - 2nd pillar: Business and innovation environment..... 70.....4.2
- B. Readiness subindex 50.....5.2**
 - 3rd pillar: Infrastructure and digital content..... 92.....3.4
 - 4th pillar: Affordability 15.....6.4
 - 5th pillar: Skills 24.....5.8
- C. Usage subindex 57.....4.0**
 - 6th pillar: Individual usage 64.....3.9
 - 7th pillar: Business usage 38.....4.0
 - 8th pillar: Government usage 64.....4.1
- D. Impact subindex 50.....3.8**
 - 9th pillar: Economic impacts 52.....3.5
 - 10th pillar: Social impacts 54.....4.0



The Networked Readiness Index in detail

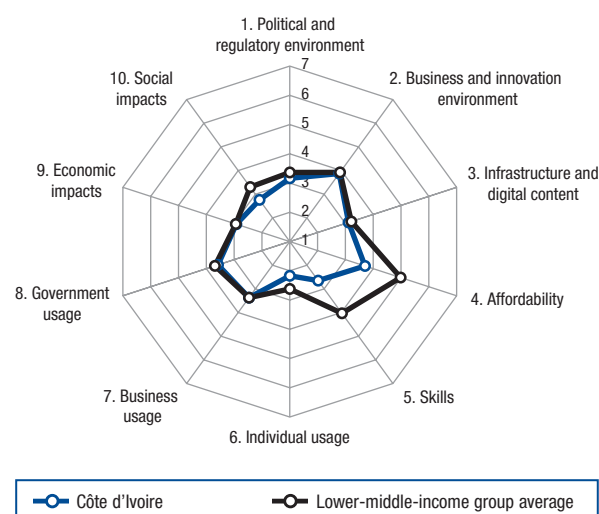
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	140	2.2
1.02 Laws relating to ICTs*	51	4.3
1.03 Judicial independence*	37	4.8
1.04 Efficiency of legal system in settling disputes*	68	3.7
1.05 Efficiency of legal system in challenging regs*	37	4.0
1.06 Intellectual property protection*	59	3.8
1.07 Software piracy rate, % software installed	50	5.8
1.08 No. procedures to enforce a contract	98	4.0
1.09 No. days to enforce a contract	123	8.2
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	49	5.3
2.02 Venture capital availability*	103	2.3
2.03 Total tax rate, % profits	129	55.3
2.04 No. days to start a business	102	24
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	52	5.2
2.07 Tertiary education gross enrollment rate, %	56	46.7
2.08 Quality of management schools*	17	5.3
2.09 Gov't procurement of advanced tech*	66	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	83	2,075.5
3.02 Mobile network coverage, % pop.	134	69.5
3.03 Int'l Internet bandwidth, kb/s per user	59	29.9
3.04 Secure Internet servers/million pop.	52	94.9
3.05 Accessibility of digital content*	47	5.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	22	0.09
4.02 Fixed broadband Internet tariffs, PPP \$/month	31	21.59
4.03 Internet & telephony competition, 0-2 (best)	94	1.63
5th pillar: Skills		
5.01 Quality of educational system*	20	4.9
5.02 Quality of math & science education*	45	4.5
5.03 Secondary education gross enrollment rate, %	32	101.1
5.04 Adult literacy rate, %	58	96.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	64	111.9
6.02 Individuals using Internet, %	68	47.5
6.03 Households w/ personal computer, %	66	49.0
6.04 Households w/ Internet access, %	59	47.3
6.05 Fixed broadband Internet subs./100 pop.	64	9.3
6.06 Mobile broadband subscriptions/100 pop.	70	20.3
6.07 Use of virtual social networks*	36	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	43	5.2
7.02 Capacity for innovation*	37	4.0
7.03 PCT patents, applications/million pop.	63	1.2
7.04 Business-to-business Internet use*	43	5.3
7.05 Business-to-consumer Internet use*	47	4.9
7.06 Extent of staff training*	23	4.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	71	3.9
8.02 Government Online Service Index, 0-1 (best)	67	0.50
8.03 Gov't success in ICT promotion*	65	4.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	45	4.8
9.02 ICT PCT patents, applications/million pop.	60	0.3
9.03 Impact of ICTs on new organizational models*	39	4.6
9.04 Knowledge-intensive jobs, % workforce	65	23.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	47	4.6
10.02 Internet access in schools*	58	4.6
10.03 ICT use & gov't efficiency*	76	4.1
10.04 E-Participation Index, 0-1 (best)	47	0.32

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Côte d'Ivoire

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	122	3.1
Networked Readiness Index 2013 (out of 144).....	120.....	3.0
A. Environment subindex	111	3.5
1st pillar: Political and regulatory environment.....	116.....	3.2
2nd pillar: Business and innovation environment.....	102.....	3.9
B. Readiness subindex	124	3.2
3rd pillar: Infrastructure and digital content.....	105.....	3.1
4th pillar: Affordability.....	120.....	3.7
5th pillar: Skills.....	133.....	2.7
C. Usage subindex	115	3.0
6th pillar: Individual usage.....	117.....	2.2
7th pillar: Business usage.....	96.....	3.4
8th pillar: Government usage.....	107.....	3.6
D. Impact subindex	119	2.8
9th pillar: Economic impacts.....	102.....	2.9
10th pillar: Social impacts.....	127.....	2.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	103	3.1
1.02 Laws relating to ICTs*	108	3.3
1.03 Judicial independence*	128	2.4
1.04 Efficiency of legal system in settling disputes*	90	3.4
1.05 Efficiency of legal system in challenging regs*	95	3.2
1.06 Intellectual property protection*	123	2.7
1.07 Software piracy rate, % software installed	89	81
1.08 No. procedures to enforce a contract	27	32
1.09 No. days to enforce a contract	85	585
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	94	4.5
2.02 Venture capital availability*	116	2.1
2.03 Total tax rate, % profits	107	46.4
2.04 No. days to start a business	40	8
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	72	5.0
2.07 Tertiary education gross enrollment rate, %	125	8.4
2.08 Quality of management schools*	62	4.3
2.09 Gov't procurement of advanced tech*	43	3.8
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	117	314.5
3.02 Mobile network coverage, % pop.	108	94.5
3.03 Int'l Internet bandwidth, kb/s per user	78	17.0
3.04 Secure Internet servers/million pop.	125	1.5
3.05 Accessibility of digital content*	131	3.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	87	0.30
4.02 Fixed broadband Internet tariffs, PPP \$/month	117	63.17
4.03 Internet & telephony competition, 0–2 (best)	116	1.22
5th pillar: Skills		
5.01 Quality of educational system*	83	3.5
5.02 Quality of math & science education*	60	4.3
5.03 Secondary education gross enrollment rate, %	141	28.9
5.04 Adult literacy rate, %	134	56.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	103	91.2
6.02 Individuals using Internet, %	139	2.4
6.03 Households w/ personal computer, %	141	2.3
6.04 Households w/ Internet access, %	144	1.3
6.05 Fixed broadband Internet subs./100 pop.	133	0.1
6.06 Mobile broadband subscriptions/100 pop.	140	0.0
6.07 Use of virtual social networks*	78	5.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	67	4.7
7.02 Capacity for innovation*	127	2.9
7.03 PCT patents, applications/million pop.	105	0.1
7.04 Business-to-business Internet use*	120	4.2
7.05 Business-to-consumer Internet use*	118	3.6
7.06 Extent of staff training*	40	4.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	81	3.8
8.02 Government Online Service Index, 0–1 (best)	106	0.33
8.03 Gov't success in ICT promotion*	98	3.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	95	4.0
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	103	3.7
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	124	3.4
10.02 Internet access in schools*	134	2.3
10.03 ICT use & gov't efficiency*	112	3.5
10.04 E-Participation Index, 0–1 (best)	82	0.13

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Croatia

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 46.. 4.3

Networked Readiness Index 2013 (out of 144)..... 51 4.2

A. Environment subindex 58 4.1

1st pillar: Political and regulatory environment 88 3.5

2nd pillar: Business and innovation environment 44 4.7

B. Readiness subindex 41 5.4

3rd pillar: Infrastructure and digital content 54 4.6

4th pillar: Affordability 36 6.0

5th pillar: Skills 36 5.6

C. Usage subindex 46 4.2

6th pillar: Individual usage 39 5.0

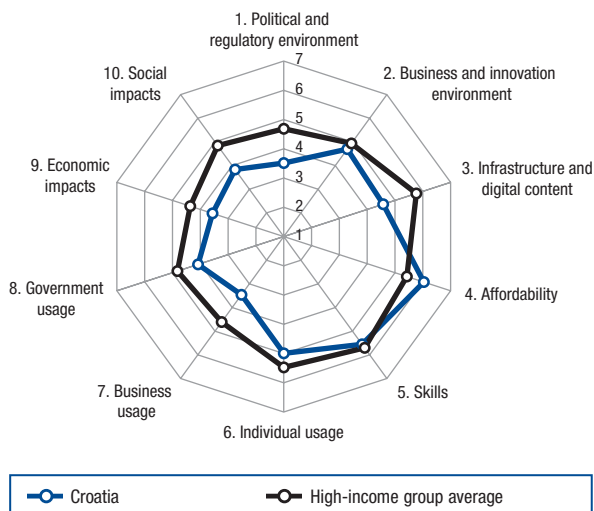
7th pillar: Business usage 81 3.5

8th pillar: Government usage 65 4.1

D. Impact subindex 54 3.7

9th pillar: Economic impacts 40 3.6

10th pillar: Social impacts 66 3.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	92	3.3
1.02 Laws relating to ICTs*	71	4.0
1.03 Judicial independence*	109	3.0
1.04 Efficiency of legal system in settling disputes*	140	2.5
1.05 Efficiency of legal system in challenging regs*	132	2.5
1.06 Intellectual property protection*	81	3.5
1.07 Software piracy rate, % software installed	40	5.3
1.08 No. procedures to enforce a contract	78	3.8
1.09 No. days to enforce a contract	83	5.72
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	59	5.1
2.02 Venture capital availability*	110	2.2
2.03 Total tax rate, % profits	12	19.8
2.04 No. days to start a business	40	8
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	107	4.5
2.07 Tertiary education gross enrollment rate, %	44	58.8
2.08 Quality of management schools*	78	4.2
2.09 Gov't procurement of advanced tech*	136	2.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	75	2,500.1
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	60	28.7
3.04 Secure Internet servers/million pop.	36	245.1
3.05 Accessibility of digital content*	42	5.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	71	0.24
4.02 Fixed broadband Internet tariffs, PPP \$/month	51	26.19
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	97	3.4
5.02 Quality of math & science education*	22	5.0
5.03 Secondary education gross enrollment rate, %	42	98.0
5.04 Adult literacy rate, %	40	98.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	60	115.4
6.02 Individuals using Internet, %	44	63.0
6.03 Households w/ personal computer, %	42	68.0
6.04 Households w/ Internet access, %	39	66.0
6.05 Fixed broadband Internet subs./100 pop.	36	20.7
6.06 Mobile broadband subscriptions/100 pop.	24	53.9
6.07 Use of virtual social networks*	71	5.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	76	4.7
7.02 Capacity for innovation*	110	3.1
7.03 PCT patents, applications/million pop.	34	9.8
7.04 Business-to-business Internet use*	49	5.2
7.05 Business-to-consumer Internet use*	65	4.6
7.06 Extent of staff training*	121	3.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	98	3.6
8.02 Government Online Service Index, 0-1 (best)	40	0.64
8.03 Gov't success in ICT promotion*	110	3.8
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	64	4.5
9.02 ICT PCT patents, applications/million pop.	37	1.4
9.03 Impact of ICTs on new organizational models*	67	4.2
9.04 Knowledge-intensive jobs, % workforce	40	32.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	72	4.2
10.02 Internet access in schools*	53	4.7
10.03 ICT use & gov't efficiency*	94	3.7
10.04 E-Participation Index, 0-1 (best)	52	0.29

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Cyprus

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....37..4.6

Networked Readiness Index 2013 (out of 144).....35.....4.6

A. Environment subindex.....39.....4.6

1st pillar: Political and regulatory environment.....45.....4.2

2nd pillar: Business and innovation environment.....26.....5.0

B. Readiness subindex.....16.....6.0

3rd pillar: Infrastructure and digital content.....28.....5.8

4th pillar: Affordability.....39.....6.0

5th pillar: Skills.....11.....6.1

C. Usage subindex.....48.....4.1

6th pillar: Individual usage.....45.....4.6

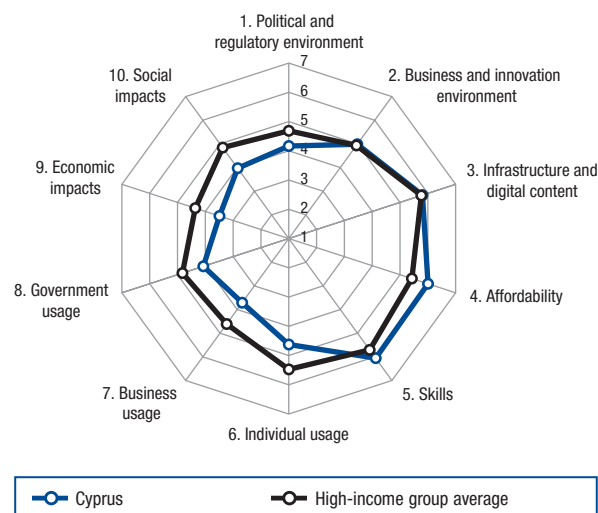
7th pillar: Business usage.....58.....3.7

8th pillar: Government usage.....66.....4.1

D. Impact subindex.....52.....3.7

9th pillar: Economic impacts.....45.....3.5

10th pillar: Social impacts.....57.....4.0



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	46	4.0
1.02 Laws relating to ICTs*	61	4.1
1.03 Judicial independence*	47	4.5
1.04 Efficiency of legal system in settling disputes*	42	4.2
1.05 Efficiency of legal system in challenging regs*	26	4.4
1.06 Intellectual property protection*	40	4.4
1.07 Software piracy rate, % software installed	34	4.8
1.08 No. procedures to enforce a contract	122	4.3
1.09 No. days to enforce a contract	115	7.35
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	41	5.5
2.02 Venture capital availability*	54	2.8
2.03 Total tax rate, % profits	18	22.5
2.04 No. days to start a business	40	8
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	47	5.2
2.07 Tertiary education gross enrollment rate, %	57	46.5
2.08 Quality of management schools*	18	5.3
2.09 Gov't procurement of advanced tech*	72	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	51	4,414.6
3.02 Mobile network coverage, % pop.	32	100.0
3.03 Int'l Internet bandwidth, kb/s per user	32	69.7
3.04 Secure Internet servers/million pop.	20	786.5
3.05 Accessibility of digital content*	40	5.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	29	0.12
4.02 Fixed broadband Internet tariffs, PPP \$/month	38	23.92
4.03 Internet & telephony competition, 0–2 (best)	109	1.31
5th pillar: Skills		
5.01 Quality of educational system*	9	5.3
5.02 Quality of math & science education*	7	5.6
5.03 Secondary education gross enrollment rate, %	62	92.8
5.04 Adult literacy rate, %	42	98.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	91	98.4
6.02 Individuals using Internet, %	47	61.0
6.03 Households w/ personal computer, %	39	70.0
6.04 Households w/ Internet access, %	45	62.0
6.05 Fixed broadband Internet subs./100 pop.	37	19.2
6.06 Mobile broadband subscriptions/100 pop.	47	34.1
6.07 Use of virtual social networks*	41	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	38	5.2
7.02 Capacity for innovation*	93	3.3
7.03 PCT patents, applications/million pop.	47	5.2
7.04 Business-to-business Internet use*	76	4.8
7.05 Business-to-consumer Internet use*	53	4.9
7.06 Extent of staff training*	67	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	77	3.9
8.02 Government Online Service Index, 0–1 (best)	51	0.56
8.03 Gov't success in ICT promotion*	96	4.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	76	4.3
9.02 ICT PCT patents, applications/million pop.	73	0.1
9.03 Impact of ICTs on new organizational models*	82	4.0
9.04 Knowledge-intensive jobs, % workforce	33	35.0
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	46	4.6
10.02 Internet access in schools*	30	5.6
10.03 ICT use & gov't efficiency*	66	4.2
10.04 E-Participation Index, 0–1 (best)	97	0.08

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Czech Republic

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 42.. 4.5

Networked Readiness Index 2013 (out of 144)..... 42..... 4.4

A. Environment subindex..... 49..... 4.2

1st pillar: Political and regulatory environment..... 51..... 4.0

2nd pillar: Business and innovation environment..... 60..... 4.4

B. Readiness subindex..... 35..... 5.5

3rd pillar: Infrastructure and digital content..... 23..... 6.0

4th pillar: Affordability..... 84..... 5.1

5th pillar: Skills..... 49..... 5.3

C. Usage subindex..... 40..... 4.4

6th pillar: Individual usage..... 30..... 5.3

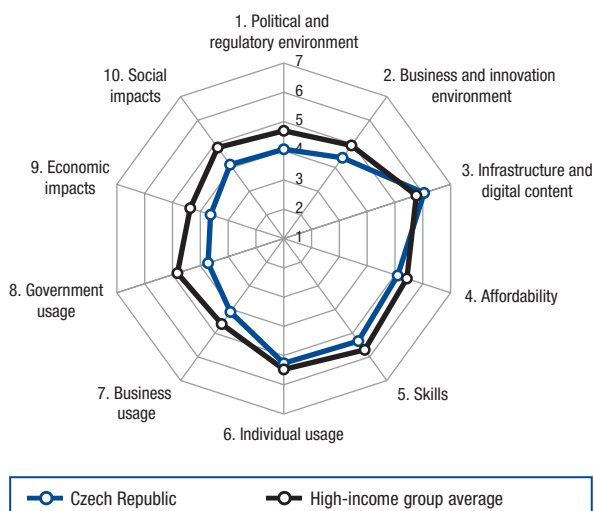
7th pillar: Business usage..... 31..... 4.1

8th pillar: Government usage..... 96..... 3.7

D. Impact subindex..... 45..... 3.9

9th pillar: Economic impacts..... 38..... 3.6

10th pillar: Social impacts..... 47..... 4.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	110	3.0
1.02 Laws relating to ICTs*	47	4.4
1.03 Judicial independence*	68	3.8
1.04 Efficiency of legal system in settling disputes*	115	3.1
1.05 Efficiency of legal system in challenging regs*	126	2.7
1.06 Intellectual property protection*	61	3.8
1.07 Software piracy rate, % software installed	20	3.5
1.08 No. procedures to enforce a contract	8	2.7
1.09 No. days to enforce a contract	95	6.11
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	53	5.2
2.02 Venture capital availability*	74	2.6
2.03 Total tax rate, % profits	110	48.1
2.04 No. days to start a business	94	20
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	12	5.8
2.07 Tertiary education gross enrollment rate, %	30	64.6
2.08 Quality of management schools*	90	4.0
2.09 Gov't procurement of advanced tech*	124	2.8
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	23	8,260.3
3.02 Mobile network coverage, % pop.	43	99.8
3.03 Int'l Internet bandwidth, kb/s per user	19	100.1
3.04 Secure Internet servers/million pop.	27	518.6
3.05 Accessibility of digital content*	19	6.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	118	0.43
4.02 Fixed broadband Internet tariffs, PPP \$/month	63	29.20
4.03 Internet & telephony competition, 0-2 (best)	69	1.87
5th pillar: Skills		
5.01 Quality of educational system*	67	3.7
5.02 Quality of math & science education*	83	4.0
5.03 Secondary education gross enrollment rate, %	52	96.0
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	41	126.9
6.02 Individuals using Internet, %	28	75.0
6.03 Households w/ personal computer, %	34	75.0
6.04 Households w/ Internet access, %	33	71.0
6.05 Fixed broadband Internet subs./100 pop.	40	16.4
6.06 Mobile broadband subscriptions/100 pop.	29	52.1
6.07 Use of virtual social networks*	43	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	54	4.9
7.02 Capacity for innovation*	26	4.3
7.03 PCT patents, applications/million pop.	29	15.3
7.04 Business-to-business Internet use*	24	5.7
7.05 Business-to-consumer Internet use*	9	5.8
7.06 Extent of staff training*	68	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	113	3.3
8.02 Government Online Service Index, 0-1 (best)	53	0.54
8.03 Gov't success in ICT promotion*	116	3.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	78	4.3
9.02 ICT PCT patents, applications/million pop.	32	2.3
9.03 Impact of ICTs on new organizational models*	73	4.1
9.04 Knowledge-intensive jobs, % workforce	26	37.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	58	4.5
10.02 Internet access in schools*	24	5.8
10.03 ICT use & gov't efficiency*	101	3.6
10.04 E-Participation Index, 0-1 (best)	55	0.26

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Denmark

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 13..5.5

Networked Readiness Index 2013 (out of 144)..... 8.....5.6

A. Environment subindex..... 16.....5.2

1st pillar: Political and regulatory environment..... 19.....5.2

2nd pillar: Business and innovation environment..... 18.....5.2

B. Readiness subindex..... 14.....6.1

3rd pillar: Infrastructure and digital content..... 20.....6.2

4th pillar: Affordability..... 29.....6.2

5th pillar: Skills..... 18.....5.9

C. Usage subindex..... 7.....5.7

6th pillar: Individual usage..... 3.....6.6

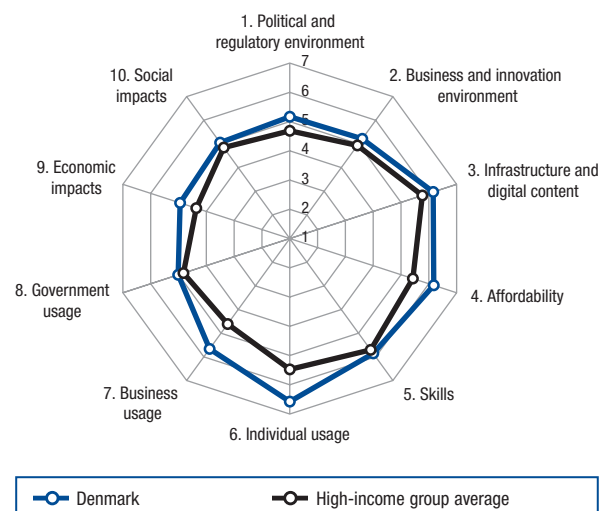
7th pillar: Business usage..... 7.....5.7

8th pillar: Government usage..... 26.....5.0

D. Impact subindex..... 19.....5.0

9th pillar: Economic impacts..... 16.....4.9

10th pillar: Social impacts..... 24.....5.0



The Networked Readiness Index in detail

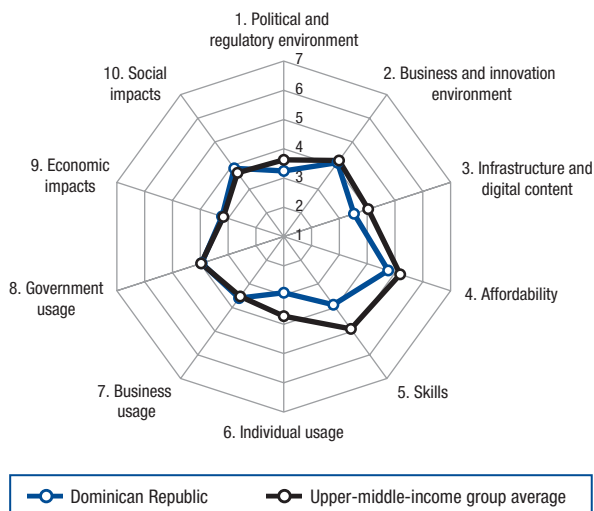
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	23	4.7
1.02 Laws relating to ICTs*	18	5.1
1.03 Judicial independence*	8	6.2
1.04 Efficiency of legal system in settling disputes*	21	4.9
1.05 Efficiency of legal system in challenging regs*	38	4.0
1.06 Intellectual property protection*	26	5.0
1.07 Software piracy rate, % software installed	7	24
1.08 No. procedures to enforce a contract	47	35
1.09 No. days to enforce a contract	35	410
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	29	5.9
2.02 Venture capital availability*	95	2.4
2.03 Total tax rate, % profits	29	27.0
2.04 No. days to start a business	19	6
2.05 No. procedures to start a business	22	4
2.06 Intensity of local competition*	27	5.5
2.07 Tertiary education gross enrollment rate, %	19	73.6
2.08 Quality of management schools*	25	5.2
2.09 Gov't procurement of advanced tech*	87	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	40	5,438.4
3.02 Mobile network coverage, % pop.	88	97.0
3.03 Int'l Internet bandwidth, kb/s per user	12	174.8
3.04 Secure Internet servers/million pop.	5	2,214.3
3.05 Accessibility of digital content*	29	6.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	11	0.06
4.02 Fixed broadband Internet tariffs, PPP \$/month	73	32.19
4.03 Internet & telephony competition, 0–2 (best)	65	1.88
5th pillar: Skills		
5.01 Quality of educational system*	21	4.9
5.02 Quality of math & science education*	42	4.5
5.03 Secondary education gross enrollment rate, %	5	119.5
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	56	117.6
6.02 Individuals using Internet, %	4	93.0
6.03 Households w/ personal computer, %	4	92.2
6.04 Households w/ Internet access, %	6	92.0
6.05 Fixed broadband Internet subs./100 pop.	3	38.8
6.06 Mobile broadband subscriptions/100 pop.	6	97.2
6.07 Use of virtual social networks*	46	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	20	5.7
7.02 Capacity for innovation*	13	5.0
7.03 PCT patents, applications/million pop.	7	208.5
7.04 Business-to-business Internet use*	21	5.7
7.05 Business-to-consumer Internet use*	18	5.6
7.06 Extent of staff training*	14	5.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	48	4.3
8.02 Government Online Service Index, 0–1 (best)	13	0.86
8.03 Gov't success in ICT promotion*	50	4.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	33	4.9
9.02 ICT PCT patents, applications/million pop.	11	38.0
9.03 Impact of ICTs on new organizational models*	29	4.8
9.04 Knowledge-intensive jobs, % workforce	9	45.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	28	5.2
10.02 Internet access in schools*	22	5.8
10.03 ICT use & gov't efficiency*	34	4.8
10.04 E-Participation Index, 0–1 (best)	28	0.55

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Dominican Republic

	Rank (out of 148)	Value (1-7)
Networked Readiness Index 2014	93	3.7
Networked Readiness Index 2013 (out of 144)	90	3.6
A. Environment subindex	97	3.7
1st pillar: Political and regulatory environment	110	3.2
2nd pillar: Business and innovation environment	79	4.1
B. Readiness subindex	103	4.0
3rd pillar: Infrastructure and digital content	87	3.5
4th pillar: Affordability	95	4.7
5th pillar: Skills	106	3.9
C. Usage subindex	87	3.5
6th pillar: Individual usage	93	2.9
7th pillar: Business usage	67	3.6
8th pillar: Government usage	81	3.9
D. Impact subindex	64	3.6
9th pillar: Economic impacts	71	3.2
10th pillar: Social impacts	61	3.9



The Networked Readiness Index in detail

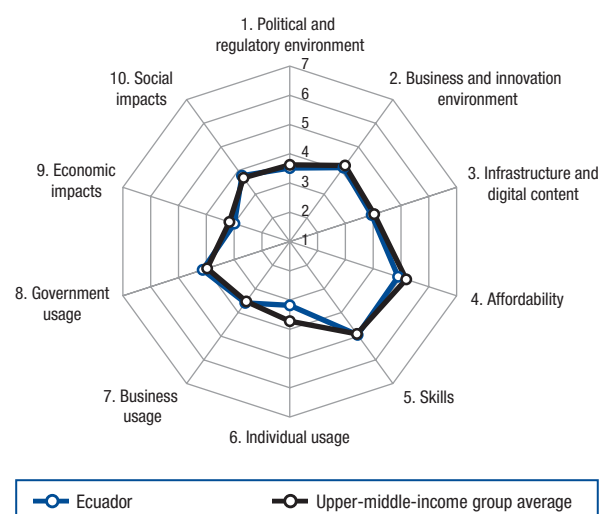
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	129	2.7
1.02 Laws relating to ICTs*	73	4.0
1.03 Judicial independence*	131	2.4
1.04 Efficiency of legal system in settling disputes*	99	3.4
1.05 Efficiency of legal system in challenging regs*	107	3.0
1.06 Intellectual property protection*	107	3.0
1.07 Software piracy rate, % software installed	78	76
1.08 No. procedures to enforce a contract	42	34
1.09 No. days to enforce a contract	49	460
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	51	5.2
2.02 Venture capital availability*	86	2.5
2.03 Total tax rate, % profits	97	43.5
2.04 No. days to start a business	89	19
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	75	4.9
2.07 Tertiary education gross enrollment rate, %	76	34.0
2.08 Quality of management schools*	106	3.7
2.09 Gov't procurement of advanced tech*	80	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	95	1,278.6
3.02 Mobile network coverage, % pop.	107	94.6
3.03 Int'l Internet bandwidth, kb/s per user	84	14.9
3.04 Secure Internet servers/million pop.	78	23.0
3.05 Accessibility of digital content*	60	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	116	0.42
4.02 Fixed broadband Internet tariffs, PPP \$/month	96	39.51
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	140	2.5
5.02 Quality of math & science education*	146	2.2
5.03 Secondary education gross enrollment rate, %	98	75.1
5.04 Adult literacy rate, %	87	90.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	106	86.9
6.02 Individuals using Internet, %	74	45.0
6.03 Households w/ personal computer, %	96	19.8
6.04 Households w/ Internet access, %	99	13.7
6.05 Fixed broadband Internet subs./100 pop.	83	4.3
6.06 Mobile broadband subscriptions/100 pop.	78	15.6
6.07 Use of virtual social networks*	51	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	56	4.9
7.02 Capacity for innovation*	98	3.2
7.03 PCT patents, applications/million pop.	83	0.4
7.04 Business-to-business Internet use*	53	5.1
7.05 Business-to-consumer Internet use*	61	4.7
7.06 Extent of staff training*	76	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	104	3.5
8.02 Government Online Service Index, 0-1 (best)	55	0.54
8.03 Gov't success in ICT promotion*	85	4.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	57	4.6
9.02 ICT PCT patents, applications/million pop.	80	0.0
9.03 Impact of ICTs on new organizational models*	44	4.5
9.04 Knowledge-intensive jobs, % workforce	85	17.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	80	4.0
10.02 Internet access in schools*	99	3.6
10.03 ICT use & gov't efficiency*	74	4.1
10.04 E-Participation Index, 0-1 (best)	34	0.47

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Ecuador

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	82	3.9
Networked Readiness Index 2013 (out of 144).....	91	3.6
A. Environment subindex	81	3.8
1st pillar: Political and regulatory environment.....	89	3.5
2nd pillar: Business and innovation environment.....	78	4.1
B. Readiness subindex	83	4.6
3rd pillar: Infrastructure and digital content.....	75	3.9
4th pillar: Affordability.....	92	4.9
5th pillar: Skills.....	75	4.9
C. Usage subindex	74	3.6
6th pillar: Individual usage.....	83	3.2
7th pillar: Business usage.....	71	3.6
8th pillar: Government usage.....	62	4.1
D. Impact subindex	80	3.4
9th pillar: Economic impacts.....	95	3.0
10th pillar: Social impacts.....	71	3.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	91	3.3
1.02 Laws relating to ICTs*	65	4.0
1.03 Judicial independence*	100	3.2
1.04 Efficiency of legal system in settling disputes*	97	3.4
1.05 Efficiency of legal system in challenging regs*	100	3.1
1.06 Intellectual property protection*	79	3.6
1.07 Software piracy rate, % software installed	67	68
1.08 No. procedures to enforce a contract	91	39
1.09 No. days to enforce a contract	86	588
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	89	4.6
2.02 Venture capital availability*	34	3.2
2.03 Total tax rate, % profits	57	33.9
2.04 No. days to start a business	134	56
2.05 No. procedures to start a business	137	13
2.06 Intensity of local competition*	112	4.5
2.07 Tertiary education gross enrollment rate, %	69	38.9
2.08 Quality of management schools*	77	4.2
2.09 Gov't procurement of advanced tech*	29	4.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	91	1,329.2
3.02 Mobile network coverage, % pop.	96	96.0
3.03 Int'l Internet bandwidth, kb/s per user	55	31.8
3.04 Secure Internet servers/million pop.	79	22.1
3.05 Accessibility of digital content*	97	4.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	104	0.36
4.02 Fixed broadband Internet tariffs, PPP \$/month	99	41.06
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	62	3.8
5.02 Quality of math & science education*	84	4.0
5.03 Secondary education gross enrollment rate, %	80	86.8
5.04 Adult literacy rate, %	82	91.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	81	106.2
6.02 Individuals using Internet, %	88	35.1
6.03 Households w/ personal computer, %	82	32.2
6.04 Households w/ Internet access, %	84	22.5
6.05 Fixed broadband Internet subs./100 pop.	77	5.3
6.06 Mobile broadband subscriptions/100 pop.	68	21.6
6.07 Use of virtual social networks*	103	5.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	87	4.5
7.02 Capacity for innovation*	53	3.7
7.03 PCT patents, applications/million pop.	81	0.4
7.04 Business-to-business Internet use*	95	4.6
7.05 Business-to-consumer Internet use*	57	4.8
7.06 Extent of staff training*	61	4.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	58	4.2
8.02 Government Online Service Index, 0–1 (best)	80	0.46
8.03 Gov't success in ICT promotion*	62	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	83	4.2
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	66	4.2
9.04 Knowledge-intensive jobs, % workforce	98	14.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	66	4.3
10.02 Internet access in schools*	80	4.0
10.03 ICT use & gov't efficiency*	55	4.4
10.04 E-Participation Index, 0–1 (best)	59	0.24

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Egypt

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 91 .. 3.7

Networked Readiness Index 2013 (out of 144) 80 3.8

A. Environment subindex 119 3.4

1st pillar: Political and regulatory environment 115 3.2

2nd pillar: Business and innovation environment 117 3.7

B. Readiness subindex 93 4.4

3rd pillar: Infrastructure and digital content 99 3.3

4th pillar: Affordability 16 6.4

5th pillar: Skills 120 3.3

C. Usage subindex 89 3.5

6th pillar: Individual usage 71 3.7

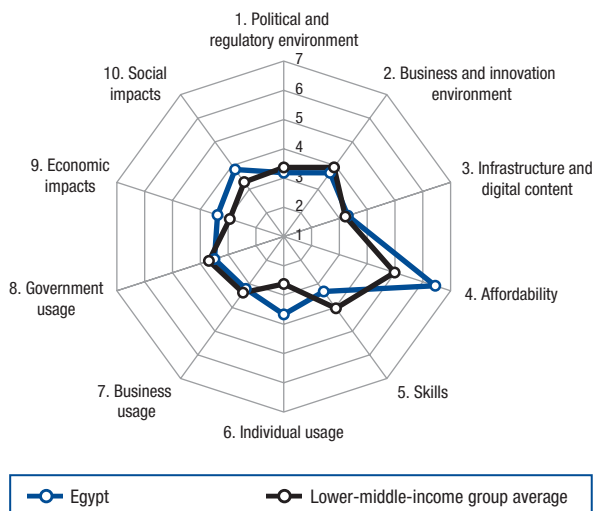
7th pillar: Business usage 112 3.2

8th pillar: Government usage 113 3.5

D. Impact subindex 61 3.6

9th pillar: Economic impacts 59 3.4

10th pillar: Social impacts 65 3.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	135	2.4
1.02 Laws relating to ICTs*	104	3.4
1.03 Judicial independence*	82	3.5
1.04 Efficiency of legal system in settling disputes*	106	3.2
1.05 Efficiency of legal system in challenging regs*	94	3.2
1.06 Intellectual property protection*	94	3.2
1.07 Software piracy rate, % software installed	53	61
1.08 No. procedures to enforce a contract	116	42
1.09 No. days to enforce a contract	132	1,010
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	117	4.1
2.02 Venture capital availability*	51	2.9
2.03 Total tax rate, % profits	94	42.6
2.04 No. days to start a business	40	8
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	131	4.1
2.07 Tertiary education gross enrollment rate, %	79	28.8
2.08 Quality of management schools*	145	2.3
2.09 Gov't procurement of advanced tech*	116	3.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	84	1,972.3
3.02 Mobile network coverage, % pop.	43	99.8
3.03 Int'l Internet bandwidth, kb/s per user	117	4.2
3.04 Secure Internet servers/million pop.	107	3.7
3.05 Accessibility of digital content*	89	4.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	8	0.05
4.02 Fixed broadband Internet tariffs, PPP \$/month	11	15.09
4.03 Internet & telephony competition, 0-2 (best)	103	1.36
5th pillar: Skills		
5.01 Quality of educational system*	145	2.2
5.02 Quality of math & science education*	145	2.2
5.03 Secondary education gross enrollment rate, %	97	75.9
5.04 Adult literacy rate, %	113	73.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	51	119.9
6.02 Individuals using Internet, %	75	44.1
6.03 Households w/ personal computer, %	76	37.9
6.04 Households w/ Internet access, %	74	32.3
6.05 Fixed broadband Internet subs./100 pop.	91	2.8
6.06 Mobile broadband subscriptions/100 pop.	59	27.9
6.07 Use of virtual social networks*	50	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	110	4.2
7.02 Capacity for innovation*	111	3.1
7.03 PCT patents, applications/million pop.	75	0.6
7.04 Business-to-business Internet use*	81	4.7
7.05 Business-to-consumer Internet use*	70	4.5
7.06 Extent of staff training*	138	3.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	141	2.6
8.02 Government Online Service Index, 0-1 (best)	42	0.60
8.03 Gov't success in ICT promotion*	131	3.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	101	3.9
9.02 ICT PCT patents, applications/million pop.	70	0.2
9.03 Impact of ICTs on new organizational models*	78	4.0
9.04 Knowledge-intensive jobs, % workforce	35	34.0
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	92	3.8
10.02 Internet access in schools*	125	2.7
10.03 ICT use & gov't efficiency*	96	3.7
10.04 E-Participation Index, 0-1 (best)	15	0.68

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

El Salvador

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....98..3.6

Networked Readiness Index 2013 (out of 144).....93.....3.5

A. Environment subindex.....110.....3.5

1st pillar: Political and regulatory environment.....121.....3.1

2nd pillar: Business and innovation environment.....95.....4.0

B. Readiness subindex.....96.....4.2

3rd pillar: Infrastructure and digital content.....102.....3.1

4th pillar: Affordability.....55.....5.7

5th pillar: Skills.....107.....3.8

C. Usage subindex.....93.....3.4

6th pillar: Individual usage.....96.....2.9

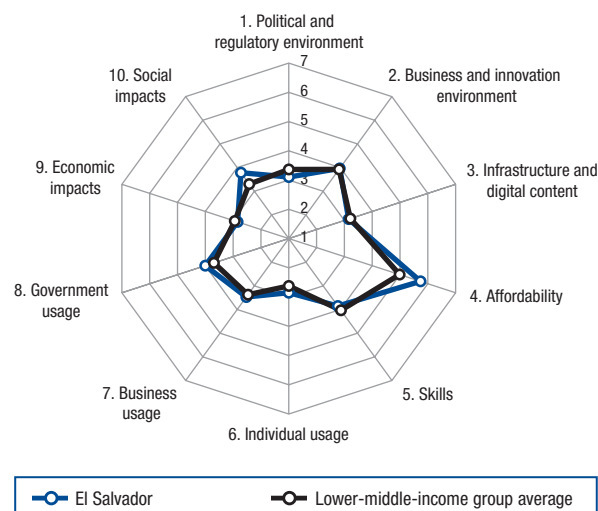
7th pillar: Business usage.....80.....3.5

8th pillar: Government usage.....74.....4.0

D. Impact subindex.....84.....3.3

9th pillar: Economic impacts.....109.....2.8

10th pillar: Social impacts.....70.....3.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	122	2.8
1.02 Laws relating to ICTs*	102	3.4
1.03 Judicial independence*	105	3.0
1.04 Efficiency of legal system in settling disputes*	126	2.8
1.05 Efficiency of legal system in challenging regs*	110	3.0
1.06 Intellectual property protection*	112	2.9
1.07 Software piracy rate, % software installed	87	80
1.08 No. procedures to enforce a contract	42	34
1.09 No. days to enforce a contract	118	786
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	113	4.1
2.02 Venture capital availability*	59	2.8
2.03 Total tax rate, % profits	76	38.1
2.04 No. days to start a business	84	17
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	105	4.6
2.07 Tertiary education gross enrollment rate, %	89	24.5
2.08 Quality of management schools*	93	3.8
2.09 Gov't procurement of advanced tech*	71	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	99	927.9
3.02 Mobile network coverage, % pop.	101	95.0
3.03 Int'l Internet bandwidth, kb/s per user	101	6.9
3.04 Secure Internet servers/million pop.	81	20.6
3.05 Accessibility of digital content*	85	4.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	75	0.26
4.02 Fixed broadband Internet tariffs, PPP \$/month	60	29.02
4.03 Internet & telephony competition, 0–2 (best)	69	1.87
5th pillar: Skills		
5.01 Quality of educational system*	109	3.1
5.02 Quality of math & science education*	129	2.8
5.03 Secondary education gross enrollment rate, %	107	67.2
5.04 Adult literacy rate, %	106	84.5

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	31	137.3
6.02 Individuals using Internet, %	99	25.5
6.03 Households w/ personal computer, %	102	15.3
6.04 Households w/ Internet access, %	95	15.0
6.05 Fixed broadband Internet subs./100 pop.	87	3.8
6.06 Mobile broadband subscriptions/100 pop.	100	5.5
6.07 Use of virtual social networks*	111	5.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	102	4.3
7.02 Capacity for innovation*	56	3.7
7.03 PCT patents, applications/million pop.	119	0.0
7.04 Business-to-business Internet use*	105	4.4
7.05 Business-to-consumer Internet use*	73	4.5
7.06 Extent of staff training*	81	3.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	119	3.2
8.02 Government Online Service Index, 0–1 (best)	32	0.67
8.03 Gov't success in ICT promotion*	112	3.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	88	4.1
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	79	4.0
9.04 Knowledge-intensive jobs, % workforce	102	11.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*.....	101	3.7
10.02 Internet access in schools*.....	97	3.7
10.03 ICT use & gov't efficiency*.....	116	3.4
10.04 E-Participation Index, 0–1 (best).....	28	0.55

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Estonia

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 21 .. 5.3

Networked Readiness Index 2013 (out of 144) 22 5.1

A. Environment subindex 26 4.9

1st pillar: Political and regulatory environment 26 4.8

2nd pillar: Business and innovation environment 28 4.9

B. Readiness subindex 22 5.7

3rd pillar: Infrastructure and digital content 25 5.9

4th pillar: Affordability 61 5.5

5th pillar: Skills 25 5.8

C. Usage subindex 22 5.2

6th pillar: Individual usage 17 5.8

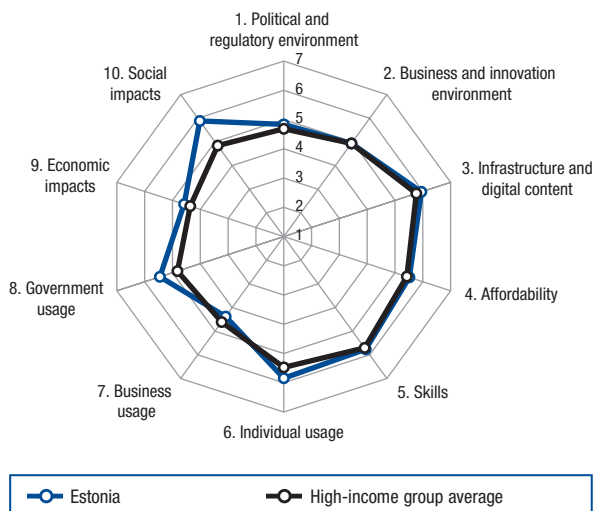
7th pillar: Business usage 28 4.4

8th pillar: Government usage 12 5.5

D. Impact subindex 13 5.2

9th pillar: Economic impacts 22 4.6

10th pillar: Social impacts 4 5.9



The Networked Readiness Index in detail

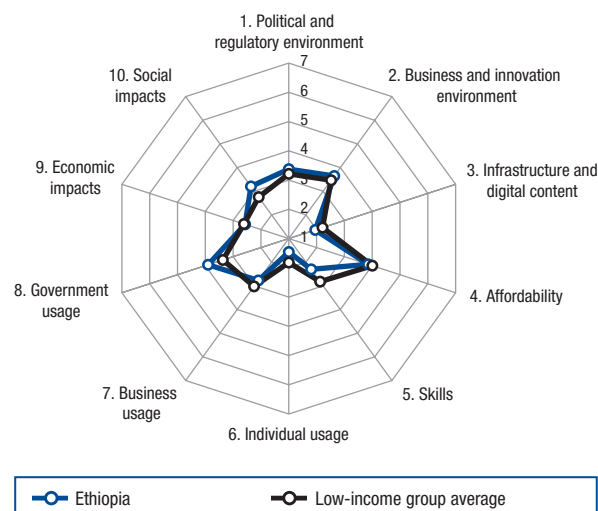
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	36	4.3
1.02 Laws relating to ICTs*	3	5.8
1.03 Judicial independence*	20	5.5
1.04 Efficiency of legal system in settling disputes*	39	4.3
1.05 Efficiency of legal system in challenging regs*	33	4.2
1.06 Intellectual property protection*	31	4.8
1.07 Software piracy rate, % software installed	34	4.8
1.08 No. procedures to enforce a contract	47	3.5
1.09 No. days to enforce a contract	39	4.25
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	35	5.8
2.02 Venture capital availability*	30	3.3
2.03 Total tax rate, % profits	114	49.4
2.04 No. days to start a business	32	7
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	22	5.6
2.07 Tertiary education gross enrollment rate, %	24	71.7
2.08 Quality of management schools*	54	4.5
2.09 Gov't procurement of advanced tech*	34	3.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	18	8,933.9
3.02 Mobile network coverage, % pop.	28	100.0
3.03 Int'l Internet bandwidth, kb/s per user	62	26.5
3.04 Secure Internet servers/million pop.	23	660.0
3.05 Accessibility of digital content*	6	6.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	99	0.34
4.02 Fixed broadband Internet tariffs, PPP \$/month	61	29.07
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	47	4.1
5.02 Quality of math & science education*	26	4.9
5.03 Secondary education gross enrollment rate, %	13	109.1
5.04 Adult literacy rate, %	1	99.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	12	160.4
6.02 Individuals using Internet, %	25	79.0
6.03 Households w/ personal computer, %	31	76.0
6.04 Households w/ Internet access, %	26	75.0
6.05 Fixed broadband Internet subs./100 pop.	20	25.5
6.06 Mobile broadband subscriptions/100 pop.	13	76.9
6.07 Use of virtual social networks*	8	6.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	36	5.4
7.02 Capacity for innovation*	28	4.3
7.03 PCT patents, applications/million pop.	26	31.1
7.04 Business-to-business Internet use*	6	6.0
7.05 Business-to-consumer Internet use*	11	5.8
7.06 Extent of staff training*	37	4.4
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	18	5.0
8.02 Government Online Service Index, 0-1 (best)	18	0.82
8.03 Gov't success in ICT promotion*	13	5.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	9	5.5
9.02 ICT PCT patents, applications/million pop.	22	11.8
9.03 Impact of ICTs on new organizational models*	3	5.5
9.04 Knowledge-intensive jobs, % workforce	20	41.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	7	5.8
10.02 Internet access in schools*	3	6.5
10.03 ICT use & gov't efficiency*	5	5.6
10.04 E-Participation Index, 0-1 (best)	8	0.76

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Ethiopia

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	130	2.9
Networked Readiness Index 2013 (out of 144).....	128.....	2.9
A. Environment subindex	112	3.5
1st pillar: Political and regulatory environment.....	102.....	3.4
2nd pillar: Business and innovation environment.....	120.....	3.6
B. Readiness subindex	135	2.7
3rd pillar: Infrastructure and digital content.....	135.....	1.9
4th pillar: Affordability.....	115.....	3.9
5th pillar: Skills.....	140.....	2.3
C. Usage subindex	130	2.7
6th pillar: Individual usage.....	146.....	1.5
7th pillar: Business usage.....	141.....	2.8
8th pillar: Government usage.....	83.....	3.9
D. Impact subindex	112	2.9
9th pillar: Economic impacts.....	128.....	2.6
10th pillar: Social impacts.....	103.....	3.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	94	3.3
1.02 Laws relating to ICTs*	130	2.8
1.03 Judicial independence*	112	2.9
1.04 Efficiency of legal system in settling disputes*	81	3.6
1.05 Efficiency of legal system in challenging regs*	116	2.9
1.06 Intellectual property protection*	85	3.5
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	78	3.8
1.09 No. days to enforce a contract	71	5.30
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	126	3.9
2.02 Venture capital availability*	114	2.1
2.03 Total tax rate, % profits	54	33.4
2.04 No. days to start a business	76	15
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	133	4.0
2.07 Tertiary education gross enrollment rate, %	126	8.2
2.08 Quality of management schools*	118	3.5
2.09 Gov't procurement of advanced tech*	61	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	141	57.7
3.02 Mobile network coverage, % pop.	130	73.0
3.03 Int'l Internet bandwidth, kb/s per user	115	4.8
3.04 Secure Internet servers/million pop.	145	0.2
3.05 Accessibility of digital content*	142	3.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	28	0.11
4.02 Fixed broadband Internet tariffs, PPP \$/month	114	55.23
4.03 Internet & telephony competition, 0–2 (best)	144	0.00
5th pillar: Skills		
5.01 Quality of educational system*	108	3.1
5.02 Quality of math & science education*	109	3.4
5.03 Secondary education gross enrollment rate, %	134	37.2
5.04 Adult literacy rate, %	144	39.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	147	22.4
6.02 Individuals using Internet, %	144	1.5
6.03 Households w/ personal computer, %	143	2.1
6.04 Households w/ Internet access, %	141	1.9
6.05 Fixed broadband Internet subs./100 pop.	143	0.0
6.06 Mobile broadband subscriptions/100 pop.	107	4.4
6.07 Use of virtual social networks*	144	3.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	131	3.8
7.02 Capacity for innovation*	141	2.6
7.03 PCT patents, applications/million pop.	121	0.0
7.04 Business-to-business Internet use*	141	3.5
7.05 Business-to-consumer Internet use*	146	2.7
7.06 Extent of staff training*	123	3.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	72	3.9
8.02 Government Online Service Index, 0–1 (best)	76	0.47
8.03 Gov't success in ICT promotion*	97	4.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	132	3.4
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	130	3.3
9.04 Knowledge-intensive jobs, % workforce	91	15.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	132	3.2
10.02 Internet access in schools*	124	2.8
10.03 ICT use & gov't efficiency*	92	3.8
10.04 E-Participation Index, 0–1 (best)	44	0.34

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Finland

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 1 6.0

Networked Readiness Index 2013 (out of 144) 1 6.0

A. Environment subindex 3 5.6

1st pillar: Political and regulatory environment 3 5.9

2nd pillar: Business and innovation environment 9 5.4

B. Readiness subindex 1 6.6

3rd pillar: Infrastructure and digital content 1 6.9

4th pillar: Affordability 18 6.4

5th pillar: Skills 1 6.5

C. Usage subindex 2 6.0

6th pillar: Individual usage 6 6.4

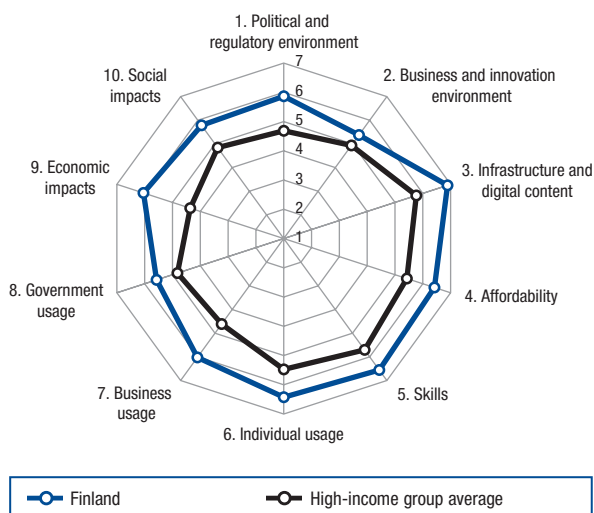
7th pillar: Business usage 2 6.0

8th pillar: Government usage 8 5.6

D. Impact subindex 2 5.9

9th pillar: Economic impacts 1 6.0

10th pillar: Social impacts 7 5.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	2	5.7
1.02 Laws relating to ICTs*	5	5.6
1.03 Judicial independence*	2	6.6
1.04 Efficiency of legal system in settling disputes*	2	6.1
1.05 Efficiency of legal system in challenging regs*	1	5.9
1.06 Intellectual property protection*	1	6.2
1.07 Software piracy rate, % software installed	10	25
1.08 No. procedures to enforce a contract	36	33
1.09 No. days to enforce a contract	22	375
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	1	6.5
2.02 Venture capital availability*	11	4.0
2.03 Total tax rate, % profits	80	39.8
2.04 No. days to start a business	70	14
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	86	4.8
2.07 Tertiary education gross enrollment rate, %	2	95.5
2.08 Quality of management schools*	10	5.6
2.09 Gov't procurement of advanced tech*	21	4.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	8	12,997.4
3.02 Mobile network coverage, % pop.	53	99.5
3.03 Int'l Internet bandwidth, kb/s per user	14	159.3
3.04 Secure Internet servers/million pop.	10	1,612.6
3.05 Accessibility of digital content*	2	6.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	14	0.07
4.02 Fixed broadband Internet tariffs, PPP \$/month	58	28.94
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	2	5.9
5.02 Quality of math & science education*	2	6.3
5.03 Secondary education gross enrollment rate, %	16	107.5
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	8	172.3
6.02 Individuals using Internet, %	7	91.0
6.03 Households w/ personal computer, %	10	88.0
6.04 Households w/ Internet access, %	13	87.0
6.05 Fixed broadband Internet subs./100 pop.	16	30.3
6.06 Mobile broadband subscriptions/100 pop.	3	106.6
6.07 Use of virtual social networks*	6	6.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	7	6.0
7.02 Capacity for innovation*	2	5.7
7.03 PCT patents, applications/million pop.	4	283.6
7.04 Business-to-business Internet use*	1	6.2
7.05 Business-to-consumer Internet use*	16	5.6
7.06 Extent of staff training*	2	5.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	16	5.1
8.02 Government Online Service Index, 0-1 (best)	7	0.88
8.03 Gov't success in ICT promotion*	16	5.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	1	5.8
9.02 ICT PCT patents, applications/million pop.	2	110.1
9.03 Impact of ICTs on new organizational models*	1	5.7
9.04 Knowledge-intensive jobs, % workforce	12	43.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	10	5.7
10.02 Internet access in schools*	2	6.6
10.03 ICT use & gov't efficiency*	14	5.4
10.04 E-Participation Index, 0-1 (best)	11	0.74

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

France

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....25..5.1

Networked Readiness Index 2013 (out of 144).....26.....5.1

A. Environment subindex.....30.....4.8

1st pillar: Political and regulatory environment.....23.....5.0

2nd pillar: Business and innovation environment.....47.....4.7

B. Readiness subindex.....27.....5.6

3rd pillar: Infrastructure and digital content.....27.....5.8

4th pillar: Affordability.....72.....5.3

5th pillar: Skills.....19.....5.9

C. Usage subindex.....23.....5.2

6th pillar: Individual usage.....22.....5.7

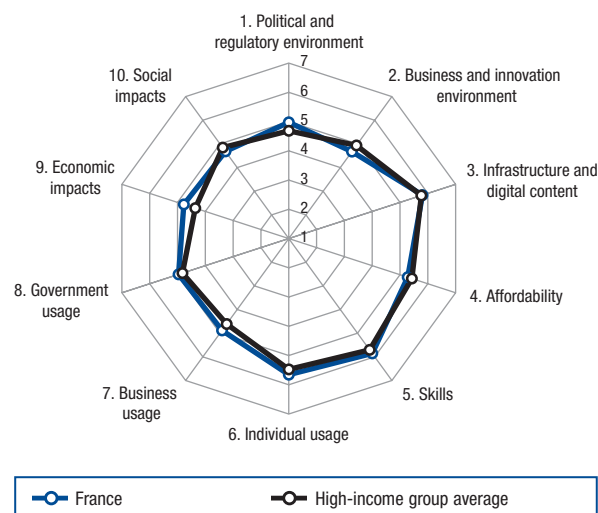
7th pillar: Business usage.....20.....4.9

8th pillar: Government usage.....28.....5.0

D. Impact subindex.....23.....4.7

9th pillar: Economic impacts.....19.....4.8

10th pillar: Social impacts.....35.....4.7



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	29	4.5
1.02 Laws relating to ICTs*	29	4.9
1.03 Judicial independence*	31	5.1
1.04 Efficiency of legal system in settling disputes*	48	4.1
1.05 Efficiency of legal system in challenging regs*	31	4.3
1.06 Intellectual property protection*	12	5.7
1.07 Software piracy rate, % software installed	22	37
1.08 No. procedures to enforce a contract	15	29
1.09 No. days to enforce a contract	26	395
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	18	6.1
2.02 Venture capital availability*	49	2.9
2.03 Total tax rate, % profits	136	64.7
2.04 No. days to start a business	32	7
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	26	5.5
2.07 Tertiary education gross enrollment rate, %	45	57.1
2.08 Quality of management schools*	5	5.8
2.09 Gov't procurement of advanced tech*	60	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	22	8,449.8
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	26	83.9
3.04 Secure Internet servers/million pop.	28	409.0
3.05 Accessibility of digital content*	41	5.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	124	0.47
4.02 Fixed broadband Internet tariffs, PPP \$/month	41	24.50
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	43	4.2
5.02 Quality of math & science education*	15	5.2
5.03 Secondary education gross enrollment rate, %	11	109.9
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	95	97.4
6.02 Individuals using Internet, %	17	83.0
6.03 Households w/ personal computer, %	22	81.0
6.04 Households w/ Internet access, %	19	80.0
6.05 Fixed broadband Internet subs./100 pop.	4	37.5
6.06 Mobile broadband subscriptions/100 pop.	31	51.8
6.07 Use of virtual social networks*	54	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	32	5.5
7.02 Capacity for innovation*	16	4.8
7.03 PCT patents, applications/million pop.	15	111.3
7.04 Business-to-business Internet use*	37	5.5
7.05 Business-to-consumer Internet use*	27	5.3
7.06 Extent of staff training*	42	4.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	59	4.2
8.02 Government Online Service Index, 0–1 (best)	8	0.88
8.03 Gov't success in ICT promotion*	63	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	21	5.2
9.02 ICT PCT patents, applications/million pop.	14	30.6
9.03 Impact of ICTs on new organizational models*	42	4.6
9.04 Knowledge-intensive jobs, % workforce	10	44.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	35	5.1
10.02 Internet access in schools*	64	4.4
10.03 ICT use & gov't efficiency*	40	4.8
10.04 E-Participation Index, 0–1 (best)	25	0.58

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Gabon

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 128..3.0

Networked Readiness Index 2013 (out of 144)..... 1213.0

A. Environment subindex 1343.2

1st pillar: Political and regulatory environment 1203.1

2nd pillar: Business and innovation environment 1373.3

B. Readiness subindex 1173.3

3rd pillar: Infrastructure and digital content 1322.3

4th pillar: Affordability 1094.1

5th pillar: Skills 1133.7

C. Usage subindex 1222.9

6th pillar: Individual usage 1092.4

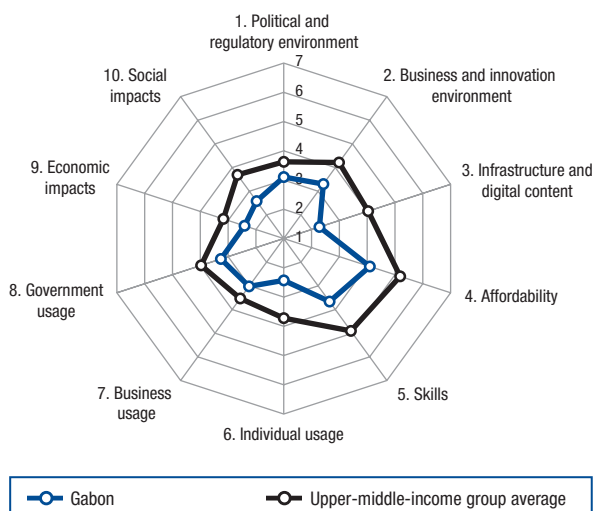
7th pillar: Business usage 1263.0

8th pillar: Government usage 1223.3

D. Impact subindex 1362.5

9th pillar: Economic impacts 1362.4

10th pillar: Social impacts 1342.6



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	54	3.9
1.02 Laws relating to ICTs*	136	2.6
1.03 Judicial independence*	120	2.6
1.04 Efficiency of legal system in settling disputes*	86	3.5
1.05 Efficiency of legal system in challenging regs*	86	3.3
1.06 Intellectual property protection*	131	2.6
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	78	3.8
1.09 No. days to enforce a contract	133	1,070
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	129	3.9
2.02 Venture capital availability*	124	2.0
2.03 Total tax rate, % profits	97	43.5
2.04 No. days to start a business	133	50
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	129	4.2
2.07 Tertiary education gross enrollment rate, %	131	7.2
2.08 Quality of management schools*	127	3.3
2.09 Gov't procurement of advanced tech*	91	3.3
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	97	1,109.8
3.02 Mobile network coverage, % pop.	128	79.0
3.03 Int'l Internet bandwidth, kb/s per user	108	5.5
3.04 Secure Internet servers/million pop.	90	11.0
3.05 Accessibility of digital content*	143	3.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	121	0.46
4.02 Fixed broadband Internet tariffs, PPP \$/month	100	41.15
4.03 Internet & telephony competition, 0-2 (best)	115	1.23
5th pillar: Skills		
5.01 Quality of educational system*	126	2.7
5.02 Quality of math & science education*	121	3.0
5.03 Secondary education gross enrollment rate, %	117	53.9
5.04 Adult literacy rate, %	93	89.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	6	179.5
6.02 Individuals using Internet, %	126	8.6
6.03 Households w/ personal computer, %	114	10.1
6.04 Households w/ Internet access, %	113	7.9
6.05 Fixed broadband Internet subs./100 pop.	118	0.3
6.06 Mobile broadband subscriptions/100 pop.	140	0.0
6.07 Use of virtual social networks*	133	4.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	96	4.4
7.02 Capacity for innovation*	144	2.5
7.03 PCT patents, applications/million pop.	86	0.3
7.04 Business-to-business Internet use*	122	4.1
7.05 Business-to-consumer Internet use*	135	3.1
7.06 Extent of staff training*	113	3.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	94	3.7
8.02 Government Online Service Index, 0-1 (best)	131	0.19
8.03 Gov't success in ICT promotion*	95	4.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	127	3.5
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	146	2.7
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	125	3.3
10.02 Internet access in schools*	142	2.0
10.03 ICT use & gov't efficiency*	120	3.4
10.04 E-Participation Index, 0-1 (best)	92	0.11

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Gambia, The

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 107..3.4

Networked Readiness Index 2013 (out of 144)..... 98.....3.5

A. Environment subindex..... 68.....3.9

1st pillar: Political and regulatory environment..... 36.....4.4

2nd pillar: Business and innovation environment..... 125.....3.5

B. Readiness subindex..... 131.....2.8

3rd pillar: Infrastructure and digital content..... 123.....2.6

4th pillar: Affordability..... 137.....2.7

5th pillar: Skills..... 124.....3.2

C. Usage subindex..... 99.....3.4

6th pillar: Individual usage..... 120.....2.1

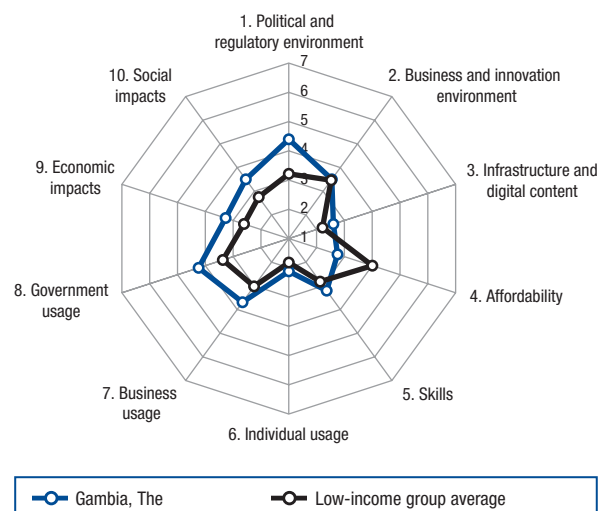
7th pillar: Business usage..... 60.....3.7

8th pillar: Government usage..... 56.....4.2

D. Impact subindex..... 79.....3.4

9th pillar: Economic impacts..... 67.....3.3

10th pillar: Social impacts..... 84.....3.5



The Networked Readiness Index in detail

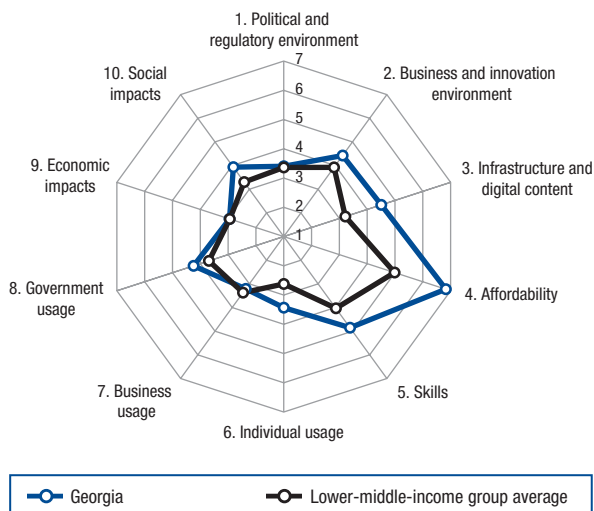
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	33	4.3
1.02 Laws relating to ICTs*	50	4.3
1.03 Judicial independence*	61	4.0
1.04 Efficiency of legal system in settling disputes*	33	4.5
1.05 Efficiency of legal system in challenging regs*	45	3.9
1.06 Intellectual property protection*	43	4.2
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	36	3.3
1.09 No. days to enforce a contract	33	4.07
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	74	4.9
2.02 Venture capital availability*	85	2.5
2.03 Total tax rate, % profits	148	283.2
2.04 No. days to start a business	108	27
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	84	4.8
2.07 Tertiary education gross enrollment rate, %	139	4.5
2.08 Quality of management schools*	46	4.6
2.09 Gov't procurement of advanced tech*	18	4.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	127	147.4
3.02 Mobile network coverage, % pop.	119	85.0
3.03 Int'l Internet bandwidth, kb/s per user	133	2.1
3.04 Secure Internet servers/million pop.	106	3.9
3.05 Accessibility of digital content*	81	4.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	102	0.35
4.02 Fixed broadband Internet tariffs, PPP \$/month	144	986.58
4.03 Internet & telephony competition, 0–2 (best)	122	1.13
5th pillar: Skills		
5.01 Quality of educational system*	29	4.5
5.02 Quality of math & science education*	94	3.8
5.03 Secondary education gross enrollment rate, %	115	57.5
5.04 Adult literacy rate, %	138	51.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	109	85.2
6.02 Individuals using Internet, %	120	12.4
6.03 Households w/ personal computer, %	122	7.4
6.04 Households w/ Internet access, %	116	6.7
6.05 Fixed broadband Internet subs./100 pop.	136	0.0
6.06 Mobile broadband subscriptions/100 pop.	121	1.4
6.07 Use of virtual social networks*	101	5.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	60	4.9
7.02 Capacity for innovation*	65	3.5
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	79	4.8
7.05 Business-to-consumer Internet use*	84	4.3
7.06 Extent of staff training*	29	4.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	23	4.8
8.02 Government Online Service Index, 0–1 (best)	110	0.32
8.03 Gov't success in ICT promotion*	27	5.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	61	4.6
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	64	4.3
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	55	4.5
10.02 Internet access in schools*	85	3.9
10.03 ICT use & gov't efficiency*	48	4.6
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Georgia

	Rank (out of 148)	Value (1-7)
Networked Readiness Index 2014	60	4.1
Networked Readiness Index 2013 (out of 144)	65	3.9
A. Environment subindex	73	3.9
1st pillar: Political and regulatory environment	97	3.4
2nd pillar: Business and innovation environment	59	4.4
B. Readiness subindex	40	5.4
3rd pillar: Infrastructure and digital content	59	4.5
4th pillar: Affordability	4	6.8
5th pillar: Skills	78	4.9
C. Usage subindex	75	3.6
6th pillar: Individual usage	76	3.4
7th pillar: Business usage	110	3.2
8th pillar: Government usage	55	4.2
D. Impact subindex	74	3.4
9th pillar: Economic impacts	100	2.9
10th pillar: Social impacts	59	3.9



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	65	3.7
1.02 Laws relating to ICTs*	79	3.8
1.03 Judicial independence*	91	3.3
1.04 Efficiency of legal system in settling disputes*	92	3.4
1.05 Efficiency of legal system in challenging regs*	105	3.0
1.06 Intellectual property protection*	124	2.7
1.07 Software piracy rate, % software installed	107	91
1.08 No. procedures to enforce a contract	36	33
1.09 No. days to enforce a contract	11	285
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	100	4.4
2.02 Venture capital availability*	106	2.3
2.03 Total tax rate, % profits	11	16.4
2.04 No. days to start a business	2	2
2.05 No. procedures to start a business	3	2
2.06 Intensity of local competition*	123	4.3
2.07 Tertiary education gross enrollment rate, %	82	27.9
2.08 Quality of management schools*	107	3.7
2.09 Gov't procurement of advanced tech*	62	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	79	2,273.7
3.02 Mobile network coverage, % pop.	57	99.1
3.03 Int'l Internet bandwidth, kb/s per user	40	52.9
3.04 Secure Internet servers/million pop.	73	25.9
3.05 Accessibility of digital content*	71	5.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	15	0.08
4.02 Fixed broadband Internet tariffs, PPP \$/month	25	20.15
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	105	3.2
5.02 Quality of math & science education*	106	3.4
5.03 Secondary education gross enrollment rate, %	81	86.8
5.04 Adult literacy rate, %	4	99.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	77	107.8
6.02 Individuals using Internet, %	71	45.5
6.03 Households w/ personal computer, %	80	32.7
6.04 Households w/ Internet access, %	76	32.0
6.05 Fixed broadband Internet subs./100 pop.	66	8.7
6.06 Mobile broadband subscriptions/100 pop.	91	8.5
6.07 Use of virtual social networks*	66	5.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	117	4.1
7.02 Capacity for innovation*	118	3.0
7.03 PCT patents, applications/million pop.	66	1.2
7.04 Business-to-business Internet use*	92	4.6
7.05 Business-to-consumer Internet use*	98	4.0
7.06 Extent of staff training*	107	3.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	88	3.7
8.02 Government Online Service Index, 0-1 (best)	42	0.60
8.03 Gov't success in ICT promotion*	71	4.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	102	3.9
9.02 ICT PCT patents, applications/million pop.	57	0.4
9.03 Impact of ICTs on new organizational models*	117	3.5
9.04 Knowledge-intensive jobs, % workforce	69	22.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	67	4.3
10.02 Internet access in schools*	62	4.5
10.03 ICT use & gov't efficiency*	41	4.7
10.04 E-Participation Index, 0-1 (best)	63	0.21

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Germany

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 12..5.5

Networked Readiness Index 2013 (out of 144)..... 13.....5.4

A. Environment subindex..... 17.....5.1

1st pillar: Political and regulatory environment..... 10.....5.4

2nd pillar: Business and innovation environment..... 31.....4.9

B. Readiness subindex..... 8.....6.2

3rd pillar: Infrastructure and digital content..... 11.....6.5

4th pillar: Affordability..... 43.....5.9

5th pillar: Skills..... 12.....6.0

C. Usage subindex..... 13.....5.5

6th pillar: Individual usage..... 19.....5.7

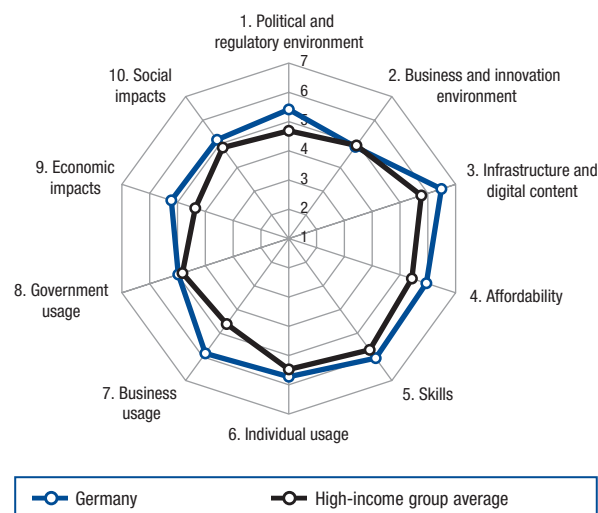
7th pillar: Business usage..... 5.....5.8

8th pillar: Government usage..... 27.....5.0

D. Impact subindex..... 14.....5.2

9th pillar: Economic impacts..... 8.....5.2

10th pillar: Social impacts..... 20.....5.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	11	5.1
1.02 Laws relating to ICTs*	26	5.0
1.03 Judicial independence*	13	6.0
1.04 Efficiency of legal system in settling disputes*	13	5.2
1.05 Efficiency of legal system in challenging regs*	11	4.9
1.06 Intellectual property protection*	14	5.6
1.07 Software piracy rate, % software installed	12	26
1.08 No. procedures to enforce a contract	18	30
1.09 No. days to enforce a contract	25	394
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	13	6.3
2.02 Venture capital availability*	33	3.2
2.03 Total tax rate, % profits	114	49.4
2.04 No. days to start a business	75	15
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	10	5.9
2.07 Tertiary education gross enrollment rate, %	46	56.5
2.08 Quality of management schools*	27	5.1
2.09 Gov't procurement of advanced tech*	17	4.3
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	28	7,460.6
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	30	74.8
3.04 Secure Internet servers/million pop.	18	1,090.9
3.05 Accessibility of digital content*	25	6.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	27	0.11
4.02 Fixed broadband Internet tariffs, PPP \$/month	92	37.93
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	14	5.1
5.02 Quality of math & science education*	21	5.1
5.03 Secondary education gross enrollment rate, %	30	101.7
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	67	111.6
6.02 Individuals using Internet, %	16	84.0
6.03 Households w/ personal computer, %	12	87.0
6.04 Households w/ Internet access, %	15	85.0
6.05 Fixed broadband Internet subs./100 pop.	9	33.7
6.06 Mobile broadband subscriptions/100 pop.	40	40.8
6.07 Use of virtual social networks*	56	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	16	5.8
7.02 Capacity for innovation*	3	5.6
7.03 PCT patents, applications/million pop.	6	210.5
7.04 Business-to-business Internet use*	20	5.7
7.05 Business-to-consumer Internet use*	14	5.8
7.06 Extent of staff training*	10	5.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	34	4.5
8.02 Government Online Service Index, 0–1 (best)	24	0.75
8.03 Gov't success in ICT promotion*	34	4.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	15	5.3
9.02 ICT PCT patents, applications/million pop.	10	46.0
9.03 Impact of ICTs on new organizational models*	17	5.1
9.04 Knowledge-intensive jobs, % workforce	14	43.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	25	5.2
10.02 Internet access in schools*	42	5.0
10.03 ICT use & gov't efficiency*	33	4.8
10.04 E-Participation Index, 0–1 (best)	8	0.76

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Ghana

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 96..3.6

Networked Readiness Index 2013 (out of 144)..... 95.....3.5

A. Environment subindex..... 48.....4.2

1st pillar: Political and regulatory environment..... 41.....4.2

2nd pillar: Business and innovation environment..... 66.....4.3

B. Readiness subindex 109.....3.9

3rd pillar: Infrastructure and digital content..... 124.....2.5

4th pillar: Affordability 64.....5.4

5th pillar: Skills 110.....3.7

C. Usage subindex 100.....3.3

6th pillar: Individual usage 100.....2.7

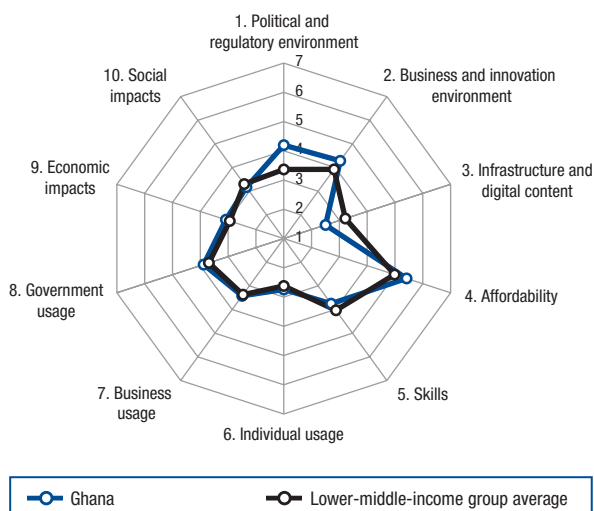
7th pillar: Business usage 90.....3.4

8th pillar: Government usage 85.....3.9

D. Impact subindex 101.....3.1

9th pillar: Economic impacts 85.....3.1

10th pillar: Social impacts 106.....3.2



The Networked Readiness Index in detail

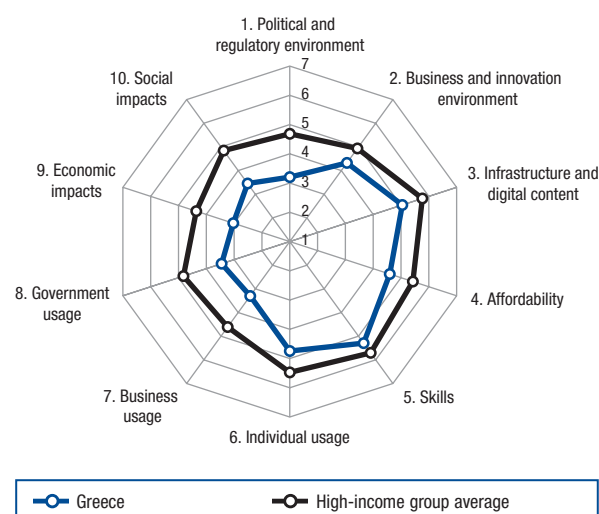
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	31	4.3
1.02 Laws relating to ICTs*	77	3.8
1.03 Judicial independence*	50	4.4
1.04 Efficiency of legal system in settling disputes*	50	4.1
1.05 Efficiency of legal system in challenging regs*	65	3.5
1.06 Intellectual property protection*	56	3.9
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	55	3.6
1.09 No. days to enforce a contract	56	4.95
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	81	4.7
2.02 Venture capital availability*	67	2.7
2.03 Total tax rate, % profits	19	22.9
2.04 No. days to start a business	70	14
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	68	5.0
2.07 Tertiary education gross enrollment rate, %	112	12.2
2.08 Quality of management schools*	51	4.5
2.09 Gov't procurement of advanced tech*	64	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	115	451.2
3.02 Mobile network coverage, % pop.	118	87.0
3.03 Int'l Internet bandwidth, kb/s per user	147	0.2
3.04 Secure Internet servers/million pop.	114	3.0
3.05 Accessibility of digital content*	114	4.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	18	0.08
4.02 Fixed broadband Internet tariffs, PPP \$/month	104	45.42
4.03 Internet & telephony competition, 0-2 (best)	89	1.67
5th pillar: Skills		
5.01 Quality of educational system*	46	4.2
5.02 Quality of math & science education*	62	4.2
5.03 Secondary education gross enrollment rate, %	114	58.2
5.04 Adult literacy rate, %	122	67.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	90	101.0
6.02 Individuals using Internet, %	107	17.1
6.03 Households w/ personal computer, %	107	13.8
6.04 Households w/ Internet access, %	105	11.0
6.05 Fixed broadband Internet subs./100 pop.	120	0.3
6.06 Mobile broadband subscriptions/100 pop.	48	33.9
6.07 Use of virtual social networks*	99	5.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	91	4.4
7.02 Capacity for innovation*	55	3.7
7.03 PCT patents, applications/million pop.	107	0.0
7.04 Business-to-business Internet use*	102	4.4
7.05 Business-to-consumer Internet use*	115	3.7
7.06 Extent of staff training*	79	3.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	49	4.3
8.02 Government Online Service Index, 0-1 (best)	116	0.30
8.03 Gov't success in ICT promotion*	58	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	75	4.3
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	89	3.9
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	84	3.9
10.02 Internet access in schools*	114	3.1
10.03 ICT use & gov't efficiency*	86	4.0
10.04 E-Participation Index, 0-1 (best)	92	0.11

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Greece

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	74	3.9
Networked Readiness Index 2013 (out of 144).....	64	3.9
A. Environment subindex	89	3.8
1st pillar: Political and regulatory environment.....	114	3.2
2nd pillar: Business and innovation environment.....	64	4.3
B. Readiness subindex	62	5.0
3rd pillar: Infrastructure and digital content.....	40	5.0
4th pillar: Affordability.....	102	4.6
5th pillar: Skills.....	53	5.3
C. Usage subindex	67	3.8
6th pillar: Individual usage.....	43	4.7
7th pillar: Business usage.....	102	3.3
8th pillar: Government usage.....	117	3.4
D. Impact subindex	90	3.2
9th pillar: Economic impacts.....	91	3.0
10th pillar: Social impacts.....	87	3.4



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	106	3.1
1.02 Laws relating to ICTs*	106	3.3
1.03 Judicial independence*	84	3.4
1.04 Efficiency of legal system in settling disputes*	138	2.5
1.05 Efficiency of legal system in challenging regs*	130	2.6
1.06 Intellectual property protection*	70	3.7
1.07 Software piracy rate, % software installed	53	61
1.08 No. procedures to enforce a contract	91	39
1.09 No. days to enforce a contract	141	1,300
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	67	5.0
2.02 Venture capital availability*	146	1.7
2.03 Total tax rate, % profits	100	44.0
2.04 No. days to start a business	70	14
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	87	4.8
2.07 Tertiary education gross enrollment rate, %	4	91.4
2.08 Quality of management schools*	94	3.8
2.09 Gov't procurement of advanced tech*	141	2.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	47	5,103.2
3.02 Mobile network coverage, % pop.	33	99.9
3.03 Int'l Internet bandwidth, kb/s per user	35	64.2
3.04 Secure Internet servers/million pop.	42	168.3
3.05 Accessibility of digital content*	69	5.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	137	0.61
4.02 Fixed broadband Internet tariffs, PPP \$/month	43	25.15
4.03 Internet & telephony competition, 0–2 (best)	80	1.80
5th pillar: Skills		
5.01 Quality of educational system*	112	3.1
5.02 Quality of math & science education*	58	4.3
5.03 Secondary education gross enrollment rate, %	10	110.8
5.04 Adult literacy rate, %	55	97.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	49	120.0
6.02 Individuals using Internet, %	53	56.0
6.03 Households w/ personal computer, %	56	57.4
6.04 Households w/ Internet access, %	51	54.0
6.05 Fixed broadband Internet subs./100 pop.	27	24.1
6.06 Mobile broadband subscriptions/100 pop.	35	45.7
6.07 Use of virtual social networks*	90	5.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	88	4.5
7.02 Capacity for innovation*	117	3.0
7.03 PCT patents, applications/million pop.	37	7.2
7.04 Business-to-business Internet use*	107	4.4
7.05 Business-to-consumer Internet use*	86	4.2
7.06 Extent of staff training*	116	3.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	138	2.8
8.02 Government Online Service Index, 0–1 (best)	48	0.58
8.03 Gov't success in ICT promotion*	140	3.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	129	3.5
9.02 ICT PCT patents, applications/million pop.	38	1.4
9.03 Impact of ICTs on new organizational models*	128	3.3
9.04 Knowledge-intensive jobs, % workforce	44	31.1
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	109	3.6
10.02 Internet access in schools*	86	3.9
10.03 ICT use & gov't efficiency*	124	3.2
10.04 E-Participation Index, 0–1 (best)	44	0.34

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

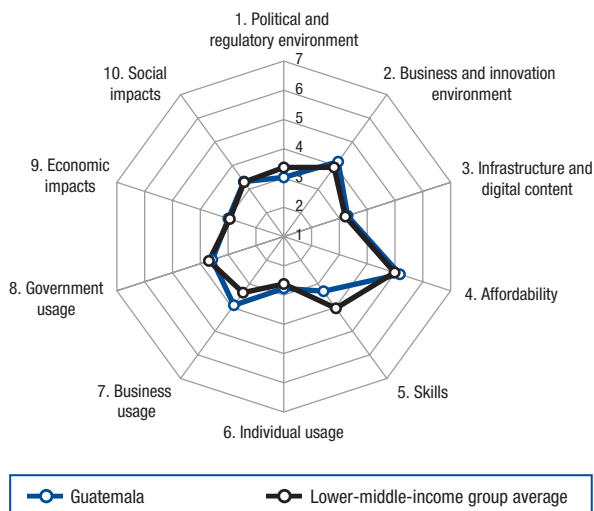
Guatemala

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 101 ..3.5

Networked Readiness Index 2013 (out of 144)..... 102.....3.4

- A. Environment subindex..... 105.....3.6**
 - 1st pillar: Political and regulatory environment..... 123.....3.0
 - 2nd pillar: Business and innovation environment..... 74.....4.2
- B. Readiness subindex 107.....3.9**
 - 3rd pillar: Infrastructure and digital content..... 100.....3.3
 - 4th pillar: Affordability 78.....5.2
 - 5th pillar: Skills 122.....3.3
- C. Usage subindex 96.....3.4**
 - 6th pillar: Individual usage 99.....2.8
 - 7th pillar: Business usage 42.....3.9
 - 8th pillar: Government usage 109.....3.6
- D. Impact subindex 99.....3.2**
 - 9th pillar: Economic impacts 94.....3.0
 - 10th pillar: Social impacts 95.....3.3



The Networked Readiness Index in detail

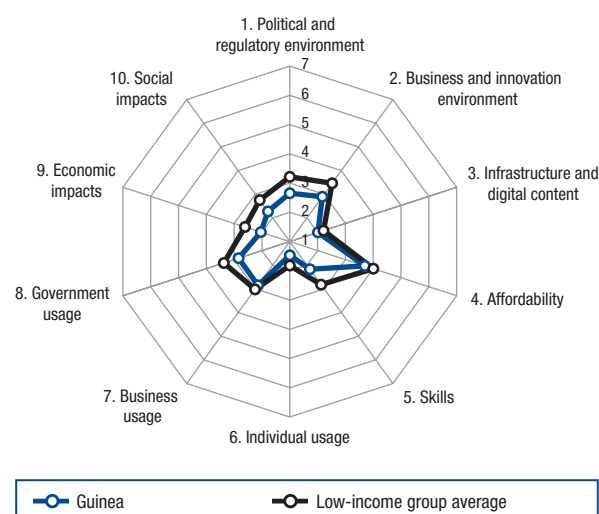
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	143	2.1
1.02 Laws relating to ICTs*	75	3.9
1.03 Judicial independence*	107	3.0
1.04 Efficiency of legal system in settling disputes*	100	3.3
1.05 Efficiency of legal system in challenging regs*	73	3.5
1.06 Intellectual property protection*	111	2.9
1.07 Software piracy rate, % software installed	83	79
1.08 No. procedures to enforce a contract	24	31
1.09 No. days to enforce a contract	145	1,402
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	48	5.3
2.02 Venture capital availability*	60	2.8
2.03 Total tax rate, % profits	89	40.9
2.04 No. days to start a business	94	20
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	53	5.2
2.07 Tertiary education gross enrollment rate, %	99	17.9
2.08 Quality of management schools*	38	4.8
2.09 Gov't procurement of advanced tech*	113	3.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	113	553.9
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	102	6.6
3.04 Secure Internet servers/million pop.	86	14.1
3.05 Accessibility of digital content*	74	5.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	114	0.41
4.02 Fixed broadband Internet tariffs, PPP \$/month	70	30.78
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	135	2.6
5.02 Quality of math & science education*	139	2.4
5.03 Secondary education gross enrollment rate, %	110	65.1
5.04 Adult literacy rate, %	110	75.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	30	137.8
6.02 Individuals using Internet, %	111	16.0
6.03 Households w/ personal computer, %	97	19.2
6.04 Households w/ Internet access, %	109	9.3
6.05 Fixed broadband Internet subs./100 pop.	98	1.8
6.06 Mobile broadband subscriptions/100 pop.	106	4.5
6.07 Use of virtual social networks*	74	5.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	41	5.2
7.02 Capacity for innovation*	51	3.7
7.03 PCT patents, applications/million pop.	101	0.1
7.04 Business-to-business Internet use*	52	5.2
7.05 Business-to-consumer Internet use*	55	4.8
7.06 Extent of staff training*	28	4.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	115	3.3
8.02 Government Online Service Index, 0-1 (best)	77	0.46
8.03 Gov't success in ICT promotion*	115	3.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	58	4.6
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	51	4.5
9.04 Knowledge-intensive jobs, % workforce	104	9.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	75	4.1
10.02 Internet access in schools*	110	3.3
10.03 ICT use & gov't efficiency*	108	3.5
10.04 E-Participation Index, 0-1 (best)	59	0.24

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Guinea

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	145 ..	2.5
Networked Readiness Index 2013 (out of 144).....	140	2.6
A. Environment subindex	142	2.8
1st pillar: Political and regulatory environment.....	139	2.6
2nd pillar: Business and innovation environment.....	144	2.9
B. Readiness subindex	139	2.6
3rd pillar: Infrastructure and digital content.....	134	2.0
4th pillar: Affordability.....	122	3.7
5th pillar: Skills.....	142	2.2
C. Usage subindex	144	2.4
6th pillar: Individual usage.....	145	1.5
7th pillar: Business usage.....	138	2.9
8th pillar: Government usage.....	139	2.8
D. Impact subindex	145	2.2
9th pillar: Economic impacts.....	148	2.0
10th pillar: Social impacts.....	142	2.3



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	139	2.3
1.02 Laws relating to ICTs*	139	2.5
1.03 Judicial independence*	137	2.2
1.04 Efficiency of legal system in settling disputes*	139	2.5
1.05 Efficiency of legal system in challenging regs*	118	2.9
1.06 Intellectual property protection*	143	2.2
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	142	4.9
1.09 No. days to enforce a contract	9	276
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	140	3.5
2.02 Venture capital availability*	141	1.8
2.03 Total tax rate, % profits	146	91.2
2.04 No. days to start a business	81	16
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	132	4.1
2.07 Tertiary education gross enrollment rate, %	123	8.8
2.08 Quality of management schools*	144	2.5
2.09 Gov't procurement of advanced tech*	112	3.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	135	90.2
3.02 Mobile network coverage, % pop.	127	80.0
3.03 Int'l Internet bandwidth, kb/s per user	134	2.1
3.04 Secure Internet servers/million pop.	143	0.4
3.05 Accessibility of digital content*	145	2.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	36	0.14
4.02 Fixed broadband Internet tariffs, PPP \$/month	145	2,049.86
4.03 Internet & telephony competition, 0–2 (best)	91	1.65
5th pillar: Skills		
5.01 Quality of educational system*	139	2.6
5.02 Quality of math & science education*	111	3.3
5.03 Secondary education gross enrollment rate, %	131	38.8
5.04 Adult literacy rate, %	143	41.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	140	41.8
6.02 Individuals using Internet, %	143	1.5
6.03 Households w/ personal computer, %	144	2.1
6.04 Households w/ Internet access, %	145	1.3
6.05 Fixed broadband Internet subs./100 pop.	144	0.0
6.06 Mobile broadband subscriptions/100 pop.	140	0.0
6.07 Use of virtual social networks*	143	4.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	129	3.9
7.02 Capacity for innovation*	145	2.5
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	123	4.1
7.05 Business-to-consumer Internet use*	134	3.1
7.06 Extent of staff training*	129	3.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	96	3.7
8.02 Government Online Service Index, 0–1 (best)	144	0.00
8.03 Gov't success in ICT promotion*	105	3.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	136	3.3
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	142	2.9
9.04 Knowledge-intensive jobs, % workforce	119	0.7
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	135	3.1
10.02 Internet access in schools*	143	1.8
10.03 ICT use & gov't efficiency*	126	3.2
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Guyana

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 88..3.8

Networked Readiness Index 2013 (out of 144)..... 100.....3.4

A. Environment subindex..... 65.....4.0

1st pillar: Political and regulatory environment..... 64.....3.8

2nd pillar: Business and innovation environment..... 71.....4.2

B. Readiness subindex..... 80.....4.6

3rd pillar: Infrastructure and digital content..... 98.....3.3

4th pillar: Affordability..... 70.....5.4

5th pillar: Skills..... 60.....5.2

C. Usage subindex..... 102.....3.3

6th pillar: Individual usage..... 103.....2.5

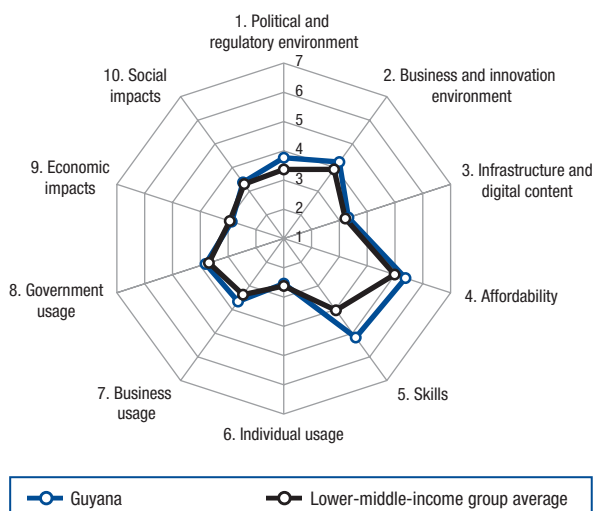
7th pillar: Business usage..... 63.....3.7

8th pillar: Government usage..... 87.....3.8

D. Impact subindex..... 102.....3.1

9th pillar: Economic impacts..... 106.....2.9

10th pillar: Social impacts..... 91.....3.4



The Networked Readiness Index in detail

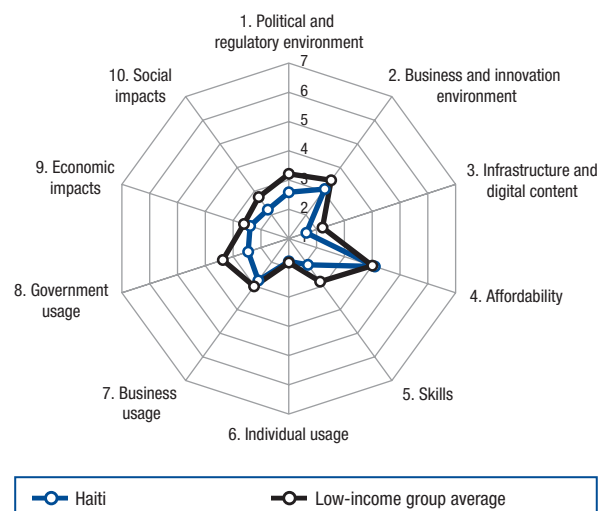
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	68	3.6
1.02 Laws relating to ICTs*	91	3.6
1.03 Judicial independence*	79	3.5
1.04 Efficiency of legal system in settling disputes*	73	3.7
1.05 Efficiency of legal system in challenging regs*	60	3.6
1.06 Intellectual property protection*	84	3.5
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	55	3.6
1.09 No. days to enforce a contract	84	5.81
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	73	4.9
2.02 Venture capital availability*	38	3.2
2.03 Total tax rate, % profits	51	32.5
2.04 No. days to start a business	96	20
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	69	5.0
2.07 Tertiary education gross enrollment rate, %	110	12.9
2.08 Quality of management schools*	50	4.5
2.09 Gov't procurement of advanced tech*	39	3.8
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	98	1,046.0
3.02 Mobile network coverage, % pop.	88	97.0
3.03 Int'l Internet bandwidth, kb/s per user	98	8.4
3.04 Secure Internet servers/million pop.	102	6.3
3.05 Accessibility of digital content*	68	5.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	31	0.12
4.02 Fixed broadband Internet tariffs, PPP \$/month	35	22.82
4.03 Internet & telephony competition, 0–2 (best)	139	0.50
5th pillar: Skills		
5.01 Quality of educational system*	49	4.1
5.02 Quality of math & science education*	53	4.3
5.03 Secondary education gross enrollment rate, %	22	105.4
5.04 Adult literacy rate, %	104	85.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	123	68.8
6.02 Individuals using Internet, %	93	33.0
6.03 Households w/ personal computer, %	92	22.9
6.04 Households w/ Internet access, %	85	20.6
6.05 Fixed broadband Internet subs./100 pop.	89	3.7
6.06 Mobile broadband subscriptions/100 pop.	133	0.1
6.07 Use of virtual social networks*	60	5.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	69	4.7
7.02 Capacity for innovation*	38	4.0
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	80	4.8
7.05 Business-to-consumer Internet use*	80	4.4
7.06 Extent of staff training*	64	4.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	46	4.4
8.02 Government Online Service Index, 0–1 (best)	123	0.25
8.03 Gov't success in ICT promotion*	55	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	93	4.1
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	75	4.1
9.04 Knowledge-intensive jobs, % workforce	101	12.7
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	68	4.3
10.02 Internet access in schools*	76	4.1
10.03 ICT use & gov't efficiency*	75	4.1
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Haiti

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	143	2.5
Networked Readiness Index 2013 (out of 144).....	141.....	2.6
A. Environment subindex	141	2.8
1st pillar: Political and regulatory environment.....	144.....	2.6
2nd pillar: Business and innovation environment.....	141.....	3.1
B. Readiness subindex	140	2.6
3rd pillar: Infrastructure and digital content.....	142.....	1.6
4th pillar: Affordability.....	108.....	4.1
5th pillar: Skills.....	143.....	2.1
C. Usage subindex	145	2.3
6th pillar: Individual usage.....	132.....	1.8
7th pillar: Business usage.....	140.....	2.8
8th pillar: Government usage.....	147.....	2.5
D. Impact subindex	142	2.3
9th pillar: Economic impacts.....	138.....	2.4
10th pillar: Social impacts.....	143.....	2.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	147	2.1
1.02 Laws relating to ICTs*	142	2.3
1.03 Judicial independence*	143	2.0
1.04 Efficiency of legal system in settling disputes*	146	2.2
1.05 Efficiency of legal system in challenging regs*	140	2.3
1.06 Intellectual property protection*	147	2.0
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	47	3.5
1.09 No. days to enforce a contract	71	5.30
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	128	3.9
2.02 Venture capital availability*	135	1.9
2.03 Total tax rate, % profits	83	40.4
2.04 No. days to start a business	143	97
2.05 No. procedures to start a business	133	12
2.06 Intensity of local competition*	140	3.7
2.07 Tertiary education gross enrollment rate, %	n/a	n/a
2.08 Quality of management schools*	130	3.2
2.09 Gov't procurement of advanced tech*	135	2.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	139	71.6
3.02 Mobile network coverage, % pop.	n/a	n/a
3.03 Int'l Internet bandwidth, kb/s per user	148	0.2
3.04 Secure Internet servers/million pop.	123	1.7
3.05 Accessibility of digital content*	138	3.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	54	0.18
4.02 Fixed broadband Internet tariffs, PPP \$/month	126	72.32
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	142	2.3
5.02 Quality of math & science education*	120	3.0
5.03 Secondary education gross enrollment rate, %	n/a	n/a
5.04 Adult literacy rate, %	140	48.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	131	59.9
6.02 Individuals using Internet, %	125	9.8
6.03 Households w/ personal computer, %	123	7.3
6.04 Households w/ Internet access, %	131	3.4
6.05 Fixed broadband Internet subs./100 pop.	147	0.0
6.06 Mobile broadband subscriptions/100 pop.	140	0.0
6.07 Use of virtual social networks*	119	4.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	132	3.8
7.02 Capacity for innovation*	140	2.6
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	138	3.7
7.05 Business-to-consumer Internet use*	128	3.4
7.06 Extent of staff training*	144	2.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	140	2.7
8.02 Government Online Service Index, 0–1 (best)	142	0.09
8.03 Gov't success in ICT promotion*	138	3.2
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	139	3.2
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	136	3.0
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	141	2.9
10.02 Internet access in schools*	136	2.3
10.03 ICT use & gov't efficiency*	145	2.7
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Honduras

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 116..3.2

Networked Readiness Index 2013 (out of 144)..... 109.....3.3

A. Environment subindex..... 129.....3.3

1st pillar: Political and regulatory environment..... 128.....2.9

2nd pillar: Business and innovation environment..... 118.....3.7

B. Readiness subindex 108.....3.9

3rd pillar: Infrastructure and digital content..... 115.....2.8

4th pillar: Affordability 77.....5.2

5th pillar: Skills 112.....3.7

C. Usage subindex 117.....3.0

6th pillar: Individual usage 106.....2.5

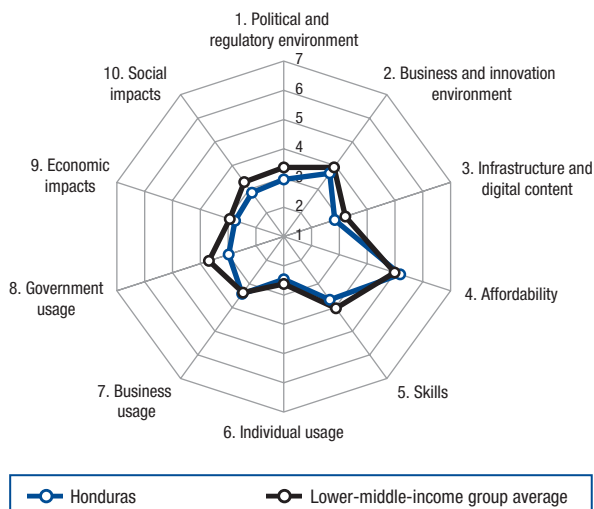
7th pillar: Business usage 91.....3.4

8th pillar: Government usage 133.....3.0

D. Impact subindex 120.....2.8

9th pillar: Economic impacts 116.....2.7

10th pillar: Social impacts 119.....2.9



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	121	2.8
1.02 Laws relating to ICTs*	119	3.1
1.03 Judicial independence*	108	3.0
1.04 Efficiency of legal system in settling disputes*	109	3.2
1.05 Efficiency of legal system in challenging regs*	96	3.1
1.06 Intellectual property protection*	103	3.1
1.07 Software piracy rate, % software installed	75	73
1.08 No. procedures to enforce a contract	138	47
1.09 No. days to enforce a contract	128	920
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	93	4.5
2.02 Venture capital availability*	82	2.5
2.03 Total tax rate, % profits	78	39.2
2.04 No. days to start a business	70	14
2.05 No. procedures to start a business	137	13
2.06 Intensity of local competition*	104	4.6
2.07 Tertiary education gross enrollment rate, %	95	20.6
2.08 Quality of management schools*	123	3.4
2.09 Gov't procurement of advanced tech*	125	2.8
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	100	916.3
3.02 Mobile network coverage, % pop.	116	89.9
3.03 Int'l Internet bandwidth, kb/s per user	118	4.2
3.04 Secure Internet servers/million pop.	95	9.5
3.05 Accessibility of digital content*	107	4.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	107	0.36
4.02 Fixed broadband Internet tariffs, PPP \$/month	83	34.71
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	141	2.4
5.02 Quality of math & science education*	144	2.2
5.03 Secondary education gross enrollment rate, %	102	73.1
5.04 Adult literacy rate, %	101	85.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	99	92.9
6.02 Individuals using Internet, %	105	18.1
6.03 Households w/ personal computer, %	104	15.1
6.04 Households w/ Internet access, %	100	13.2
6.05 Fixed broadband Internet subs./100 pop.	110	0.8
6.06 Mobile broadband subscriptions/100 pop.	90	8.6
6.07 Use of virtual social networks*	98	5.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	74	4.7
7.02 Capacity for innovation*	112	3.1
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	91	4.6
7.05 Business-to-consumer Internet use*	93	4.1
7.06 Extent of staff training*	77	3.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	139	2.7
8.02 Government Online Service Index, 0–1 (best)	94	0.38
8.03 Gov't success in ICT promotion*	146	2.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	109	3.9
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	94	3.8
9.04 Knowledge-intensive jobs, % workforce	100	12.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	115	3.5
10.02 Internet access in schools*	115	3.1
10.03 ICT use & gov't efficiency*	134	3.0
10.04 E-Participation Index, 0–1 (best)	82	0.13

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Hong Kong SAR

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 8..5.6

Networked Readiness Index 2013 (out of 144)..... 14.....5.4

A. Environment subindex..... 4.....5.6

1st pillar: Political and regulatory environment..... 11.....5.4

2nd pillar: Business and innovation environment..... 2.....5.7

B. Readiness subindex..... 12.....6.1

3rd pillar: Infrastructure and digital content..... 26.....5.9

4th pillar: Affordability..... 22.....6.4

5th pillar: Skills..... 10.....6.1

C. Usage subindex..... 15.....5.4

6th pillar: Individual usage..... 12.....6.0

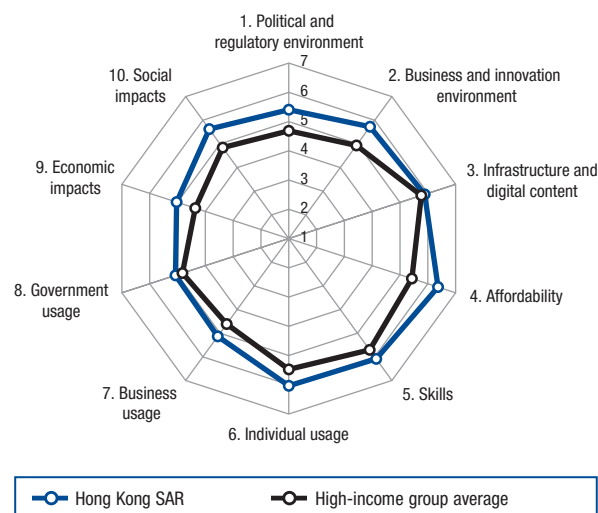
7th pillar: Business usage..... 16.....5.1

8th pillar: Government usage..... 24.....5.1

D. Impact subindex..... 10.....5.3

9th pillar: Economic impacts..... 13.....5.0

10th pillar: Social impacts..... 11.....5.6



The Networked Readiness Index in detail

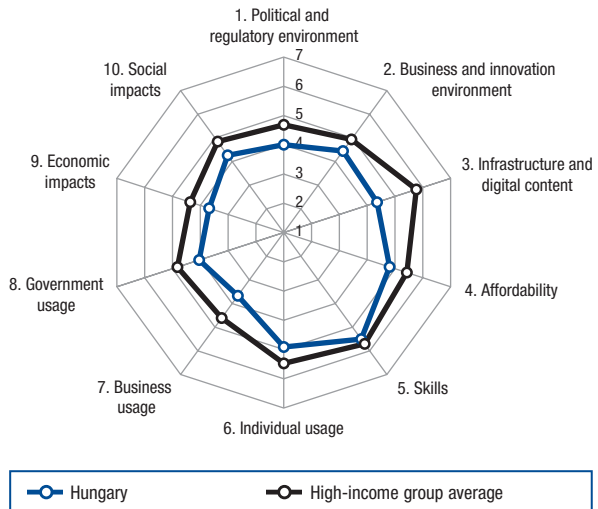
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	42	4.1
1.02 Laws relating to ICTs*	7	5.5
1.03 Judicial independence*	4	6.3
1.04 Efficiency of legal system in settling disputes*	3	5.8
1.05 Efficiency of legal system in challenging regs*	2	5.6
1.06 Intellectual property protection*	10	5.7
1.07 Software piracy rate, % software installed	30	4.3
1.08 No. procedures to enforce a contract	8	2.7
1.09 No. days to enforce a contract	17	3.60
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	11	6.3
2.02 Venture capital availability*	1	4.6
2.03 Total tax rate, % profits	19	22.9
2.04 No. days to start a business	5	3
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	7	5.9
2.07 Tertiary education gross enrollment rate, %	39	60.1
2.08 Quality of management schools*	14	5.4
2.09 Gov't procurement of advanced tech*	19	4.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	39	5,519.3
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	2	1,426.6
3.04 Secure Internet servers/million pop.	24	636.7
3.05 Accessibility of digital content*	10	6.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	3	0.02
4.02 Fixed broadband Internet tariffs, PPP \$/month	66	30.08
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	22	4.8
5.02 Quality of math & science education*	10	5.5
5.03 Secondary education gross enrollment rate, %	21	105.6
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	1	229.2
6.02 Individuals using Internet, %	33	72.8
6.03 Households w/ personal computer, %	24	80.3
6.04 Households w/ Internet access, %	22	78.6
6.05 Fixed broadband Internet subs./100 pop.	15	31.2
6.06 Mobile broadband subscriptions/100 pop.	11	83.2
6.07 Use of virtual social networks*	16	6.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	12	5.9
7.02 Capacity for innovation*	29	4.2
7.03 PCT patents, applications/million pop.	n/a	n/a
7.04 Business-to-business Internet use*	18	5.8
7.05 Business-to-consumer Internet use*	19	5.5
7.06 Extent of staff training*	21	4.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	21	4.9
8.02 Government Online Service Index, 0–1 (best)	n/a	n/a
8.03 Gov't success in ICT promotion*	17	5.2
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	19	5.3
9.02 ICT PCT patents, applications/million pop.	n/a	n/a
9.03 Impact of ICTs on new organizational models*	18	5.1
9.04 Knowledge-intensive jobs, % workforce	29	36.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	14	5.5
10.02 Internet access in schools*	14	6.1
10.03 ICT use & gov't efficiency*	17	5.2
10.04 E-Participation Index, 0–1 (best)	n/a	n/a

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Hungary

	Rank (out of 148)	Value (1-7)
Networked Readiness Index 2014	47	4.3
Networked Readiness Index 2013 (out of 144)	44	4.3
A. Environment subindex	50	4.2
1st pillar: Political and regulatory environment	54	4.0
2nd pillar: Business and innovation environment	56	4.4
B. Readiness subindex	67	4.9
3rd pillar: Infrastructure and digital content	64	4.4
4th pillar: Affordability	94	4.8
5th pillar: Skills	41	5.5
C. Usage subindex	45	4.2
6th pillar: Individual usage	40	4.9
7th pillar: Business usage	62	3.7
8th pillar: Government usage	69	4.0
D. Impact subindex	42	4.0
9th pillar: Economic impacts	36	3.7
10th pillar: Social impacts	42	4.3



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	64	3.7
1.02 Laws relating to ICTs*	57	4.2
1.03 Judicial independence*	66	3.9
1.04 Efficiency of legal system in settling disputes*	113	3.1
1.05 Efficiency of legal system in challenging regs*	138	2.4
1.06 Intellectual property protection*	58	3.9
1.07 Software piracy rate, % software installed	28	4.1
1.08 No. procedures to enforce a contract	47	3.5
1.09 No. days to enforce a contract	26	3.95
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	57	5.2
2.02 Venture capital availability*	122	2.1
2.03 Total tax rate, % profits	118	49.7
2.04 No. days to start a business	15	5
2.05 No. procedures to start a business	22	4
2.06 Intensity of local competition*	43	5.3
2.07 Tertiary education gross enrollment rate, %	42	59.5
2.08 Quality of management schools*	68	4.3
2.09 Gov't procurement of advanced tech*	114	3.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	62	3,460.3
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	83	15.3
3.04 Secure Internet servers/million pop.	35	247.2
3.05 Accessibility of digital content*	24	6.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	78	0.27
4.02 Fixed broadband Internet tariffs, PPP \$/month	107	48.58
4.03 Internet & telephony competition, 0-2 (best)	68	1.88
5th pillar: Skills		
5.01 Quality of educational system*	93	3.4
5.02 Quality of math & science education*	38	4.6
5.03 Secondary education gross enrollment rate, %	35	100.8
5.04 Adult literacy rate, %	13	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	59	116.1
6.02 Individuals using Internet, %	34	72.0
6.03 Households w/ personal computer, %	38	71.0
6.04 Households w/ Internet access, %	35	69.0
6.05 Fixed broadband Internet subs./100 pop.	31	22.9
6.06 Mobile broadband subscriptions/100 pop.	64	24.2
6.07 Use of virtual social networks*	76	5.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	73	4.7
7.02 Capacity for innovation*	97	3.2
7.03 PCT patents, applications/million pop.	28	24.2
7.04 Business-to-business Internet use*	42	5.3
7.05 Business-to-consumer Internet use*	52	4.9
7.06 Extent of staff training*	108	3.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	108	3.4
8.02 Government Online Service Index, 0-1 (best)	31	0.69
8.03 Gov't success in ICT promotion*	117	3.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	65	4.5
9.02 ICT PCT patents, applications/million pop.	29	4.8
9.03 Impact of ICTs on new organizational models*	74	4.1
9.04 Knowledge-intensive jobs, % workforce	31	35.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	83	4.0
10.02 Internet access in schools*	33	5.4
10.03 ICT use & gov't efficiency*	87	3.9
10.04 E-Participation Index, 0-1 (best)	36	0.45

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Iceland

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 19..5.3

Networked Readiness Index 2013 (out of 144)..... 17.....5.3

A. Environment subindex..... 20..... 5.0

1st pillar: Political and regulatory environment..... 27..... 4.8

2nd pillar: Business and innovation environment..... 19..... 5.2

B. Readiness subindex..... 2..... 6.4

3rd pillar: Infrastructure and digital content..... 2..... 6.9

4th pillar: Affordability..... 13..... 6.4

5th pillar: Skills..... 13..... 6.0

C. Usage subindex..... 24..... 5.2

6th pillar: Individual usage..... 7..... 6.4

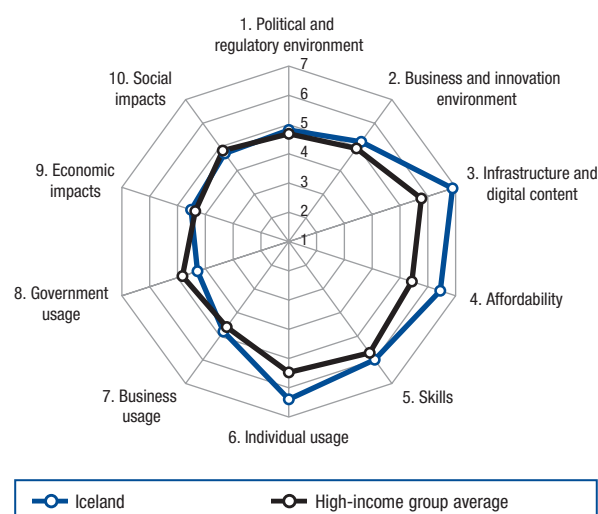
7th pillar: Business usage..... 22..... 4.8

8th pillar: Government usage..... 53..... 4.3

D. Impact subindex..... 25..... 4.6

9th pillar: Economic impacts..... 25..... 4.5

10th pillar: Social impacts..... 34..... 4.7



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	60	3.7
1.02 Laws relating to ICTs*	31	4.9
1.03 Judicial independence*	19	5.6
1.04 Efficiency of legal system in settling disputes*	27	4.7
1.05 Efficiency of legal system in challenging regs*	21	4.5
1.06 Intellectual property protection*	29	4.8
1.07 Software piracy rate, % software installed	34	4.8
1.08 No. procedures to enforce a contract	8	2.7
1.09 No. days to enforce a contract	37	4.1
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	7	6.4
2.02 Venture capital availability*	68	2.7
2.03 Total tax rate, % profits	41	29.9
2.04 No. days to start a business	12	5
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	83	4.8
2.07 Tertiary education gross enrollment rate, %	10	80.9
2.08 Quality of management schools*	22	5.2
2.09 Gov't procurement of advanced tech*	53	3.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	1	54,817.2
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	5	319.0
3.04 Secure Internet servers/million pop.	1	3,139.3
3.05 Accessibility of digital content*	1	6.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	33	0.13
4.02 Fixed broadband Internet tariffs, PPP \$/month	50	26.18
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	16	5.1
5.02 Quality of math & science education*	24	4.9
5.03 Secondary education gross enrollment rate, %	14	108.6
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	76	108.1
6.02 Individuals using Internet, %	1	96.2
6.03 Households w/ personal computer, %	2	96.0
6.04 Households w/ Internet access, %	2	95.0
6.05 Fixed broadband Internet subs./100 pop.	7	34.3
6.06 Mobile broadband subscriptions/100 pop.	16	70.9
6.07 Use of virtual social networks*	1	6.7
7th pillar: Business usage		
7.01 Firm-level technology absorption*	2	6.2
7.02 Capacity for innovation*	32	4.1
7.03 PCT patents, applications/million pop.	18	84.1
7.04 Business-to-business Internet use*	22	5.7
7.05 Business-to-consumer Internet use*	28	5.3
7.06 Extent of staff training*	24	4.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	62	4.1
8.02 Government Online Service Index, 0–1 (best)	53	0.54
8.03 Gov't success in ICT promotion*	66	4.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	31	5.0
9.02 ICT PCT patents, applications/million pop.	21	13.9
9.03 Impact of ICTs on new organizational models*	22	4.9
9.04 Knowledge-intensive jobs, % workforce	6	46.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	15	5.5
10.02 Internet access in schools*	1	6.6
10.03 ICT use & gov't efficiency*	38	4.8
10.04 E-Participation Index, 0–1 (best)	77	0.16

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

India

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 83..3.8

Networked Readiness Index 2013 (out of 144)..... 68.....3.9

A. Environment subindex..... 91.....3.8

1st pillar: Political and regulatory environment..... 73.....3.6

2nd pillar: Business and innovation environment..... 103.....3.9

B. Readiness subindex 85.....4.6

3rd pillar: Infrastructure and digital content..... 119.....2.7

4th pillar: Affordability 1.....7.0

5th pillar: Skills 101.....4.0

C. Usage subindex 91.....3.4

6th pillar: Individual usage 121.....2.1

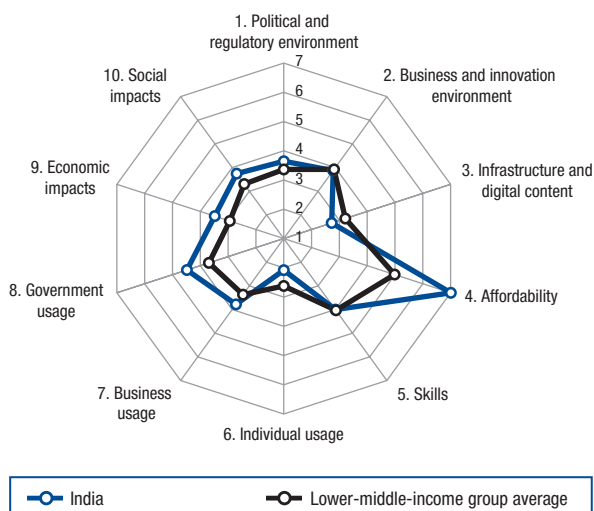
7th pillar: Business usage 51.....3.8

8th pillar: Government usage 41.....4.5

D. Impact subindex 60.....3.6

9th pillar: Economic impacts 50.....3.5

10th pillar: Social impacts 73.....3.7



The Networked Readiness Index in detail

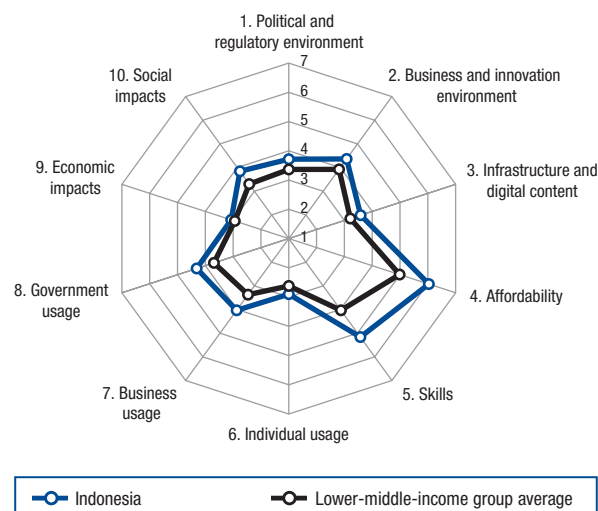
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	61	3.7
1.02 Laws relating to ICTs*	54	4.2
1.03 Judicial independence*	40	4.7
1.04 Efficiency of legal system in settling disputes*	62	3.8
1.05 Efficiency of legal system in challenging regs*	48	3.8
1.06 Intellectual property protection*	71	3.7
1.07 Software piracy rate, % software installed	58	63
1.08 No. procedures to enforce a contract	134	46
1.09 No. days to enforce a contract	146	1,420
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	58	5.2
2.02 Venture capital availability*	27	3.3
2.03 Total tax rate, % profits	134	62.8
2.04 No. days to start a business	108	27
2.05 No. procedures to start a business	133	12
2.06 Intensity of local competition*	24	5.6
2.07 Tertiary education gross enrollment rate, %	92	23.3
2.08 Quality of management schools*	30	5.0
2.09 Gov't procurement of advanced tech*	92	3.3
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	101	861.7
3.02 Mobile network coverage, % pop.	122	83.0
3.03 Int'l Internet bandwidth, kb/s per user	111	5.3
3.04 Secure Internet servers/million pop.	108	3.6
3.05 Accessibility of digital content*	84	4.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	7	0.04
4.02 Fixed broadband Internet tariffs, PPP \$/month	4	13.45
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	33	4.4
5.02 Quality of math & science education*	32	4.7
5.03 Secondary education gross enrollment rate, %	105	68.5
5.04 Adult literacy rate, %	127	62.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	122	69.9
6.02 Individuals using Internet, %	119	12.6
6.03 Households w/ personal computer, %	112	10.9
6.04 Households w/ Internet access, %	108	9.5
6.05 Fixed broadband Internet subs./100 pop.	102	1.2
6.06 Mobile broadband subscriptions/100 pop.	104	5.0
6.07 Use of virtual social networks*	91	5.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	48	5.0
7.02 Capacity for innovation*	41	4.0
7.03 PCT patents, applications/million pop.	61	1.5
7.04 Business-to-business Internet use*	69	4.8
7.05 Business-to-consumer Internet use*	71	4.5
7.06 Extent of staff training*	53	4.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	54	4.3
8.02 Government Online Service Index, 0-1 (best)	55	0.54
8.03 Gov't success in ICT promotion*	29	4.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	40	4.8
9.02 ICT PCT patents, applications/million pop.	55	0.4
9.03 Impact of ICTs on new organizational models*	40	4.6
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	63	4.3
10.02 Internet access in schools*	77	4.1
10.03 ICT use & gov't efficiency*	53	4.4
10.04 E-Participation Index, 0-1 (best)	71	0.18

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Indonesia

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	64	4.0
Networked Readiness Index 2013 (out of 144).....	76.....	3.8
A. Environment subindex	63	4.0
1st pillar: Political and regulatory environment.....	68.....	3.7
2nd pillar: Business and innovation environment.....	62.....	4.4
B. Readiness subindex	65	4.9
3rd pillar: Infrastructure and digital content.....	85.....	3.6
4th pillar: Affordability.....	37.....	6.0
5th pillar: Skills.....	61.....	5.2
C. Usage subindex	69	3.7
6th pillar: Individual usage.....	95.....	2.9
7th pillar: Business usage.....	36.....	4.0
8th pillar: Government usage.....	49.....	4.3
D. Impact subindex	72	3.5
9th pillar: Economic impacts.....	86.....	3.1
10th pillar: Social impacts.....	63.....	3.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	57	3.8
1.02 Laws relating to ICTs*	46	4.5
1.03 Judicial independence*	74	3.7
1.04 Efficiency of legal system in settling disputes*	49	4.1
1.05 Efficiency of legal system in challenging regs*	50	3.7
1.06 Intellectual property protection*	55	3.9
1.07 Software piracy rate, % software installed	98	86
1.08 No. procedures to enforce a contract	98	40
1.09 No. days to enforce a contract	57	498
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	60	5.1
2.02 Venture capital availability*	17	3.7
2.03 Total tax rate, % profits	49	32.2
2.04 No. days to start a business	131	48
2.05 No. procedures to start a business	119	10
2.06 Intensity of local competition*	66	5.0
2.07 Tertiary education gross enrollment rate, %	84	27.2
2.08 Quality of management schools*	58	4.4
2.09 Gov't procurement of advanced tech*	25	4.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	104	748.1
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	77	17.1
3.04 Secure Internet servers/million pop.	105	3.9
3.05 Accessibility of digital content*	80	4.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	45	0.16
4.02 Fixed broadband Internet tariffs, PPP \$/month	56	28.48
4.03 Internet & telephony competition, 0–2 (best)	84	1.76
5th pillar: Skills		
5.01 Quality of educational system*	36	4.3
5.02 Quality of math & science education*	35	4.7
5.03 Secondary education gross enrollment rate, %	93	81.2
5.04 Adult literacy rate, %	77	92.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	61	114.2
6.02 Individuals using Internet, %	112	15.4
6.03 Households w/ personal computer, %	103	15.1
6.04 Households w/ Internet access, %	117	6.5
6.05 Fixed broadband Internet subs./100 pop.	103	1.2
6.06 Mobile broadband subscriptions/100 pop.	54	31.6
6.07 Use of virtual social networks*	48	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	46	5.1
7.02 Capacity for innovation*	24	4.4
7.03 PCT patents, applications/million pop.	103	0.1
7.04 Business-to-business Internet use*	63	4.9
7.05 Business-to-consumer Internet use*	31	5.2
7.06 Extent of staff training*	25	4.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	42	4.4
8.02 Government Online Service Index, 0–1 (best)	67	0.50
8.03 Gov't success in ICT promotion*	53	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	38	4.9
9.02 ICT PCT patents, applications/million pop.	88	0.0
9.03 Impact of ICTs on new organizational models*	41	4.6
9.04 Knowledge-intensive jobs, % workforce	106	8.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	69	4.2
10.02 Internet access in schools*	50	4.8
10.03 ICT use & gov't efficiency*	73	4.1
10.04 E-Participation Index, 0–1 (best)	63	0.21

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Iran, Islamic Rep.

Rank Value
(out of 148) (1-7)

Networked Readiness Index 2014 104..3.4

Networked Readiness Index 2013 (out of 144)..... 101.....3.4

A. Environment subindex 86.....3.8

1st pillar: Political and regulatory environment 86.....3.5

2nd pillar: Business and innovation environment 86.....4.0

B. Readiness subindex 110.....3.9

3rd pillar: Infrastructure and digital content..... 103.....3.1

4th pillar: Affordability 118.....3.7

5th pillar: Skills 85.....4.7

C. Usage subindex 113.....3.0

6th pillar: Individual usage 111.....2.4

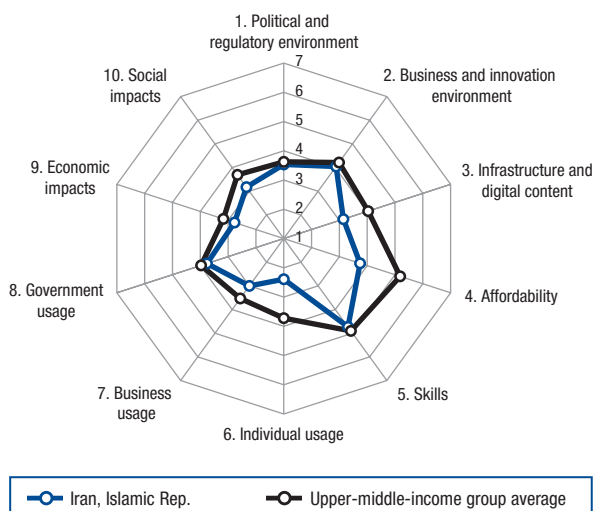
7th pillar: Business usage 129.....3.0

8th pillar: Government usage 91.....3.8

D. Impact subindex 107.....3.0

9th pillar: Economic impacts 114.....2.8

10th pillar: Social impacts 105.....3.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	59	3.8
1.02 Laws relating to ICTs*	97	3.5
1.03 Judicial independence*	73	3.7
1.04 Efficiency of legal system in settling disputes*	91	3.4
1.05 Efficiency of legal system in challenging regs*	124	2.7
1.06 Intellectual property protection*	122	2.8
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	98	4.0
1.09 No. days to enforce a contract	58	5.05
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	121	4.0
2.02 Venture capital availability*	139	1.8
2.03 Total tax rate, % profits	101	44.1
2.04 No. days to start a business	81	16
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	121	4.3
2.07 Tertiary education gross enrollment rate, %	48	55.2
2.08 Quality of management schools*	95	3.8
2.09 Gov't procurement of advanced tech*	73	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	66	3,178.1
3.02 Mobile network coverage, % pop.	97	96.0
3.03 Int'l Internet bandwidth, kb/s per user	121	3.7
3.04 Secure Internet servers/million pop.	127	1.3
3.05 Accessibility of digital content*	123	3.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	61	0.21
4.02 Fixed broadband Internet tariffs, PPP \$/month	124	69.52
4.03 Internet & telephony competition, 0-2 (best)	110	1.29
5th pillar: Skills		
5.01 Quality of educational system*	103	3.2
5.02 Quality of math & science education*	40	4.6
5.03 Secondary education gross enrollment rate, %	83	86.3
5.04 Adult literacy rate, %	103	85.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	117	76.1
6.02 Individuals using Internet, %	98	26.0
6.03 Households w/ personal computer, %	77	37.0
6.04 Households w/ Internet access, %	78	26.5
6.05 Fixed broadband Internet subs./100 pop.	85	4.0
6.06 Mobile broadband subscriptions/100 pop.	122	1.3
6.07 Use of virtual social networks*	147	3.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	120	4.0
7.02 Capacity for innovation*	85	3.4
7.03 PCT patents, applications/million pop.	106	0.0
7.04 Business-to-business Internet use*	139	3.7
7.05 Business-to-consumer Internet use*	121	3.5
7.06 Extent of staff training*	141	3.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	105	3.5
8.02 Government Online Service Index, 0-1 (best)	70	0.49
8.03 Gov't success in ICT promotion*	102	3.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	106	3.9
9.02 ICT PCT patents, applications/million pop.	84	0.0
9.03 Impact of ICTs on new organizational models*	107	3.6
9.04 Knowledge-intensive jobs, % workforce	93	15.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	95	3.8
10.02 Internet access in schools*	126	2.7
10.03 ICT use & gov't efficiency*	70	4.1
10.04 E-Participation Index, 0-1 (best)	71	0.18

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

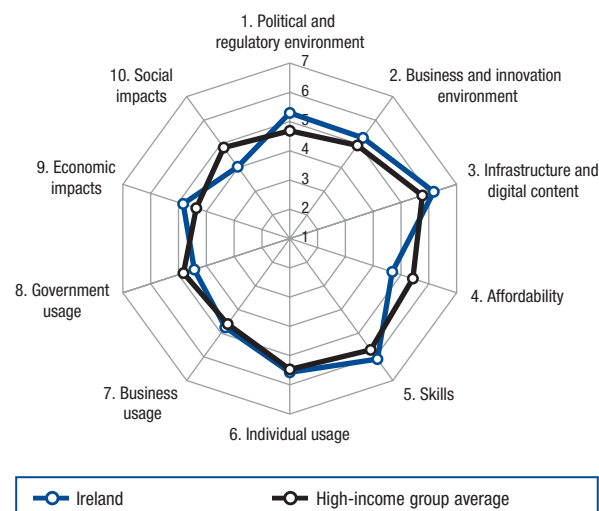
Ireland

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....26..5.1

Networked Readiness Index 2013 (out of 144).....27.....5.1

A. Environment subindex	12.....5.3
1st pillar: Political and regulatory environment.....	13.....5.3
2nd pillar: Business and innovation environment.....	16.....5.3
B. Readiness subindex	26.....5.6
3rd pillar: Infrastructure and digital content.....	19.....6.2
4th pillar: Affordability.....	98.....4.7
5th pillar: Skills.....	9.....6.1
C. Usage subindex	29.....4.9
6th pillar: Individual usage.....	23.....5.6
7th pillar: Business usage.....	23.....4.8
8th pillar: Government usage.....	45.....4.4
D. Impact subindex	31.....4.4
9th pillar: Economic impacts.....	18.....4.8
10th pillar: Social impacts.....	55.....4.0



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	28	4.5
1.02 Laws relating to ICTs*	23	5.1
1.03 Judicial independence*	3	6.4
1.04 Efficiency of legal system in settling disputes*	22	4.8
1.05 Efficiency of legal system in challenging regs*	19	4.6
1.06 Intellectual property protection*	19	5.4
1.07 Software piracy rate, % software installed	19	34
1.08 No. procedures to enforce a contract	1	21
1.09 No. days to enforce a contract	106	650
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	30	5.9
2.02 Venture capital availability*	69	2.7
2.03 Total tax rate, % profits	25	25.7
2.04 No. days to start a business	53	10
2.05 No. procedures to start a business	22	4
2.06 Intensity of local competition*	42	5.3
2.07 Tertiary education gross enrollment rate, %	21	73.5
2.08 Quality of management schools*	19	5.3
2.09 Gov't procurement of advanced tech*	70	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	36	5,993.7
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	20	97.1
3.04 Secure Internet servers/million pop.	19	1,003.1
3.05 Accessibility of digital content*	49	5.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	134	0.55
4.02 Fixed broadband Internet tariffs, PPP \$/month	68	30.56
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	5	5.5
5.02 Quality of math & science education*	25	4.9
5.03 Secondary education gross enrollment rate, %	6	117.8
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	78	107.2
6.02 Individuals using Internet, %	25	79.0
6.03 Households w/ personal computer, %	19	83.0
6.04 Households w/ Internet access, %	18	81.0
6.05 Fixed broadband Internet subs./100 pop.	32	22.7
6.06 Mobile broadband subscriptions/100 pop.	18	65.9
6.07 Use of virtual social networks*	29	6.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	25	5.6
7.02 Capacity for innovation*	20	4.6
7.03 PCT patents, applications/million pop.	20	79.1
7.04 Business-to-business Internet use*	33	5.5
7.05 Business-to-consumer Internet use*	33	5.1
7.06 Extent of staff training*	20	4.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	45	4.4
8.02 Government Online Service Index, 0–1 (best)	55	0.54
8.03 Gov't success in ICT promotion*	41	4.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	14	5.4
9.02 ICT PCT patents, applications/million pop.	15	29.9
9.03 Impact of ICTs on new organizational models*	15	5.1
9.04 Knowledge-intensive jobs, % workforce	22	41.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	44	4.7
10.02 Internet access in schools*	43	5.0
10.03 ICT use & gov't efficiency*	46	4.6
10.04 E-Participation Index, 0–1 (best)	82	0.13

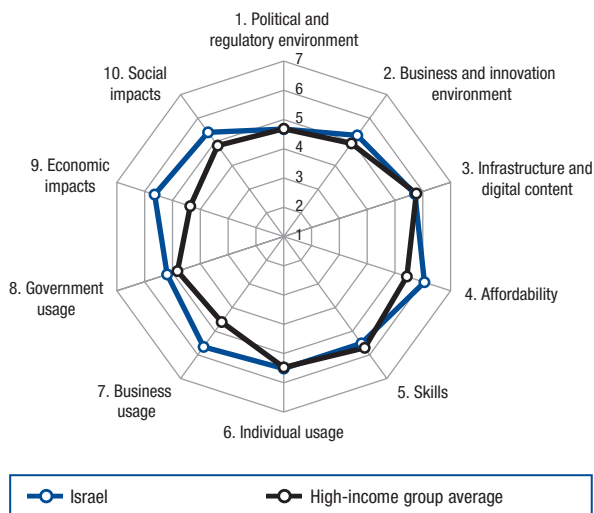
Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Israel

Networked Readiness Index 2014 15..5.4

Networked Readiness Index 2013 (out of 144)..... 15.....5.4

- A. Environment subindex**..... 22.....5.0
 - 1st pillar: Political and regulatory environment..... 28.....4.7
 - 2nd pillar: Business and innovation environment..... 14.....5.3
- B. Readiness subindex** 20.....5.8
 - 3rd pillar: Infrastructure and digital content..... 29.....5.7
 - 4th pillar: Affordability 35.....6.0
 - 5th pillar: Skills 39.....5.5
- C. Usage subindex** 14.....5.5
 - 6th pillar: Individual usage 26.....5.5
 - 7th pillar: Business usage 8.....5.7
 - 8th pillar: Government usage 19.....5.2
- D. Impact subindex**..... 6.....5.5
 - 9th pillar: Economic impacts 4.....5.6
 - 10th pillar: Social impacts 14.....5.4



The Networked Readiness Index in detail

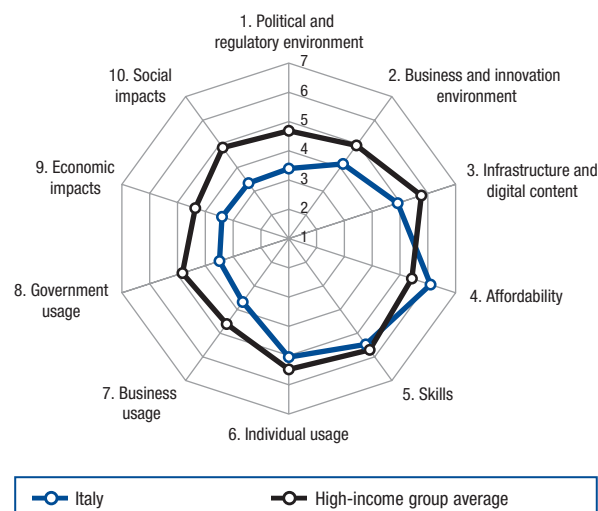
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	51	4.0
1.02 Laws relating to ICTs*	32	4.9
1.03 Judicial independence*	15	5.8
1.04 Efficiency of legal system in settling disputes*	44	4.2
1.05 Efficiency of legal system in challenging regs*	34	4.1
1.06 Intellectual property protection*	34	4.6
1.07 Software piracy rate, % software installed	17	31
1.08 No. procedures to enforce a contract	47	35
1.09 No. days to enforce a contract	125	890
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	17	6.2
2.02 Venture capital availability*	8	4.2
2.03 Total tax rate, % profits	41	29.9
2.04 No. days to start a business	70	14
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	95	4.7
2.07 Tertiary education gross enrollment rate, %	33	62.4
2.08 Quality of management schools*	42	4.7
2.09 Gov't procurement of advanced tech*	9	4.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	25	7,677.6
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	39	56.2
3.04 Secure Internet servers/million pop.	29	396.4
3.05 Accessibility of digital content*	37	5.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	89	0.31
4.02 Fixed broadband Internet tariffs, PPP \$/month	2	8.39
4.03 Internet & telephony competition, 0-2 (best)	84	1.76
5th pillar: Skills		
5.01 Quality of educational system*	56	4.0
5.02 Quality of math & science education*	78	4.0
5.03 Secondary education gross enrollment rate, %	27	101.9
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	48	120.7
6.02 Individuals using Internet, %	31	73.4
6.03 Households w/ personal computer, %	21	82.1
6.04 Households w/ Internet access, %	29	73.4
6.05 Fixed broadband Internet subs./100 pop.	22	25.3
6.06 Mobile broadband subscriptions/100 pop.	26	53.0
6.07 Use of virtual social networks*	32	6.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	5	6.1
7.02 Capacity for innovation*	4	5.6
7.03 PCT patents, applications/million pop.	5	215.8
7.04 Business-to-business Internet use*	40	5.3
7.05 Business-to-consumer Internet use*	23	5.4
7.06 Extent of staff training*	49	4.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	43	4.4
8.02 Government Online Service Index, 0-1 (best)	15	0.85
8.03 Gov't success in ICT promotion*	19	5.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	26	5.1
9.02 ICT PCT patents, applications/million pop.	5	79.4
9.03 Impact of ICTs on new organizational models*	19	5.0
9.04 Knowledge-intensive jobs, % workforce	19	42.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	22	5.3
10.02 Internet access in schools*	39	5.1
10.03 ICT use & gov't efficiency*	31	4.8
10.04 E-Participation Index, 0-1 (best)	7	0.89

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Italy

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	58	4.2
Networked Readiness Index 2013 (out of 144).....	50	4.2
A. Environment subindex	88	3.8
1st pillar: Political and regulatory environment.....	99	3.4
2nd pillar: Business and innovation environment.....	76	4.1
B. Readiness subindex	33	5.5
3rd pillar: Infrastructure and digital content.....	42	4.9
4th pillar: Affordability.....	32	6.1
5th pillar: Skills.....	43	5.5
C. Usage subindex	51	4.1
6th pillar: Individual usage.....	37	5.0
7th pillar: Business usage.....	61	3.7
8th pillar: Government usage.....	112	3.5
D. Impact subindex	82	3.4
9th pillar: Economic impacts.....	58	3.4
10th pillar: Social impacts.....	94	3.3



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*.....	128	2.7
1.02 Laws relating to ICTs*.....	89	3.7
1.03 Judicial independence*.....	70	3.7
1.04 Efficiency of legal system in settling disputes*..	145	2.3
1.05 Efficiency of legal system in challenging regs*..	134	2.5
1.06 Intellectual property protection*.....	67	3.7
1.07 Software piracy rate, % software installed.....	34	4.8
1.08 No. procedures to enforce a contract.....	67	3.7
1.09 No. days to enforce a contract.....	135	1,185
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*.....	69	5.0
2.02 Venture capital availability*.....	138	1.8
2.03 Total tax rate, % profits.....	138	65.8
2.04 No. days to start a business.....	22	6
2.05 No. procedures to start a business.....	58	6
2.06 Intensity of local competition*.....	73	5.0
2.07 Tertiary education gross enrollment rate, %.....	31	63.9
2.08 Quality of management schools*.....	31	5.0
2.09 Gov't procurement of advanced tech*.....	129	2.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita.....	48	4,832.2
3.02 Mobile network coverage, % pop.....	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user.....	28	76.3
3.04 Secure Internet servers/million pop.....	39	208.1
3.05 Accessibility of digital content*.....	98	4.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.....	42	0.15
4.02 Fixed broadband Internet tariffs, PPP \$/month..	46	25.91
4.03 Internet & telephony competition, 0–2 (best).....	89	1.67
5th pillar: Skills		
5.01 Quality of educational system*.....	72	3.6
5.02 Quality of math & science education*.....	61	4.3
5.03 Secondary education gross enrollment rate, %..	36	100.7
5.04 Adult literacy rate, %.....	38	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.....	13	159.8
6.02 Individuals using Internet, %.....	51	58.0
6.03 Households w/ personal computer, %.....	44	67.0
6.04 Households w/ Internet access, %.....	43	63.0
6.05 Fixed broadband Internet subs./100 pop.....	34	22.1
6.06 Mobile broadband subscriptions/100 pop.....	28	52.2
6.07 Use of virtual social networks*.....	65	5.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*.....	112	4.2
7.02 Capacity for innovation*.....	31	4.2
7.03 PCT patents, applications/million pop.....	24	51.8
7.04 Business-to-business Internet use*.....	113	4.3
7.05 Business-to-consumer Internet use*.....	82	4.3
7.06 Extent of staff training*.....	130	3.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*.....	130	3.0
8.02 Government Online Service Index, 0–1 (best).....	48	0.58
8.03 Gov't success in ICT promotion*.....	144	3.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*.....	111	3.8
9.02 ICT PCT patents, applications/million pop.....	26	8.2
9.03 Impact of ICTs on new organizational models*..	121	3.5
9.04 Knowledge-intensive jobs, % workforce.....	34	34.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*....	107	3.6
10.02 Internet access in schools*.....	96	3.7
10.03 ICT use & gov't efficiency*.....	113	3.5
10.04 E-Participation Index, 0–1 (best).....	55	0.26

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Jamaica

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 86..3.8

Networked Readiness Index 2013 (out of 144)..... 85.....3.7

A. Environment subindex..... 67.....4.0

1st pillar: Political and regulatory environment..... 60.....3.8

2nd pillar: Business and innovation environment..... 80.....4.1

B. Readiness subindex 88.....4.5

3rd pillar: Infrastructure and digital content..... 79.....3.8

4th pillar: Affordability 89.....5.0

5th pillar: Skills 87.....4.7

C. Usage subindex 94.....3.4

6th pillar: Individual usage 87.....3.1

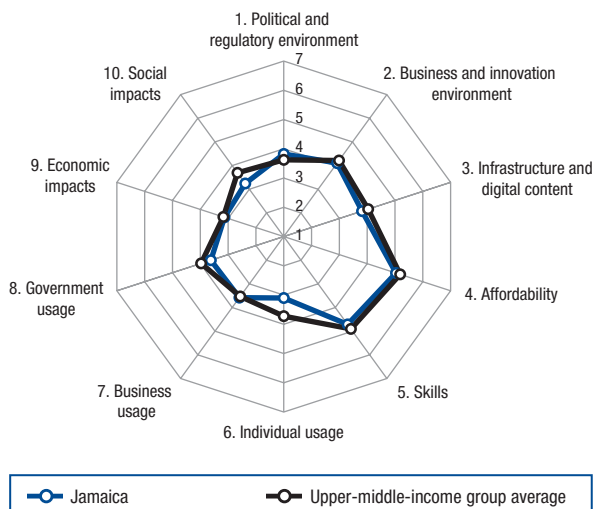
7th pillar: Business usage 72.....3.6

8th pillar: Government usage 104.....3.6

D. Impact subindex 94.....3.2

9th pillar: Economic impacts 78.....3.1

10th pillar: Social impacts 100.....3.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	90	3.3
1.02 Laws relating to ICTs*	92	3.6
1.03 Judicial independence*	49	4.4
1.04 Efficiency of legal system in settling disputes*	94	3.4
1.05 Efficiency of legal system in challenging regs*	77	3.4
1.06 Intellectual property protection*	83	3.5
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	47	3.5
1.09 No. days to enforce a contract	107	6.5
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	42	5.5
2.02 Venture capital availability*	130	1.9
2.03 Total tax rate, % profits	103	44.3
2.04 No. days to start a business	22	6
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	55	5.2
2.07 Tertiary education gross enrollment rate, %	85	26.0
2.08 Quality of management schools*	69	4.3
2.09 Gov't procurement of advanced tech*	128	2.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	85	1,899.5
3.02 Mobile network coverage, % pop.	101	95.0
3.03 Int'l Internet bandwidth, kb/s per user	69	20.2
3.04 Secure Internet servers/million pop.	60	51.3
3.05 Accessibility of digital content*	56	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	69	0.23
4.02 Fixed broadband Internet tariffs, PPP \$/month	105	47.09
4.03 Internet & telephony competition, 0-2 (best)	61	1.93
5th pillar: Skills		
5.01 Quality of educational system*	66	3.7
5.02 Quality of math & science education*	115	3.2
5.03 Secondary education gross enrollment rate, %	65	92.7
5.04 Adult literacy rate, %	99	87.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	96	96.3
6.02 Individuals using Internet, %	70	46.5
6.03 Households w/ personal computer, %	81	32.6
6.04 Households w/ Internet access, %	82	23.0
6.05 Fixed broadband Internet subs./100 pop.	84	4.3
6.06 Mobile broadband subscriptions/100 pop.	119	1.6
6.07 Use of virtual social networks*	53	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	65	4.8
7.02 Capacity for innovation*	60	3.6
7.03 PCT patents, applications/million pop.	74	0.6
7.04 Business-to-business Internet use*	75	4.8
7.05 Business-to-consumer Internet use*	97	4.0
7.06 Extent of staff training*	62	4.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	89	3.7
8.02 Government Online Service Index, 0-1 (best)	115	0.31
8.03 Gov't success in ICT promotion*	75	4.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	85	4.2
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	63	4.3
9.04 Knowledge-intensive jobs, % workforce	78	20.1
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	94	3.8
10.02 Internet access in schools*	75	4.1
10.03 ICT use & gov't efficiency*	81	4.0
10.04 E-Participation Index, 0-1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Japan

Networked Readiness Index 2014..... 16..5.4

Networked Readiness Index 2013 (out of 144)..... 21.....5.2

A. Environment subindex..... 21.....5.0

1st pillar: Political and regulatory environment..... 16.....5.2

2nd pillar: Business and innovation environment..... 40.....4.8

B. Readiness subindex..... 19.....5.8

3rd pillar: Infrastructure and digital content..... 21.....6.1

4th pillar: Affordability..... 54.....5.7

5th pillar: Skills..... 29.....5.7

C. Usage subindex..... 9.....5.7

6th pillar: Individual usage..... 16.....5.9

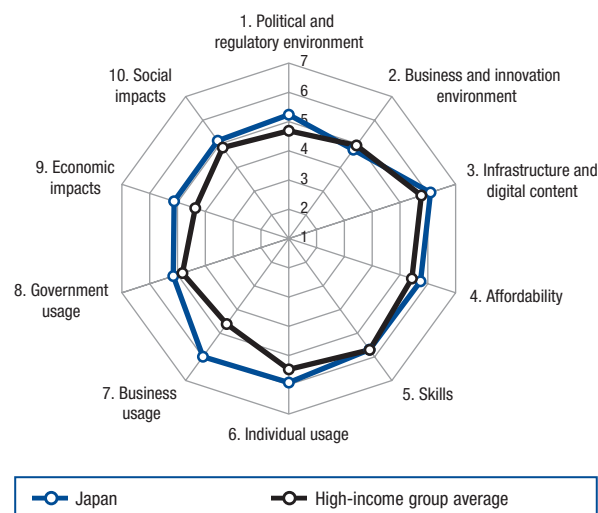
7th pillar: Business usage..... 4.....6.0

8th pillar: Government usage..... 22.....5.2

D. Impact subindex..... 16.....5.1

9th pillar: Economic impacts..... 11.....5.1

10th pillar: Social impacts..... 23.....5.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	30	4.4
1.02 Laws relating to ICTs*	33	4.8
1.03 Judicial independence*	14	6.0
1.04 Efficiency of legal system in settling disputes*	28	4.7
1.05 Efficiency of legal system in challenging regs*	35	4.1
1.06 Intellectual property protection*	11	5.7
1.07 Software piracy rate, % software installed	3	21
1.08 No. procedures to enforce a contract	24	31
1.09 No. days to enforce a contract	17	360
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	14	6.3
2.02 Venture capital availability*	39	3.1
2.03 Total tax rate, % profits	118	49.7
2.04 No. days to start a business	100	22
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	1	6.2
2.07 Tertiary education gross enrollment rate, %	40	59.9
2.08 Quality of management schools*	86	4.0
2.09 Gov't procurement of advanced tech*	37	3.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	24	8,041.6
3.02 Mobile network coverage, % pop.	33	99.9
3.03 Int'l Internet bandwidth, kb/s per user	52	32.8
3.04 Secure Internet servers/million pop.	21	750.0
3.05 Accessibility of digital content*	13	6.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	113	0.40
4.02 Fixed broadband Internet tariffs, PPP \$/month	23	20.01
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	50	4.1
5.02 Quality of math & science education*	34	4.7
5.03 Secondary education gross enrollment rate, %	29	101.8
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	69	110.9
6.02 Individuals using Internet, %	24	79.1
6.03 Households w/ personal computer, %	26	80.0
6.04 Households w/ Internet access, %	14	86.0
6.05 Fixed broadband Internet subs./100 pop.	19	27.7
6.06 Mobile broadband subscriptions/100 pop.	2	115.1
6.07 Use of virtual social networks*	68	5.7
7th pillar: Business usage		
7.01 Firm-level technology absorption*	6	6.1
7.02 Capacity for innovation*	6	5.6
7.03 PCT patents, applications/million pop.	1	301.1
7.04 Business-to-business Internet use*	7	6.0
7.05 Business-to-consumer Internet use*	6	6.0
7.06 Extent of staff training*	4	5.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	28	4.6
8.02 Government Online Service Index, 0-1 (best)	9	0.86
8.03 Gov't success in ICT promotion*	45	4.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	20	5.2
9.02 ICT PCT patents, applications/million pop.	1	118.9
9.03 Impact of ICTs on new organizational models*	37	4.7
9.04 Knowledge-intensive jobs, % workforce	57	24.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	32	5.1
10.02 Internet access in schools*	37	5.2
10.03 ICT use & gov't efficiency*	37	4.8
10.04 E-Participation Index, 0-1 (best)	11	0.74

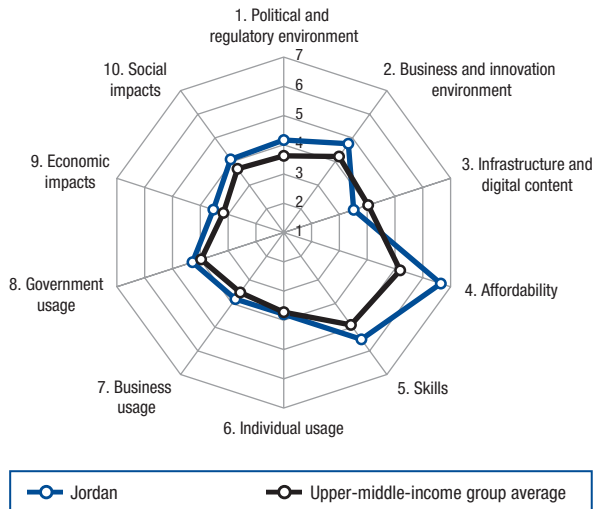
Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Jordan

Networked Readiness Index 2014 **44** .. **4.4**
 Rank (out of 148) Value (1-7)

Networked Readiness Index 2013 (out of 144) 47 4.2

- A. Environment subindex** **41** **4.5**
 - 1st pillar: Political and regulatory environment 44 4.2
 - 2nd pillar: Business and innovation environment 41 4.7
- B. Readiness subindex** **48** **5.2**
 - 3rd pillar: Infrastructure and digital content 88 3.5
 - 4th pillar: Affordability 6 6.6
 - 5th pillar: Skills 38 5.5
- C. Usage subindex** **59** **4.0**
 - 6th pillar: Individual usage 67 3.8
 - 7th pillar: Business usage 47 3.8
 - 8th pillar: Government usage 52 4.3
- D. Impact subindex** **48** **3.8**
 - 9th pillar: Economic impacts 44 3.5
 - 10th pillar: Social impacts 51 4.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	77	3.5
1.02 Laws relating to ICTs*	44	4.5
1.03 Judicial independence*	48	4.4
1.04 Efficiency of legal system in settling disputes*	38	4.3
1.05 Efficiency of legal system in challenging regs*	27	4.4
1.06 Intellectual property protection*	36	4.6
1.07 Software piracy rate, % software installed	50	5.8
1.08 No. procedures to enforce a contract	78	3.8
1.09 No. days to enforce a contract	110	6.89
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	36	5.7
2.02 Venture capital availability*	45	3.0
2.03 Total tax rate, % profits	37	28.9
2.04 No. days to start a business	63	12
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	44	5.3
2.07 Tertiary education gross enrollment rate, %	66	39.9
2.08 Quality of management schools*	47	4.6
2.09 Gov't procurement of advanced tech*	51	3.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	77	2,369.7
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	112	5.2
3.04 Secure Internet servers/million pop.	69	29.3
3.05 Accessibility of digital content*	54	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	9	0.05
4.02 Fixed broadband Internet tariffs, PPP \$/month	36	22.95
4.03 Internet & telephony competition, 0-2 (best)	60	1.94
5th pillar: Skills		
5.01 Quality of educational system*	27	4.6
5.02 Quality of math & science education*	30	4.8
5.03 Secondary education gross enrollment rate, %	76	89.1
5.04 Adult literacy rate, %	59	95.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	37	128.2
6.02 Individuals using Internet, %	81	41.0
6.03 Households w/ personal computer, %	59	54.6
6.04 Households w/ Internet access, %	64	43.6
6.05 Fixed broadband Internet subs./100 pop.	92	2.8
6.06 Mobile broadband subscriptions/100 pop.	85	11.3
6.07 Use of virtual social networks*	39	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	27	5.6
7.02 Capacity for innovation*	69	3.5
7.03 PCT patents, applications/million pop.	80	0.4
7.04 Business-to-business Internet use*	45	5.3
7.05 Business-to-consumer Internet use*	44	4.9
7.06 Extent of staff training*	83	3.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	30	4.6
8.02 Government Online Service Index, 0-1 (best)	93	0.39
8.03 Gov't success in ICT promotion*	30	4.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	35	4.9
9.02 ICT PCT patents, applications/million pop.	77	0.1
9.03 Impact of ICTs on new organizational models*	34	4.7
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	39	4.9
10.02 Internet access in schools*	44	5.0
10.03 ICT use & gov't efficiency*	26	4.9
10.04 E-Participation Index, 0-1 (best)	92	0.11

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Kazakhstan

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....38..4.6

Networked Readiness Index 2013 (out of 144).....43.....4.3

A. Environment subindex.....57.....4.1

1st pillar: Political and regulatory environment.....61.....3.8

2nd pillar: Business and innovation environment.....58.....4.4

B. Readiness subindex.....31.....5.6

3rd pillar: Infrastructure and digital content.....58.....4.5

4th pillar: Affordability.....2.....6.9

5th pillar: Skills.....51.....5.3

C. Usage subindex.....38.....4.4

6th pillar: Individual usage.....51.....4.4

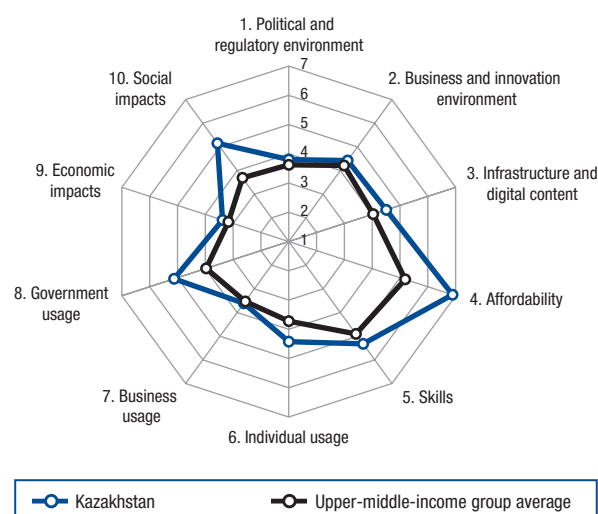
7th pillar: Business usage.....66.....3.6

8th pillar: Government usage.....23.....5.1

D. Impact subindex.....36.....4.3

9th pillar: Economic impacts.....60.....3.4

10th pillar: Social impacts.....21.....5.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	41	4.2
1.02 Laws relating to ICTs*	53	4.3
1.03 Judicial independence*	88	3.4
1.04 Efficiency of legal system in settling disputes*	53	3.9
1.05 Efficiency of legal system in challenging regs*	61	3.6
1.06 Intellectual property protection*	73	3.6
1.07 Software piracy rate, % software installed	78	76
1.08 No. procedures to enforce a contract	67	37
1.09 No. days to enforce a contract	19	370
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	88	4.6
2.02 Venture capital availability*	72	2.6
2.03 Total tax rate, % profits	36	28.6
2.04 No. days to start a business	63	12
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	120	4.3
2.07 Tertiary education gross enrollment rate, %	61	44.5
2.08 Quality of management schools*	96	3.8
2.09 Gov't procurement of advanced tech*	58	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	44	5,229.0
3.02 Mobile network coverage, % pop.	101	95.0
3.03 Int'l Internet bandwidth, kb/s per user	54	32.0
3.04 Secure Internet servers/million pop.	98	7.4
3.05 Accessibility of digital content*	59	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	17	0.08
4.02 Fixed broadband Internet tariffs, PPP \$/month	8	14.60
4.03 Internet & telephony competition, 0–2 (best)	69	1.87
5th pillar: Skills		
5.01 Quality of educational system*	88	3.4
5.02 Quality of math & science education*	75	4.1
5.03 Secondary education gross enrollment rate, %	45	97.7
5.04 Adult literacy rate, %	9	99.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	3	185.8
6.02 Individuals using Internet, %	61	53.3
6.03 Households w/ personal computer, %	49	63.0
6.04 Households w/ Internet access, %	53	52.6
6.05 Fixed broadband Internet subs./100 pop.	62	9.8
6.06 Mobile broadband subscriptions/100 pop.	38	42.5
6.07 Use of virtual social networks*	96	5.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	78	4.6
7.02 Capacity for innovation*	74	3.5
7.03 PCT patents, applications/million pop.	70	1.0
7.04 Business-to-business Internet use*	67	4.9
7.05 Business-to-consumer Internet use*	58	4.8
7.06 Extent of staff training*	56	4.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	27	4.6
8.02 Government Online Service Index, 0–1 (best)	21	0.78
8.03 Gov't success in ICT promotion*	26	5.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	80	4.3
9.02 ICT PCT patents, applications/million pop.	65	0.2
9.03 Impact of ICTs on new organizational models*	71	4.2
9.04 Knowledge-intensive jobs, % workforce	50	29.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	59	4.4
10.02 Internet access in schools*	52	4.7
10.03 ICT use & gov't efficiency*	30	4.8
10.04 E-Participation Index, 0–1 (best)	3	0.95

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Kenya

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 92..3.7

Networked Readiness Index 2013 (out of 144)..... 92.....3.5

A. Environment subindex..... 92.....3.8

1st pillar: Political and regulatory environment..... 71.....3.7

2nd pillar: Business and innovation environment..... 110.....3.8

B. Readiness subindex 99.....4.1

3rd pillar: Infrastructure and digital content..... 94.....3.4

4th pillar: Affordability 97.....4.7

5th pillar: Skills 98.....4.3

C. Usage subindex 86.....3.5

6th pillar: Individual usage 113.....2.3

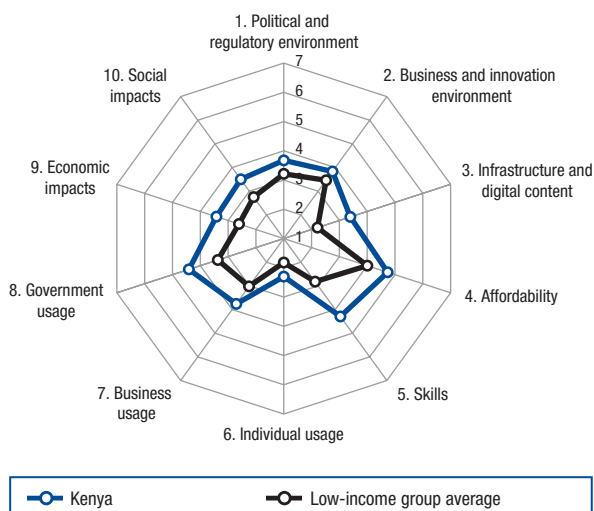
7th pillar: Business usage 54.....3.8

8th pillar: Government usage 46.....4.4

D. Impact subindex 71.....3.5

9th pillar: Economic impacts 55.....3.4

10th pillar: Social impacts 83.....3.5



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	50	4.0
1.02 Laws relating to ICTs*	62	4.1
1.03 Judicial independence*	60	4.0
1.04 Efficiency of legal system in settling disputes*	57	3.9
1.05 Efficiency of legal system in challenging regs*	56	3.7
1.06 Intellectual property protection*	86	3.4
1.07 Software piracy rate, % software installed	81	78
1.08 No. procedures to enforce a contract	126	44
1.09 No. days to enforce a contract	51	465
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	71	5.0
2.02 Venture capital availability*	47	3.0
2.03 Total tax rate, % profits	102	44.2
2.04 No. days to start a business	114	32
2.05 No. procedures to start a business	119	10
2.06 Intensity of local competition*	35	5.4
2.07 Tertiary education gross enrollment rate, %	141	4.0
2.08 Quality of management schools*	57	4.4
2.09 Gov't procurement of advanced tech*	79	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	125	186.8
3.02 Mobile network coverage, % pop.	117	89.1
3.03 Int'l Internet bandwidth, kb/s per user	66	23.7
3.04 Secure Internet servers/million pop.	103	4.2
3.05 Accessibility of digital content*	79	4.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	21	0.09
4.02 Fixed broadband Internet tariffs, PPP \$/month	119	65.18
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	44	4.2
5.02 Quality of math & science education*	95	3.8
5.03 Secondary education gross enrollment rate, %	112	60.1
5.04 Adult literacy rate, %	97	87.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	121	71.2
6.02 Individuals using Internet, %	95	32.1
6.03 Households w/ personal computer, %	113	10.8
6.04 Households w/ Internet access, %	103	11.5
6.05 Fixed broadband Internet subs./100 pop.	128	0.1
6.06 Mobile broadband subscriptions/100 pop.	116	2.2
6.07 Use of virtual social networks*	81	5.5
7th pillar: Business usage		
7.01 Firm-level technology absorption*	66	4.8
7.02 Capacity for innovation*	34	4.1
7.03 PCT patents, applications/million pop.	93	0.2
7.04 Business-to-business Internet use*	57	5.0
7.05 Business-to-consumer Internet use*	66	4.6
7.06 Extent of staff training*	54	4.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	26	4.7
8.02 Government Online Service Index, 0-1 (best)	86	0.43
8.03 Gov't success in ICT promotion*	31	4.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	41	4.8
9.02 ICT PCT patents, applications/million pop.	81	0.0
9.03 Impact of ICTs on new organizational models*	52	4.5
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	62	4.3
10.02 Internet access in schools*	81	4.0
10.03 ICT use & gov't efficiency*	57	4.4
10.04 E-Participation Index, 0-1 (best)	107	0.05

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Korea, Rep.

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 10..5.5

Networked Readiness Index 2013 (out of 144)..... 11.....5.5

A. Environment subindex..... 34.....4.7

1st pillar: Political and regulatory environment.....42.....4.2

2nd pillar: Business and innovation environment.....20.....5.2

B. Readiness subindex..... 17.....5.9

3rd pillar: Infrastructure and digital content.....13.....6.4

4th pillar: Affordability.....57.....5.7

5th pillar: Skills.....31.....5.7

C. Usage subindex..... 3.....5.9

6th pillar: Individual usage.....9.....6.3

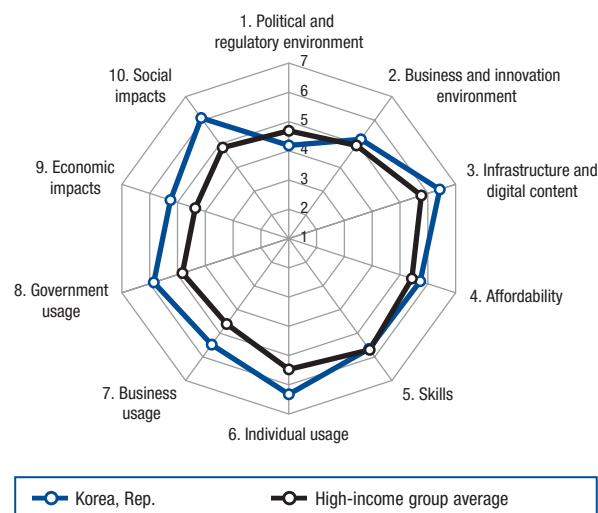
7th pillar: Business usage.....10.....5.5

8th pillar: Government usage.....3.....5.9

D. Impact subindex..... 5.....5.7

9th pillar: Economic impacts.....7.....5.2

10th pillar: Social impacts.....2.....6.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	119	2.8
1.02 Laws relating to ICTs*	12	5.3
1.03 Judicial independence*	78	3.5
1.04 Efficiency of legal system in settling disputes*	84	3.5
1.05 Efficiency of legal system in challenging regs*	101	3.0
1.06 Intellectual property protection*	48	4.0
1.07 Software piracy rate, % software installed	25	4.0
1.08 No. procedures to enforce a contract	36	3.3
1.09 No. days to enforce a contract	4	2.30
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	27	5.9
2.02 Venture capital availability*	115	2.1
2.03 Total tax rate, % profits	33	27.9
2.04 No. days to start a business	19	6
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	8	5.9
2.07 Tertiary education gross enrollment rate, %	1	100.8
2.08 Quality of management schools*	56	4.5
2.09 Gov't procurement of advanced tech*	31	4.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	13	10,567.3
3.02 Mobile network coverage, % pop.	33	99.9
3.03 Int'l Internet bandwidth, kb/s per user	63	25.8
3.04 Secure Internet servers/million pop.	3	2,751.6
3.05 Accessibility of digital content*	14	6.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	39	0.14
4.02 Fixed broadband Internet tariffs, PPP \$/month	88	36.31
4.03 Internet & telephony competition, 0–2 (best)	87	1.75
5th pillar: Skills		
5.01 Quality of educational system*	64	3.8
5.02 Quality of math & science education*	20	5.1
5.03 Secondary education gross enrollment rate, %	50	96.7
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	72	109.4
6.02 Individuals using Internet, %	15	84.1
6.03 Households w/ personal computer, %	20	82.3
6.04 Households w/ Internet access, %	1	97.4
6.05 Fixed broadband Internet subs./100 pop.	5	37.2
6.06 Mobile broadband subscriptions/100 pop.	4	105.1
6.07 Use of virtual social networks*	57	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	21	5.7
7.02 Capacity for innovation*	22	4.5
7.03 PCT patents, applications/million pop.	8	198.4
7.04 Business-to-business Internet use*	17	5.8
7.05 Business-to-consumer Internet use*	2	6.2
7.06 Extent of staff training*	51	4.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	15	5.1
8.02 Government Online Service Index, 0–1 (best)	1	1.00
8.03 Gov't success in ICT promotion*	14	5.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	2	5.7
9.02 ICT PCT patents, applications/million pop.	4	87.8
9.03 Impact of ICTs on new organizational models*	16	5.1
9.04 Knowledge-intensive jobs, % workforce	72	21.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	12	5.7
10.02 Internet access in schools*	13	6.1
10.03 ICT use & gov't efficiency*	8	5.5
10.04 E-Participation Index, 0–1 (best)	1	1.00

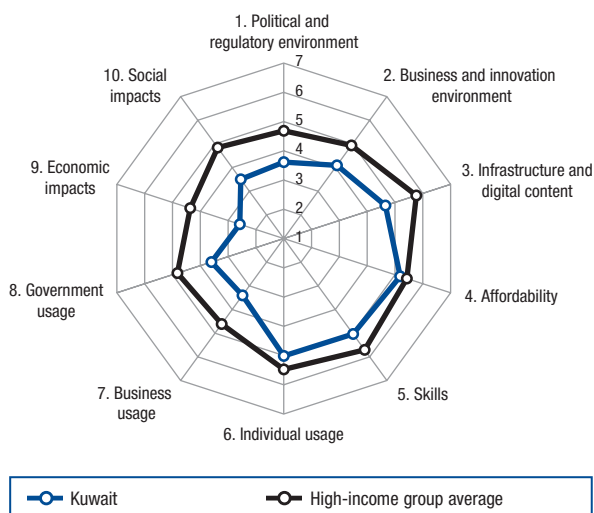
Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Kuwait

Networked Readiness Index 2014 **72..4.0**

Networked Readiness Index 2013 (out of 144)..... 62.....3.9

- A. Environment subindex**..... **78**.....**3.8**
 - 1st pillar: Political and regulatory environment..... 75.....3.6
 - 2nd pillar: Business and innovation environment..... 81.....4.1
- B. Readiness subindex**..... **64**.....**5.0**
 - 3rd pillar: Infrastructure and digital content..... 52.....4.7
 - 4th pillar: Affordability..... 76.....5.2
 - 5th pillar: Skills..... 70.....5.0
- C. Usage subindex**..... **58**.....**4.0**
 - 6th pillar: Individual usage..... 38.....5.0
 - 7th pillar: Business usage..... 94.....3.4
 - 8th pillar: Government usage..... 105.....3.6
- D. Impact subindex**..... **103**.....**3.0**
 - 9th pillar: Economic impacts..... 127.....2.6
 - 10th pillar: Social impacts..... 82.....3.5



The Networked Readiness Index in detail

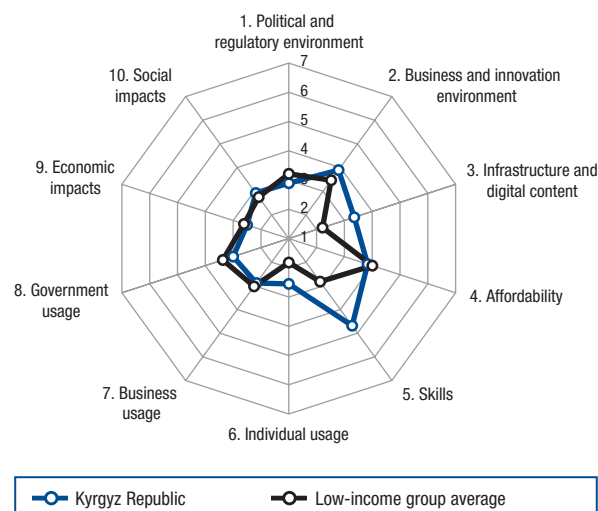
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	89	3.3
1.02 Laws relating to ICTs*	131	2.7
1.03 Judicial independence*	36	5.0
1.04 Efficiency of legal system in settling disputes*	66	3.8
1.05 Efficiency of legal system in challenging regs*	49	3.8
1.06 Intellectual property protection*	62	3.8
1.07 Software piracy rate, % software installed	52	59
1.08 No. procedures to enforce a contract	146	50
1.09 No. days to enforce a contract	79	566
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	64	5.0
2.02 Venture capital availability*	71	2.6
2.03 Total tax rate, % profits	4	12.4
2.04 No. days to start a business	114	32
2.05 No. procedures to start a business	133	12
2.06 Intensity of local competition*	110	4.5
2.07 Tertiary education gross enrollment rate, %	93	22.3
2.08 Quality of management schools*	92	3.9
2.09 Gov't procurement of advanced tech*	120	2.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	4	18,388.0
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	109	5.4
3.04 Secure Internet servers/million pop.	41	179.0
3.05 Accessibility of digital content*	51	5.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	35	0.14
4.02 Fixed broadband Internet tariffs, PPP \$/month	30	21.37
4.03 Internet & telephony competition, 0-2 (best)	142	0.25
5th pillar: Skills		
5.01 Quality of educational system*	106	3.1
5.02 Quality of math & science education*	99	3.6
5.03 Secondary education gross enrollment rate, %	34	101.0
5.04 Adult literacy rate, %	69	93.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	15	156.9
6.02 Individuals using Internet, %	23	79.2
6.03 Households w/ personal computer, %	35	75.0
6.04 Households w/ Internet access, %	40	65.2
6.05 Fixed broadband Internet subs./100 pop.	101	1.4
6.06 Mobile broadband subscriptions/100 pop.	n/a	n/a
6.07 Use of virtual social networks*	35	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	57	4.9
7.02 Capacity for innovation*	136	2.6
7.03 PCT patents, applications/million pop.	89	0.3
7.04 Business-to-business Internet use*	61	4.9
7.05 Business-to-consumer Internet use*	69	4.5
7.06 Extent of staff training*	94	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	126	3.1
8.02 Government Online Service Index, 0-1 (best)	47	0.58
8.03 Gov't success in ICT promotion*	133	3.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	135	3.3
9.02 ICT PCT patents, applications/million pop.	68	0.2
9.03 Impact of ICTs on new organizational models*	133	3.1
9.04 Knowledge-intensive jobs, % workforce	82	18.7
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	78	4.0
10.02 Internet access in schools*	66	4.4
10.03 ICT use & gov't efficiency*	111	3.5
10.04 E-Participation Index, 0-1 (best)	71	0.18

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Kyrgyz Republic

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	118	3.2
Networked Readiness Index 2013 (out of 144).....	118.....	3.1
A. Environment subindex	122	3.4
1st pillar: Political and regulatory environment.....	131.....	2.9
2nd pillar: Business and innovation environment.....	99.....	3.9
B. Readiness subindex	106	4.0
3rd pillar: Infrastructure and digital content.....	96.....	3.4
4th pillar: Affordability.....	116.....	3.8
5th pillar: Skills.....	89.....	4.7
C. Usage subindex	126	2.8
6th pillar: Individual usage.....	102.....	2.6
7th pillar: Business usage.....	137.....	2.9
8th pillar: Government usage.....	132.....	3.0
D. Impact subindex	126	2.7
9th pillar: Economic impacts.....	131.....	2.5
10th pillar: Social impacts.....	116.....	2.9



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	132	2.6
1.02 Laws relating to ICTs*	137	2.5
1.03 Judicial independence*	140	2.2
1.04 Efficiency of legal system in settling disputes*	132	2.6
1.05 Efficiency of legal system in challenging regs*	133	2.5
1.06 Intellectual property protection*	140	2.3
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	78	3.8
1.09 No. days to enforce a contract	7	2.60
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	138	3.6
2.02 Venture capital availability*	133	1.9
2.03 Total tax rate, % profits	54	33.4
2.04 No. days to start a business	40	8
2.05 No. procedures to start a business	3	2
2.06 Intensity of local competition*	124	4.3
2.07 Tertiary education gross enrollment rate, %	64	41.3
2.08 Quality of management schools*	139	2.7
2.09 Gov't procurement of advanced tech*	144	2.3
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	72	2,748.7
3.02 Mobile network coverage, % pop.	87	97.5
3.03 Int'l Internet bandwidth, kb/s per user	120	3.9
3.04 Secure Internet servers/million pop.	104	4.1
3.05 Accessibility of digital content*	78	4.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	41	0.15
4.02 Fixed broadband Internet tariffs, PPP \$/month	138	114.69
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	123	2.7
5.02 Quality of math & science education*	122	3.0
5.03 Secondary education gross enrollment rate, %	78	88.2
5.04 Adult literacy rate, %	12	99.2

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	45	124.2
6.02 Individuals using Internet, %	101	21.7
6.03 Households w/ personal computer, %	124	6.9
6.04 Households w/ Internet access, %	118	6.3
6.05 Fixed broadband Internet subs./100 pop.	109	0.9
6.06 Mobile broadband subscriptions/100 pop.	134	0.0
6.07 Use of virtual social networks*	117	4.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	139	3.7
7.02 Capacity for innovation*	138	2.6
7.03 PCT patents, applications/million pop.	95	0.1
7.04 Business-to-business Internet use*	133	3.8
7.05 Business-to-consumer Internet use*	105	3.9
7.06 Extent of staff training*	131	3.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	147	2.4
8.02 Government Online Service Index, 0–1 (best)	88	0.42
8.03 Gov't success in ICT promotion*	143	3.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	138	3.3
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	134	3.0
9.04 Knowledge-intensive jobs, % workforce	84	17.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	140	3.0
10.02 Internet access in schools*	109	3.3
10.03 ICT use & gov't efficiency*	144	2.7
10.04 E-Participation Index, 0–1 (best)	52	0.29

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

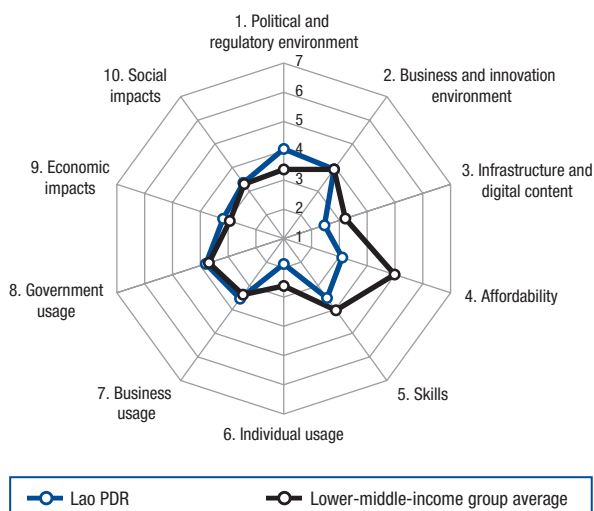
Lao PDR

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 109..3.3

Networked Readiness Index 2013 (out of 144)..... n/a.....n/a

A. Environment subindex	66	4.0
1st pillar: Political and regulatory environment.....	50.....	4.1
2nd pillar: Business and innovation environment.....	97.....	3.9
B. Readiness subindex	129	3.0
3rd pillar: Infrastructure and digital content.....	125.....	2.5
4th pillar: Affordability.....	130.....	3.1
5th pillar: Skills.....	118.....	3.5
C. Usage subindex	112	3.1
6th pillar: Individual usage.....	129.....	1.9
7th pillar: Business usage.....	74.....	3.5
8th pillar: Government usage.....	89.....	3.8
D. Impact subindex	88	3.3
9th pillar: Economic impacts.....	74.....	3.2
10th pillar: Social impacts.....	92.....	3.4



The Networked Readiness Index in detail

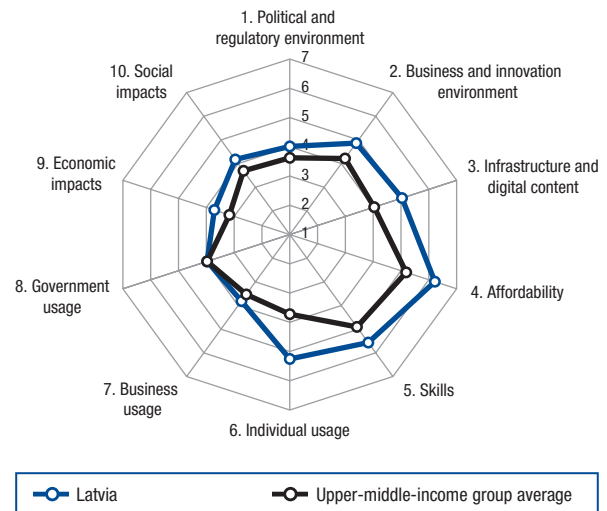
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	27	4.5
1.02 Laws relating to ICTs*	70	4.0
1.03 Judicial independence*	56	4.1
1.04 Efficiency of legal system in settling disputes*	35	4.5
1.05 Efficiency of legal system in challenging regs*	114	2.9
1.06 Intellectual property protection*	64	3.8
1.07 Software piracy rate, % software installed.....	n/a	n/a
1.08 No. procedures to enforce a contract.....	116	4.2
1.09 No. days to enforce a contract.....	46	4.43
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	112	4.2
2.02 Venture capital availability*	66	2.7
2.03 Total tax rate, % profits.....	28	26.8
2.04 No. days to start a business.....	141	9.2
2.05 No. procedures to start a business.....	58	6
2.06 Intensity of local competition*.....	56	5.2
2.07 Tertiary education gross enrollment rate, %.....	102	17.1
2.08 Quality of management schools*.....	82	4.1
2.09 Gov't procurement of advanced tech*.....	44	3.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita.....	122	242.8
3.02 Mobile network coverage, % pop.....	131	72.0
3.03 Int'l Internet bandwidth, kb/s per user.....	96	9.4
3.04 Secure Internet servers/million pop.....	133	0.9
3.05 Accessibility of digital content*.....	77	5.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.....	59	0.21
4.02 Fixed broadband Internet tariffs, PPP \$/month.....	142	209.78
4.03 Internet & telephony competition, 0-2 (best).....	130	0.91
5th pillar: Skills		
5.01 Quality of educational system*.....	57	4.0
5.02 Quality of math & science education*.....	90	3.8
5.03 Secondary education gross enrollment rate, %.....	125	46.5
5.04 Adult literacy rate, %.....	116	72.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.....	127	64.7
6.02 Individuals using Internet, %.....	123	10.7
6.03 Households w/ personal computer, %.....	117	8.7
6.04 Households w/ Internet access, %.....	121	5.1
6.05 Fixed broadband Internet subs./100 pop.....	125	0.1
6.06 Mobile broadband subscriptions/100 pop.....	117	2.1
6.07 Use of virtual social networks*.....	118	4.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*.....	90	4.5
7.02 Capacity for innovation*.....	46	3.8
7.03 PCT patents, applications/million pop.....	113	0.0
7.04 Business-to-business Internet use*.....	98	4.5
7.05 Business-to-consumer Internet use*.....	95	4.1
7.06 Extent of staff training*.....	55	4.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*.....	35	4.5
8.02 Government Online Service Index, 0-1 (best).....	127	0.22
8.03 Gov't success in ICT promotion*.....	49	4.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*.....	73	4.3
9.02 ICT PCT patents, applications/million pop.....	93	0.0
9.03 Impact of ICTs on new organizational models*.....	70	4.2
9.04 Knowledge-intensive jobs, % workforce.....	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*.....	73	4.2
10.02 Internet access in schools*.....	87	3.9
10.03 ICT use & gov't efficiency*.....	56	4.4
10.04 E-Participation Index, 0-1 (best).....	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Latvia

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	39	4.6
Networked Readiness Index 2013 (out of 144).....	41	4.4
A. Environment subindex	42	4.4
1st pillar: Political and regulatory environment.....	53	4.0
2nd pillar: Business and innovation environment.....	32	4.9
B. Readiness subindex	29	5.6
3rd pillar: Infrastructure and digital content.....	41	5.0
4th pillar: Affordability.....	26	6.2
5th pillar: Skills.....	35	5.6
C. Usage subindex	42	4.3
6th pillar: Individual usage.....	31	5.3
7th pillar: Business usage.....	48	3.8
8th pillar: Government usage.....	78	4.0
D. Impact subindex	43	3.9
9th pillar: Economic impacts.....	35	3.7
10th pillar: Social impacts.....	45	4.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	82	3.4
1.02 Laws relating to ICTs*	56	4.2
1.03 Judicial independence*	63	3.9
1.04 Efficiency of legal system in settling disputes*..	117	3.0
1.05 Efficiency of legal system in challenging regs*	97	3.1
1.06 Intellectual property protection*	51	4.0
1.07 Software piracy rate, % software installed.....	44	5.4
1.08 No. procedures to enforce a contract.....	8	2.7
1.09 No. days to enforce a contract.....	52	4.69
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	45	5.3
2.02 Venture capital availability*	58	2.8
2.03 Total tax rate, % profits.....	68	35.9
2.04 No. days to start a business.....	67	13
2.05 No. procedures to start a business.....	22	4
2.06 Intensity of local competition*.....	34	5.4
2.07 Tertiary education gross enrollment rate, %.....	28	67.3
2.08 Quality of management schools*.....	59	4.4
2.09 Gov't procurement of advanced tech*.....	101	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita.....	69	2,960.9
3.02 Mobile network coverage, % pop.....	79	98.8
3.03 Int'l Internet bandwidth, kb/s per user.....	38	59.0
3.04 Secure Internet servers/million pop.....	33	274.5
3.05 Accessibility of digital content*.....	31	5.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.....	64	0.22
4.02 Fixed broadband Internet tariffs, PPP \$/month ..	22	19.73
4.03 Internet & telephony competition, 0–2 (best).....	82	1.77
5th pillar: Skills		
5.01 Quality of educational system*.....	68	3.7
5.02 Quality of math & science education*.....	33	4.7
5.03 Secondary education gross enrollment rate, %..	40	98.7
5.04 Adult literacy rate, %.....	2	99.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.....	63	112.1
6.02 Individuals using Internet, %.....	30	74.0
6.03 Households w/ personal computer, %.....	39	70.0
6.04 Households w/ Internet access, %.....	35	69.0
6.05 Fixed broadband Internet subs./100 pop.....	29	23.4
6.06 Mobile broadband subscriptions/100 pop.....	22	58.2
6.07 Use of virtual social networks*.....	55	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*.....	68	4.7
7.02 Capacity for innovation*.....	66	3.5
7.03 PCT patents, applications/million pop.....	36	8.8
7.04 Business-to-business Internet use*.....	46	5.2
7.05 Business-to-consumer Internet use*.....	24	5.4
7.06 Extent of staff training*.....	47	4.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*.....	107	3.4
8.02 Government Online Service Index, 0–1 (best).....	45	0.59
8.03 Gov't success in ICT promotion*.....	99	3.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*.....	68	4.4
9.02 ICT PCT patents, applications/million pop.....	45	1.0
9.03 Impact of ICTs on new organizational models*.....	65	4.2
9.04 Knowledge-intensive jobs, % workforce.....	24	39.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*.....	54	4.5
10.02 Internet access in schools*.....	27	5.7
10.03 ICT use & gov't efficiency*.....	63	4.2
10.04 E-Participation Index, 0–1 (best).....	63	0.21

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Lebanon

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 97..3.6

Networked Readiness Index 2013 (out of 144)..... 94.....3.5

A. Environment subindex 103.....3.6

1st pillar: Political and regulatory environment 142.....2.6

2nd pillar: Business and innovation environment 48.....4.6

B. Readiness subindex 79.....4.6

3rd pillar: Infrastructure and digital content..... 77.....3.9

4th pillar: Affordability 99.....4.6

5th pillar: Skills 45.....5.4

C. Usage subindex 90.....3.4

6th pillar: Individual usage 58.....4.2

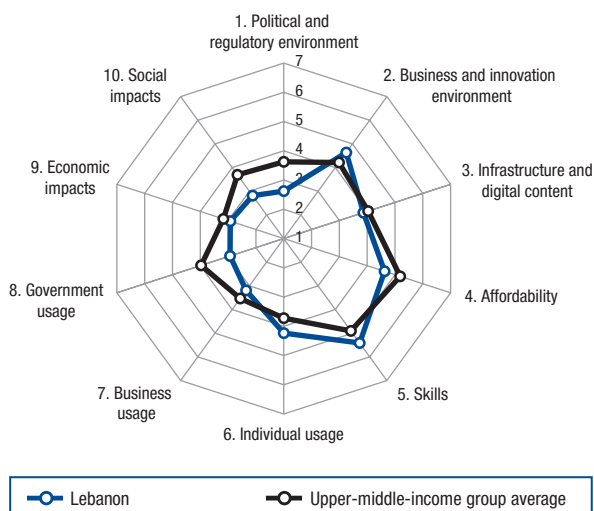
7th pillar: Business usage 116.....3.2

8th pillar: Government usage 136.....2.9

D. Impact subindex 114.....2.9

9th pillar: Economic impacts 101.....2.9

10th pillar: Social impacts 121.....2.8



The Networked Readiness Index in detail

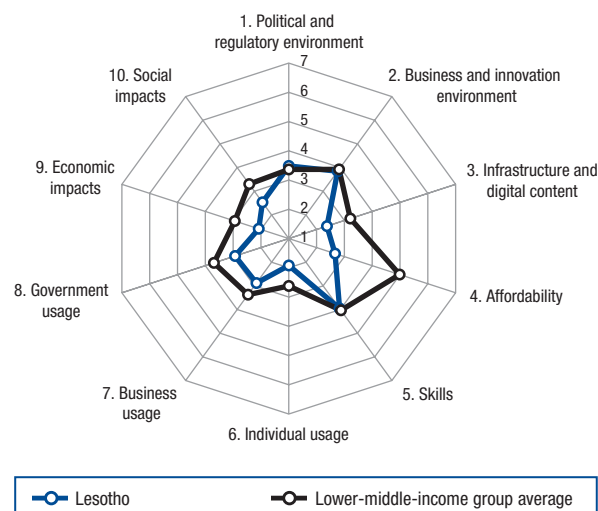
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	145	2.1
1.02 Laws relating to ICTs*	148	2.0
1.03 Judicial independence*	135	2.3
1.04 Efficiency of legal system in settling disputes*	130	2.7
1.05 Efficiency of legal system in challenging regs*	141	2.3
1.06 Intellectual property protection*	136	2.4
1.07 Software piracy rate, % software installed	71	71
1.08 No. procedures to enforce a contract	67	37
1.09 No. days to enforce a contract	112	721
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	86	4.6
2.02 Venture capital availability*	62	2.7
2.03 Total tax rate, % profits	45	30.2
2.04 No. days to start a business	51	9
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	25	5.5
2.07 Tertiary education gross enrollment rate, %	58	46.3
2.08 Quality of management schools*	13	5.4
2.09 Gov't procurement of advanced tech*	146	2.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	59	3,733.9
3.02 Mobile network coverage, % pop.	56	99.1
3.03 Int'l Internet bandwidth, kb/s per user	71	18.4
3.04 Secure Internet servers/million pop.	61	48.6
3.05 Accessibility of digital content*	115	4.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	97	0.34
4.02 Fixed broadband Internet tariffs, PPP \$/month	49	26.07
4.03 Internet & telephony competition, 0–2 (best)	138	0.55
5th pillar: Skills		
5.01 Quality of educational system*	13	5.2
5.02 Quality of math & science education*	4	5.8
5.03 Secondary education gross enrollment rate, % 100	74.0	74.0
5.04 Adult literacy rate, %	90	89.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	114	80.8
6.02 Individuals using Internet, %	46	61.3
6.03 Households w/ personal computer, %	27	79.7
6.04 Households w/ Internet access, %	42	64.0
6.05 Fixed broadband Internet subs./100 pop.	63	9.7
6.06 Mobile broadband subscriptions/100 pop.	56	28.3
6.07 Use of virtual social networks*	70	5.7
7th pillar: Business usage		
7.01 Firm-level technology absorption*	86	4.5
7.02 Capacity for innovation*	89	3.4
7.03 PCT patents, applications/million pop.	60	1.5
7.04 Business-to-business Internet use*	136	3.7
7.05 Business-to-consumer Internet use*	140	3.0
7.06 Extent of staff training*	99	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	148	2.2
8.02 Government Online Service Index, 0–1 (best)	74	0.48
8.03 Gov't success in ICT promotion*	148	2.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	134	3.4
9.02 ICT PCT patents, applications/million pop.	50	0.6
9.03 Impact of ICTs on new organizational models*	138	2.9
9.04 Knowledge-intensive jobs, % workforce	42	31.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	145	2.7
10.02 Internet access in schools*	107	3.4
10.03 ICT use & gov't efficiency*	148	2.3
10.04 E-Participation Index, 0–1 (best)	47	0.32

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Lesotho

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	133	2.9
Networked Readiness Index 2013 (out of 144).....	138.....	2.7
A. Environment subindex	99	3.7
1st pillar: Political and regulatory environment.....	90.....	3.5
2nd pillar: Business and innovation environment.....	108.....	3.8
B. Readiness subindex	130	3.0
3rd pillar: Infrastructure and digital content.....	131.....	2.4
4th pillar: Affordability.....	138.....	2.7
5th pillar: Skills.....	103.....	4.0
C. Usage subindex	138	2.6
6th pillar: Individual usage.....	127.....	1.9
7th pillar: Business usage.....	136.....	2.9
8th pillar: Government usage.....	135.....	2.9
D. Impact subindex	141	2.3
9th pillar: Economic impacts.....	147.....	2.1
10th pillar: Social impacts.....	135.....	2.5



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	53	3.9
1.02 Laws relating to ICTs*	133	2.7
1.03 Judicial independence*	80	3.5
1.04 Efficiency of legal system in settling disputes*	80	3.6
1.05 Efficiency of legal system in challenging regs*	75	3.4
1.06 Intellectual property protection*	92	3.3
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	111	4.1
1.09 No. days to enforce a contract	97	6.15
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	132	3.7
2.02 Venture capital availability*	81	2.5
2.03 Total tax rate, % profits	9	16.0
2.04 No. days to start a business	112	2.9
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	94	4.7
2.07 Tertiary education gross enrollment rate, %	117	10.8
2.08 Quality of management schools*	122	3.4
2.09 Gov't procurement of advanced tech*	131	2.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	134	100.5
3.02 Mobile network coverage, % pop.	125	81.0
3.03 Int'l Internet bandwidth, kb/s per user	105	6.3
3.04 Secure Internet servers/million pop.	141	0.5
3.05 Accessibility of digital content*	128	3.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	123	0.46
4.02 Fixed broadband Internet tariffs, PPP \$/month	139	122.24
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	73	3.6
5.02 Quality of math & science education*	105	3.4
5.03 Secondary education gross enrollment rate, %	118	51.7
5.04 Adult literacy rate, %	89	89.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	119	75.3
6.02 Individuals using Internet, %	133	4.6
6.03 Households w/ personal computer, %	126	5.9
6.04 Households w/ Internet access, %	128	3.7
6.05 Fixed broadband Internet subs./100 pop.	131	0.1
6.06 Mobile broadband subscriptions/100 pop.	95	7.5
6.07 Use of virtual social networks*	137	4.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	141	3.7
7.02 Capacity for innovation*	130	2.8
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	143	3.5
7.05 Business-to-consumer Internet use*	137	3.1
7.06 Extent of staff training*	110	3.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	132	2.9
8.02 Government Online Service Index, 0–1 (best)	116	0.30
8.03 Gov't success in ICT promotion*	142	3.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	142	3.0
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	145	2.7
9.04 Knowledge-intensive jobs, % workforce	113	6.0
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	136	3.1
10.02 Internet access in schools*	120	3.0
10.03 ICT use & gov't efficiency*	139	2.9
10.04 E-Participation Index, 0–1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

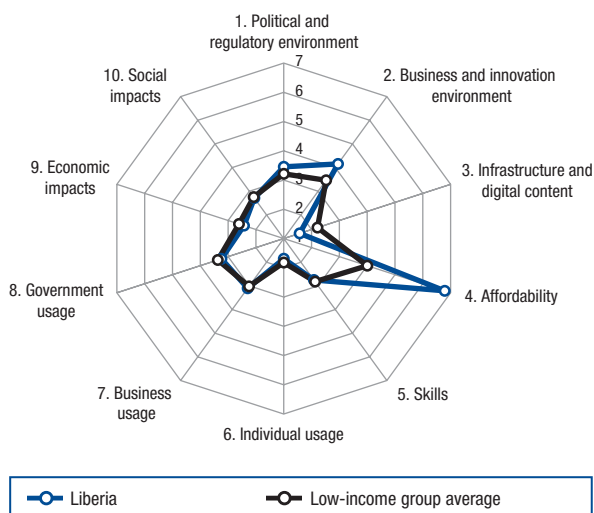
Liberia

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 121 .. 3.2

Networked Readiness Index 2013 (out of 144) 97 3.5

A. Environment subindex	82	3.8
1st pillar: Political and regulatory environment.....	92.....	3.5
2nd pillar: Business and innovation environment.....	75.....	4.2
B. Readiness subindex	114	3.7
3rd pillar: Infrastructure and digital content.....	145.....	1.6
4th pillar: Affordability.....	5.....	6.8
5th pillar: Skills.....	131.....	2.8
C. Usage subindex	132	2.7
6th pillar: Individual usage.....	136.....	1.7
7th pillar: Business usage.....	123.....	3.1
8th pillar: Government usage.....	124.....	3.2
D. Impact subindex	133	2.6
9th pillar: Economic impacts.....	134.....	2.4
10th pillar: Social impacts.....	128.....	2.7



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	71	3.6
1.02 Laws relating to ICTs*	105	3.3
1.03 Judicial independence*	83	3.4
1.04 Efficiency of legal system in settling disputes*	67	3.8
1.05 Efficiency of legal system in challenging regs*	57	3.7
1.06 Intellectual property protection*	68	3.7
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	98	4.0
1.09 No. days to enforce a contract	137	1,280
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	136	3.6
2.02 Venture capital availability*	63	2.7
2.03 Total tax rate, % profits	27	26.6
2.04 No. days to start a business	12	5
2.05 No. procedures to start a business	22	4
2.06 Intensity of local competition*	103	4.6
2.07 Tertiary education gross enrollment rate, %	97	19.4
2.08 Quality of management schools*	117	3.5
2.09 Gov't procurement of advanced tech*	40	3.8
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	136	87.7
3.02 Mobile network coverage, % pop.	144	16.4
3.03 Int'l Internet bandwidth, kb/s per user	135	2.0
3.04 Secure Internet servers/million pop.	131	1.2
3.05 Accessibility of digital content*	136	3.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	1	0.00
4.02 Fixed broadband Internet tariffs, PPP \$/month	n/a	n/a
4.03 Internet & telephony competition, 0-2 (best)	87	1.75
5th pillar: Skills		
5.01 Quality of educational system*	96	3.4
5.02 Quality of math & science education*	125	2.9
5.03 Secondary education gross enrollment rate, %	127	45.2
5.04 Adult literacy rate, %	129	60.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	134	57.1
6.02 Individuals using Internet, %	137	3.8
6.03 Households w/ personal computer, %	145	2.0
6.04 Households w/ Internet access, %	143	1.5
6.05 Fixed broadband Internet subs./100 pop.	146	0.0
6.06 Mobile broadband subscriptions/100 pop.	135	0.0
6.07 Use of virtual social networks*	127	4.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	136	3.8
7.02 Capacity for innovation*	68	3.5
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	132	3.9
7.05 Business-to-consumer Internet use*	132	3.3
7.06 Extent of staff training*	101	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	83	3.8
8.02 Government Online Service Index, 0-1 (best)	131	0.19
8.03 Gov't success in ICT promotion*	108	3.8
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	133	3.4
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	122	3.4
9.04 Knowledge-intensive jobs, % workforce	105	9.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	119	3.5
10.02 Internet access in schools*	129	2.6
10.03 ICT use & gov't efficiency*	106	3.6
10.04 E-Participation Index, 0-1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Libya

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 138..2.7

Networked Readiness Index 2013 (out of 144)..... 132.....2.8

A. Environment subindex..... 136.....3.2

1st pillar: Political and regulatory environment..... 141.....2.6

2nd pillar: Business and innovation environment..... 116.....3.7

B. Readiness subindex..... 122.....3.2

3rd pillar: Infrastructure and digital content..... 84.....3.6

4th pillar: Affordability..... 145.....1.7

5th pillar: Skills..... 96.....4.4

C. Usage subindex..... 139.....2.6

6th pillar: Individual usage..... 92.....2.9

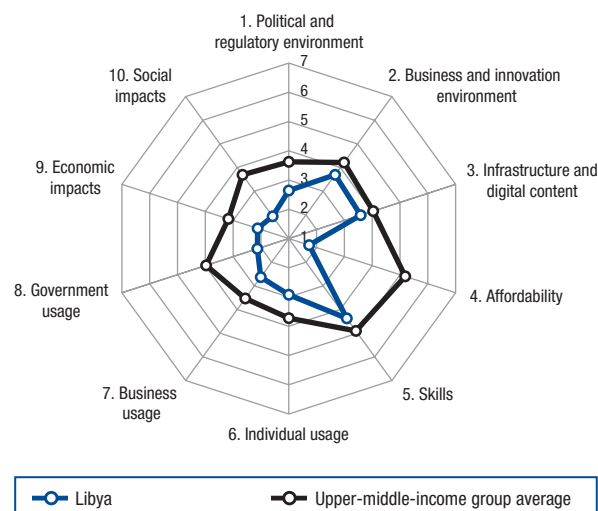
7th pillar: Business usage..... 144.....2.6

8th pillar: Government usage..... 148.....2.1

D. Impact subindex..... 148.....2.0

9th pillar: Economic impacts..... 145.....2.1

10th pillar: Social impacts..... 148.....1.9



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	126	2.7
1.02 Laws relating to ICTs*	144	2.2
1.03 Judicial independence*	97	3.2
1.04 Efficiency of legal system in settling disputes*	124	2.9
1.05 Efficiency of legal system in challenging regs*	115	2.9
1.06 Intellectual property protection*	146	2.2
1.07 Software piracy rate, % software installed	104	90
1.08 No. procedures to enforce a contract	122	43
1.09 No. days to enforce a contract	111	690
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	141	3.4
2.02 Venture capital availability*	128	2.0
2.03 Total tax rate, % profits	47	31.6
2.04 No. days to start a business	120	35
2.05 No. procedures to start a business	119	10
2.06 Intensity of local competition*	139	3.7
2.07 Tertiary education gross enrollment rate, %	36	60.9
2.08 Quality of management schools*	146	2.2
2.09 Gov't procurement of advanced tech*	143	2.3
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	49	4,524.5
3.02 Mobile network coverage, % pop.	81	98.0
3.03 Int'l Internet bandwidth, kb/s per user	88	14.0
3.04 Secure Internet servers/million pop.	121	1.8
3.05 Accessibility of digital content*	139	3.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	n/a	n/a
4.02 Fixed broadband Internet tariffs, PPP \$/month	123	66.89
4.03 Internet & telephony competition, 0–2 (best)	144	0.00
5th pillar: Skills		
5.01 Quality of educational system*	148	1.9
5.02 Quality of math & science education*	130	2.7
5.03 Secondary education gross enrollment rate, %	24	104.3
5.04 Adult literacy rate, %	92	89.5

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	16	155.8
6.02 Individuals using Internet, %	115	14.0
6.03 Households w/ personal computer, %	98	17.6
6.04 Households w/ Internet access, %	98	13.7
6.05 Fixed broadband Internet subs./100 pop.	106	1.1
6.06 Mobile broadband subscriptions/100 pop.	n/a	n/a
6.07 Use of virtual social networks*	115	5.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	142	3.6
7.02 Capacity for innovation*	143	2.5
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	142	3.5
7.05 Business-to-consumer Internet use*	144	2.7
7.06 Extent of staff training*	143	2.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	145	2.5
8.02 Government Online Service Index, 0–1 (best)	144	0.00
8.03 Gov't success in ICT promotion*	147	2.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	148	2.5
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	143	2.9
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	147	2.6
10.02 Internet access in schools*	145	1.8
10.03 ICT use & gov't efficiency*	147	2.4
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Lithuania

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 31 .. 4.8

Networked Readiness Index 2013 (out of 144) 32 4.7

A. Environment subindex 43 4.4

1st pillar: Political and regulatory environment 52 4.0

2nd pillar: Business and innovation environment 37 4.8

B. Readiness subindex 24 5.7

3rd pillar: Infrastructure and digital content 45 4.9

4th pillar: Affordability 12 6.4

5th pillar: Skills 23 5.8

C. Usage subindex 34 4.5

6th pillar: Individual usage 41 4.8

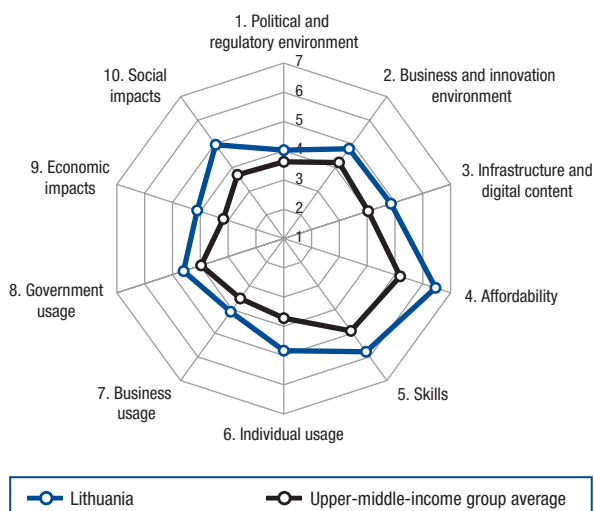
7th pillar: Business usage 33 4.1

8th pillar: Government usage 37 4.6

D. Impact subindex 27 4.5

9th pillar: Economic impacts 28 4.1

10th pillar: Social impacts 27 5.0



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	87	3.3
1.02 Laws relating to ICTs*	41	4.7
1.03 Judicial independence*	71	3.7
1.04 Efficiency of legal system in settling disputes*	96	3.4
1.05 Efficiency of legal system in challenging regs*	90	3.2
1.06 Intellectual property protection*	66	3.7
1.07 Software piracy rate, % software installed	44	5.4
1.08 No. procedures to enforce a contract	27	3.2
1.09 No. days to enforce a contract	12	3.0
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	38	5.7
2.02 Venture capital availability*	84	2.5
2.03 Total tax rate, % profits	96	43.1
2.04 No. days to start a business	32	7
2.05 No. procedures to start a business	22	4
2.06 Intensity of local competition*	36	5.4
2.07 Tertiary education gross enrollment rate, %	14	76.6
2.08 Quality of management schools*	60	4.4
2.09 Gov't procurement of advanced tech*	109	3.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	89	1,401.2
3.02 Mobile network coverage, % pop.	81	98.0
3.03 Int'l Internet bandwidth, kb/s per user	29	76.2
3.04 Secure Internet servers/million pop.	34	273.0
3.05 Accessibility of digital content*	23	6.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	57	0.20
4.02 Fixed broadband Internet tariffs, PPP \$/month	20	19.13
4.03 Internet & telephony competition, 0-2 (best)	63	1.92
5th pillar: Skills		
5.01 Quality of educational system*	59	4.0
5.02 Quality of math & science education*	16	5.2
5.03 Secondary education gross enrollment rate, %	18	106.9
5.04 Adult literacy rate, %	7	99.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	9	165.1
6.02 Individuals using Internet, %	38	68.0
6.03 Households w/ personal computer, %	47	64.0
6.04 Households w/ Internet access, %	45	62.0
6.05 Fixed broadband Internet subs./100 pop.	35	21.1
6.06 Mobile broadband subscriptions/100 pop.	73	18.8
6.07 Use of virtual social networks*	20	6.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	42	5.2
7.02 Capacity for innovation*	40	4.0
7.03 PCT patents, applications/million pop.	45	5.8
7.04 Business-to-business Internet use*	4	6.1
7.05 Business-to-consumer Internet use*	10	5.8
7.06 Extent of staff training*	59	4.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	70	3.9
8.02 Government Online Service Index, 0-1 (best)	29	0.70
8.03 Gov't success in ICT promotion*	44	4.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	32	5.0
9.02 ICT PCT patents, applications/million pop.	36	1.5
9.03 Impact of ICTs on new organizational models*	25	4.9
9.04 Knowledge-intensive jobs, % workforce	18	42.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	37	5.0
10.02 Internet access in schools*	23	5.8
10.03 ICT use & gov't efficiency*	35	4.8
10.04 E-Participation Index, 0-1 (best)	30	0.53

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Luxembourg

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 11 ..5.5

Networked Readiness Index 2013 (out of 144)..... 16.....5.4

A. Environment subindex..... 11.....5.3

1st pillar: Political and regulatory environment..... 4.....5.7

2nd pillar: Business and innovation environment..... 29.....4.9

B. Readiness subindex..... 18.....5.9

3rd pillar: Infrastructure and digital content..... 17.....6.3

4th pillar: Affordability..... 56.....5.7

5th pillar: Skills..... 27.....5.7

C. Usage subindex..... 8.....5.7

6th pillar: Individual usage..... 5.....6.4

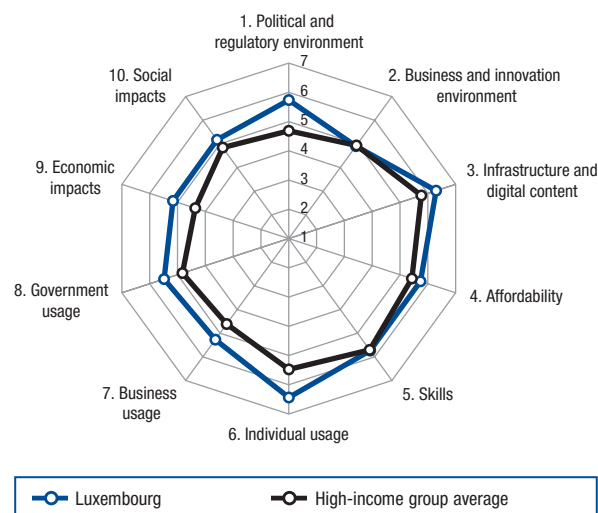
7th pillar: Business usage..... 13.....5.3

8th pillar: Government usage..... 10.....5.5

D. Impact subindex..... 15.....5.2

9th pillar: Economic impacts..... 10.....5.2

10th pillar: Social impacts..... 19.....5.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	7	5.4
1.02 Laws relating to ICTs*	1	5.9
1.03 Judicial independence*	18	5.7
1.04 Efficiency of legal system in settling disputes*	15	5.2
1.05 Efficiency of legal system in challenging regs*	9	5.2
1.06 Intellectual property protection*	6	5.9
1.07 Software piracy rate, % software installed	2	20
1.08 No. procedures to enforce a contract	5	26
1.09 No. days to enforce a contract	15	321
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	10	6.3
2.02 Venture capital availability*	13	4.0
2.03 Total tax rate, % profits	13	20.7
2.04 No. days to start a business	89	19
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	59	5.1
2.07 Tertiary education gross enrollment rate, %	98	18.2
2.08 Quality of management schools*	55	4.5
2.09 Gov't procurement of advanced tech*	11	4.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	45	5,159.6
3.02 Mobile network coverage, % pop.	33	99.9
3.03 Int'l Internet bandwidth, kb/s per user	1	4,088.5
3.04 Secure Internet servers/million pop.	6	1,983.3
3.05 Accessibility of digital content*	8	6.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	74	0.25
4.02 Fixed broadband Internet tariffs, PPP \$/month	72	31.70
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	34	4.4
5.02 Quality of math & science education*	44	4.5
5.03 Secondary education gross enrollment rate, %	33	101.0
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	25	145.4
6.02 Individuals using Internet, %	6	92.0
6.03 Households w/ personal computer, %	5	92.0
6.04 Households w/ Internet access, %	4	93.0
6.05 Fixed broadband Internet subs./100 pop.	12	32.4
6.06 Mobile broadband subscriptions/100 pop.	12	80.6
6.07 Use of virtual social networks*	30	6.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	11	5.9
7.02 Capacity for innovation*	11	5.1
7.03 PCT patents, applications/million pop.	14	112.6
7.04 Business-to-business Internet use*	15	5.9
7.05 Business-to-consumer Internet use*	26	5.3
7.06 Extent of staff training*	3	5.4
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	7	5.5
8.02 Government Online Service Index, 0–1 (best)	29	0.70
8.03 Gov't success in ICT promotion*	6	5.8
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	5	5.6
9.02 ICT PCT patents, applications/million pop.	19	23.0
9.03 Impact of ICTs on new organizational models*	14	5.1
9.04 Knowledge-intensive jobs, % workforce	1	57.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	4	5.9
10.02 Internet access in schools*	9	6.2
10.03 ICT use & gov't efficiency*	16	5.3
10.04 E-Participation Index, 0–1 (best)	38	0.39

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Macedonia, FYR

Rank Value
(out of 148) (1-7)

Networked Readiness Index 2014.....57..4.2

Networked Readiness Index 2013 (out of 144).....67.....3.9

A. Environment subindex.....53.....4.2

1st pillar: Political and regulatory environment.....67.....3.7

2nd pillar: Business and innovation environment.....46.....4.7

B. Readiness subindex.....71.....4.9

3rd pillar: Infrastructure and digital content.....61.....4.4

4th pillar: Affordability.....88.....5.0

5th pillar: Skills.....68.....5.1

C. Usage subindex.....56.....4.0

6th pillar: Individual usage.....53.....4.4

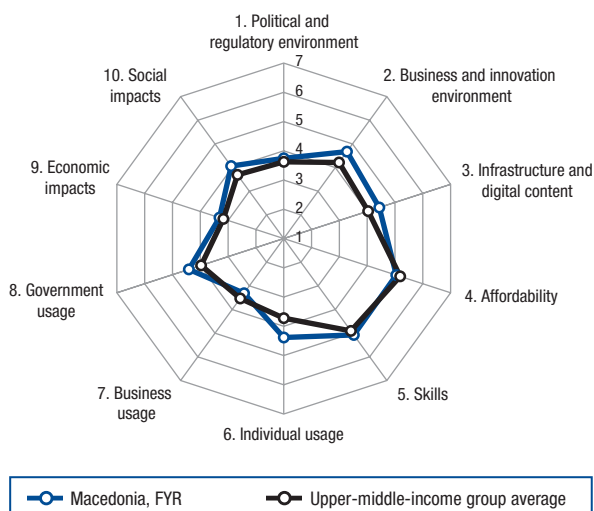
7th pillar: Business usage.....101.....3.3

8th pillar: Government usage.....47.....4.4

D. Impact subindex.....55.....3.7

9th pillar: Economic impacts.....65.....3.3

10th pillar: Social impacts.....52.....4.1



The Networked Readiness Index in detail

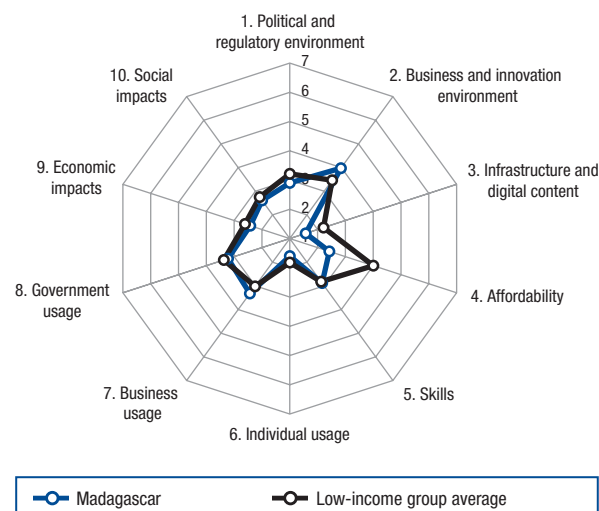
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	52	3.9
1.02 Laws relating to ICTs*	48	4.4
1.03 Judicial independence*	98	3.2
1.04 Efficiency of legal system in settling disputes*	87	3.5
1.05 Efficiency of legal system in challenging regs*	112	2.9
1.06 Intellectual property protection*	54	3.9
1.07 Software piracy rate, % software installed	62	66
1.08 No. procedures to enforce a contract	67	37
1.09 No. days to enforce a contract	93	604
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	80	4.7
2.02 Venture capital availability*	90	2.5
2.03 Total tax rate, % profits	1	8.2
2.04 No. days to start a business	2	2
2.05 No. procedures to start a business	3	2
2.06 Intensity of local competition*	85	4.8
2.07 Tertiary education gross enrollment rate, %	65	40.8
2.08 Quality of management schools*	99	3.8
2.09 Gov't procurement of advanced tech*	81	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	63	3,268.2
3.02 Mobile network coverage, % pop.	33	99.9
3.03 Int'l Internet bandwidth, kb/s per user	58	30.8
3.04 Secure Internet servers/million pop.	63	39.4
3.05 Accessibility of digital content*	53	5.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	60	0.21
4.02 Fixed broadband Internet tariffs, PPP \$/month	74	32.42
4.03 Internet & telephony competition, 0-2 (best)	130	0.91
5th pillar: Skills		
5.01 Quality of educational system*	70	3.7
5.02 Quality of math & science education*	51	4.4
5.03 Secondary education gross enrollment rate, %	91	81.9
5.04 Adult literacy rate, %	53	97.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	82	106.2
6.02 Individuals using Internet, %	43	63.1
6.03 Households w/ personal computer, %	55	58.4
6.04 Households w/ Internet access, %	49	56.8
6.05 Fixed broadband Internet subs./100 pop.	48	13.7
6.06 Mobile broadband subscriptions/100 pop.	63	25.1
6.07 Use of virtual social networks*	23	6.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	121	4.0
7.02 Capacity for innovation*	94	3.2
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	56	5.0
7.05 Business-to-consumer Internet use*	85	4.3
7.06 Extent of staff training*	104	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	29	4.6
8.02 Government Online Service Index, 0-1 (best)	83	0.45
8.03 Gov't success in ICT promotion*	32	4.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	81	4.2
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	90	3.9
9.04 Knowledge-intensive jobs, % workforce	48	29.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	49	4.6
10.02 Internet access in schools*	40	5.1
10.03 ICT use & gov't efficiency*	36	4.8
10.04 E-Participation Index, 0-1 (best)	82	0.13

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Madagascar

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	139	2.7
Networked Readiness Index 2013 (out of 144).....	137.....	2.7
A. Environment subindex	120	3.4
1st pillar: Political and regulatory environment.....	129.....	2.9
2nd pillar: Business and innovation environment.....	94.....	4.0
B. Readiness subindex	144	2.3
3rd pillar: Infrastructure and digital content.....	144.....	1.6
4th pillar: Affordability.....	141.....	2.4
5th pillar: Skills.....	126.....	2.9
C. Usage subindex	129	2.7
6th pillar: Individual usage.....	141.....	1.6
7th pillar: Business usage.....	100.....	3.3
8th pillar: Government usage.....	126.....	3.2
D. Impact subindex	134	2.5
9th pillar: Economic impacts.....	135.....	2.4
10th pillar: Social impacts.....	132.....	2.6



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	130	2.6
1.02 Laws relating to ICTs*	126	2.9
1.03 Judicial independence*	141	2.1
1.04 Efficiency of legal system in settling disputes*	121	2.9
1.05 Efficiency of legal system in challenging regs*	121	2.8
1.06 Intellectual property protection*	108	2.9
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	78	3.8
1.09 No. days to enforce a contract	124	871
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	109	4.3
2.02 Venture capital availability*	89	2.5
2.03 Total tax rate, % profits	67	35.8
2.04 No. days to start a business	40	8
2.05 No. procedures to start a business	3	2
2.06 Intensity of local competition*	82	4.8
2.07 Tertiary education gross enrollment rate, %	140	4.1
2.08 Quality of management schools*	87	4.0
2.09 Gov't procurement of advanced tech*	86	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	140	65.9
3.02 Mobile network coverage, % pop.	142	23.0
3.03 Int'l Internet bandwidth, kb/s per user	143	0.5
3.04 Secure Internet servers/million pop.	140	0.5
3.05 Accessibility of digital content*	127	3.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	130	0.53
4.02 Fixed broadband Internet tariffs, PPP \$/month	140	126.42
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	117	3.0
5.02 Quality of math & science education*	82	4.0
5.03 Secondary education gross enrollment rate, %	132	38.0
5.04 Adult literacy rate, %	126	64.5

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	141	39.4
6.02 Individuals using Internet, %	142	2.1
6.03 Households w/ personal computer, %	138	2.9
6.04 Households w/ Internet access, %	136	2.7
6.05 Fixed broadband Internet subs./100 pop.	135	0.0
6.06 Mobile broadband subscriptions/100 pop.	130	0.3
6.07 Use of virtual social networks*	102	5.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	106	4.3
7.02 Capacity for innovation*	73	3.5
7.03 PCT patents, applications/million pop.	108	0.0
7.04 Business-to-business Internet use*	111	4.4
7.05 Business-to-consumer Internet use*	101	4.0
7.06 Extent of staff training*	102	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	129	3.0
8.02 Government Online Service Index, 0–1 (best)	110	0.32
8.03 Gov't success in ICT promotion*	113	3.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	114	3.8
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	105	3.7
9.04 Knowledge-intensive jobs, % workforce	116	2.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	116	3.5
10.02 Internet access in schools*	132	2.4
10.03 ICT use & gov't efficiency*	117	3.4
10.04 E-Participation Index, 0–1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Malawi

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 132..2.9

Networked Readiness Index 2013 (out of 144)..... 129.....2.8

A. Environment subindex..... 107.....3.6

1st pillar: Political and regulatory environment..... 69.....3.7

2nd pillar: Business and innovation environment..... 130.....3.4

B. Readiness subindex 136.....2.7

3rd pillar: Infrastructure and digital content..... 126.....2.4

4th pillar: Affordability 139.....2.6

5th pillar: Skills 125.....3.0

C. Usage subindex 136.....2.6

6th pillar: Individual usage 142.....1.5

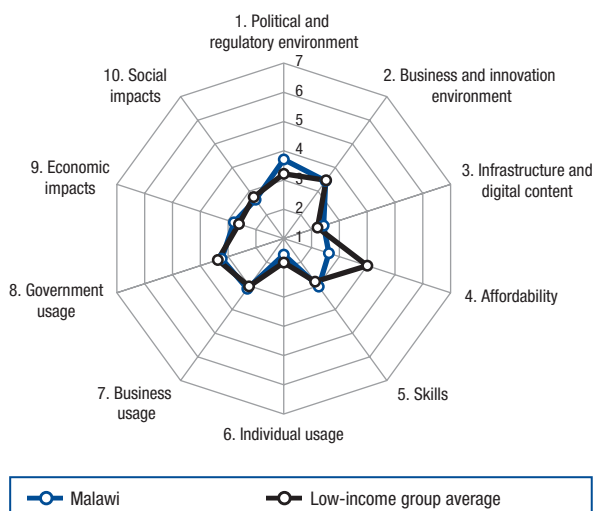
7th pillar: Business usage 121.....3.1

8th pillar: Government usage 125.....3.2

D. Impact subindex 125.....2.7

9th pillar: Economic impacts 110.....2.8

10th pillar: Social impacts 131.....2.6



The Networked Readiness Index in detail

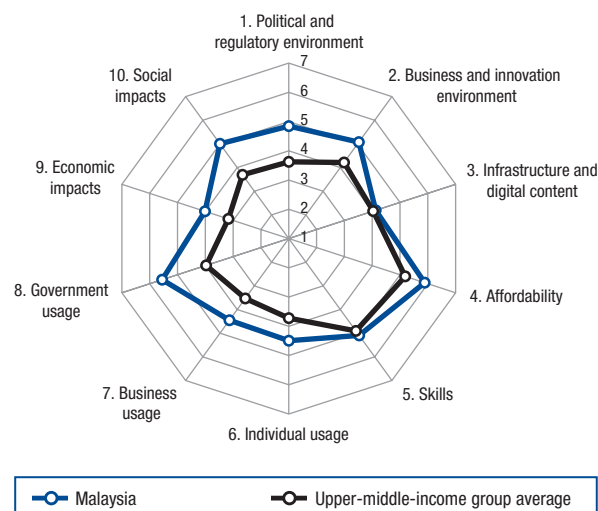
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	84	3.4
1.02 Laws relating to ICTs*	110	3.2
1.03 Judicial independence*	59	4.0
1.04 Efficiency of legal system in settling disputes*	56	3.9
1.05 Efficiency of legal system in challenging regs*	44	3.9
1.06 Intellectual property protection*	89	3.4
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	116	4.2
1.09 No. days to enforce a contract	43	4.32
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	127	3.9
2.02 Venture capital availability*	96	2.4
2.03 Total tax rate, % profits	61	34.9
2.04 No. days to start a business	129	4.0
2.05 No. procedures to start a business	119	1.0
2.06 Intensity of local competition*	125	4.3
2.07 Tertiary education gross enrollment rate, %	147	0.8
2.08 Quality of management schools*	124	3.3
2.09 Gov't procurement of advanced tech*	83	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	131	119.1
3.02 Mobile network coverage, % pop.	119	85.0
3.03 Int'l Internet bandwidth, kb/s per user	129	2.8
3.04 Secure Internet servers/million pop.	134	0.9
3.05 Accessibility of digital content*	119	4.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	112	0.39
4.02 Fixed broadband Internet tariffs, PPP \$/month	130	84.90
4.03 Internet & telephony competition, 0-2 (best)	122	1.13
5th pillar: Skills		
5.01 Quality of educational system*	92	3.4
5.02 Quality of math & science education*	113	3.2
5.03 Secondary education gross enrollment rate, %	138	34.2
5.04 Adult literacy rate, %	111	74.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	145	29.2
6.02 Individuals using Internet, %	134	4.4
6.03 Households w/ personal computer, %	132	4.0
6.04 Households w/ Internet access, %	120	5.5
6.05 Fixed broadband Internet subs./100 pop.	142	0.0
6.06 Mobile broadband subscriptions/100 pop.	112	3.5
6.07 Use of virtual social networks*	129	4.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	133	3.8
7.02 Capacity for innovation*	116	3.0
7.03 PCT patents, applications/million pop.	120	0.0
7.04 Business-to-business Internet use*	110	4.4
7.05 Business-to-consumer Internet use*	126	3.4
7.06 Extent of staff training*	84	3.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	101	3.5
8.02 Government Online Service Index, 0-1 (best)	127	0.22
8.03 Gov't success in ICT promotion*	104	3.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	115	3.7
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	106	3.6
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	114	3.5
10.02 Internet access in schools*	123	2.8
10.03 ICT use & gov't efficiency*	122	3.3
10.04 E-Participation Index, 0-1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Malaysia

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	30	4.8
Networked Readiness Index 2013 (out of 144).....	30	4.8
A. Environment subindex	24	5.0
1st pillar: Political and regulatory environment.....	25	4.8
2nd pillar: Business and innovation environment.....	24	5.1
B. Readiness subindex	59	5.0
3rd pillar: Infrastructure and digital content.....	71	4.1
4th pillar: Affordability.....	48	5.9
5th pillar: Skills.....	67	5.1
C. Usage subindex	30	4.8
6th pillar: Individual usage.....	49	4.5
7th pillar: Business usage.....	27	4.5
8th pillar: Government usage.....	9	5.6
D. Impact subindex	28	4.5
9th pillar: Economic impacts.....	30	4.0
10th pillar: Social impacts.....	25	5.0



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	16	5.0
1.02 Laws relating to ICTs*	13	5.3
1.03 Judicial independence*	44	4.5
1.04 Efficiency of legal system in settling disputes*	18	5.1
1.05 Efficiency of legal system in challenging regs*	17	4.7
1.06 Intellectual property protection*	30	4.8
1.07 Software piracy rate, % software installed	47	5.5
1.08 No. procedures to enforce a contract	15	2.9
1.09 No. days to enforce a contract	39	4.25
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	37	5.7
2.02 Venture capital availability*	7	4.2
2.03 Total tax rate, % profits	69	36.3
2.04 No. days to start a business	22	6
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	32	5.4
2.07 Tertiary education gross enrollment rate, %	73	37.1
2.08 Quality of management schools*	35	4.9
2.09 Gov't procurement of advanced tech*	4	4.8
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	50	4,523.5
3.02 Mobile network coverage, % pop.	93	96.8
3.03 Int'l Internet bandwidth, kb/s per user	79	16.4
3.04 Secure Internet servers/million pop.	57	65.7
3.05 Accessibility of digital content*	44	5.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	48	0.17
4.02 Fixed broadband Internet tariffs, PPP \$/month	82	34.65
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	19	5.0
5.02 Quality of math & science education*	27	4.9
5.03 Secondary education gross enrollment rate, %	108	66.9
5.04 Adult literacy rate, %	75	93.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	26	141.3
6.02 Individuals using Internet, %	39	65.8
6.03 Households w/ personal computer, %	45	66.9
6.04 Households w/ Internet access, %	41	64.7
6.05 Fixed broadband Internet subs./100 pop.	68	8.4
6.06 Mobile broadband subscriptions/100 pop.	82	13.4
6.07 Use of virtual social networks*	42	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	33	5.5
7.02 Capacity for innovation*	15	4.9
7.03 PCT patents, applications/million pop.	31	12.5
7.04 Business-to-business Internet use*	28	5.6
7.05 Business-to-consumer Internet use*	22	5.4
7.06 Extent of staff training*	11	5.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	9	5.4
8.02 Government Online Service Index, 0–1 (best)	20	0.79
8.03 Gov't success in ICT promotion*	9	5.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	13	5.4
9.02 ICT PCT patents, applications/million pop.	27	6.2
9.03 Impact of ICTs on new organizational models*	12	5.3
9.04 Knowledge-intensive jobs, % workforce	52	27.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	20	5.3
10.02 Internet access in schools*	36	5.2
10.03 ICT use & gov't efficiency*	9	5.5
10.04 E-Participation Index, 0–1 (best)	31	0.50

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

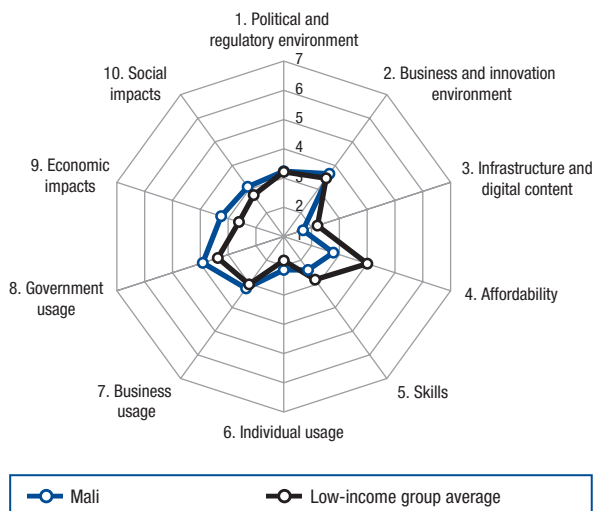
Mali

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 127..3.0

Networked Readiness Index 2013 (out of 144)..... 122.....3.0

A. Environment subindex	117	3.4
1st pillar: Political and regulatory environment.....	111.....	3.2
2nd pillar: Business and innovation environment.....	119.....	3.7
B. Readiness subindex	143	2.3
3rd pillar: Infrastructure and digital content.....	140.....	1.7
4th pillar: Affordability.....	135.....	2.8
5th pillar: Skills.....	139.....	2.4
C. Usage subindex	111	3.1
6th pillar: Individual usage.....	118.....	2.1
7th pillar: Business usage.....	114.....	3.2
8th pillar: Government usage.....	82.....	3.9
D. Impact subindex	95	3.2
9th pillar: Economic impacts.....	69.....	3.3
10th pillar: Social impacts.....	109.....	3.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	108	3.0
1.02 Laws relating to ICTs*	112	3.2
1.03 Judicial independence*	122	2.6
1.04 Efficiency of legal system in settling disputes*	111	3.1
1.05 Efficiency of legal system in challenging regs*	83	3.3
1.06 Intellectual property protection*	127	2.7
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	55	3.6
1.09 No. days to enforce a contract	98	6.20
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	84	4.6
2.02 Venture capital availability*	99	2.3
2.03 Total tax rate, % profits	116	49.5
2.04 No. days to start a business	58	11
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	111	4.5
2.07 Tertiary education gross enrollment rate, %	129	7.5
2.08 Quality of management schools*	119	3.4
2.09 Gov't procurement of advanced tech*	59	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	143	38.4
3.02 Mobile network coverage, % pop.	143	20.0
3.03 Int'l Internet bandwidth, kb/s per user	110	5.3
3.04 Secure Internet servers/million pop.	132	1.0
3.05 Accessibility of digital content*	132	3.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	108	0.36
4.02 Fixed broadband Internet tariffs, PPP \$/month	128	79.59
4.03 Internet & telephony competition, 0-2 (best)	118	1.20
5th pillar: Skills		
5.01 Quality of educational system*	122	2.9
5.02 Quality of math & science education*	126	2.9
5.03 Secondary education gross enrollment rate, %	120	50.6
5.04 Adult literacy rate, %	146	33.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	92	98.4
6.02 Individuals using Internet, %	140	2.2
6.03 Households w/ personal computer, %	121	7.7
6.04 Households w/ Internet access, %	137	2.5
6.05 Fixed broadband Internet subs./100 pop.	138	0.0
6.06 Mobile broadband subscriptions/100 pop.	124	0.7
6.07 Use of virtual social networks*	130	4.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	84	4.5
7.02 Capacity for innovation*	104	3.2
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	85	4.7
7.05 Business-to-consumer Internet use*	117	3.6
7.06 Extent of staff training*	135	3.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	64	4.1
8.02 Government Online Service Index, 0-1 (best)	110	0.32
8.03 Gov't success in ICT promotion*	43	4.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	63	4.5
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	69	4.2
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	71	4.2
10.02 Internet access in schools*	117	3.1
10.03 ICT use & gov't efficiency*	72	4.1
10.04 E-Participation Index, 0-1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

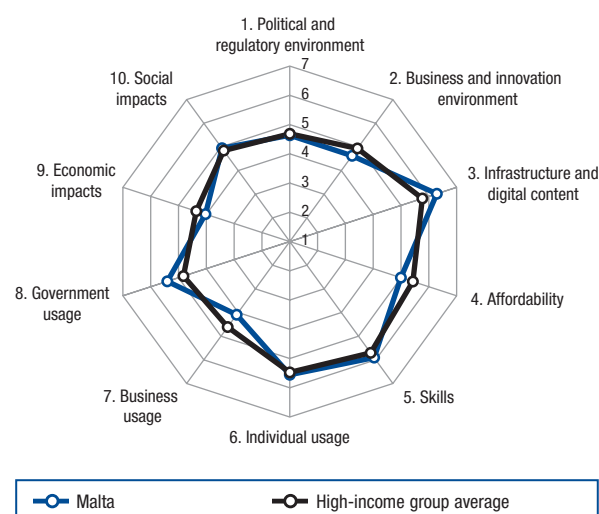
Malta

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....28..5.0

Networked Readiness Index 2013 (out of 144).....28.....4.9

A. Environment subindex.....36.....4.6
1st pillar: Political and regulatory environment.....30.....4.6
2nd pillar: Business and innovation environment.....49.....4.6
B. Readiness subindex.....23.....5.7
3rd pillar: Infrastructure and digital content.....18.....6.3
4th pillar: Affordability.....90.....5.0
5th pillar: Skills.....16.....5.9
C. Usage subindex.....28.....5.0
6th pillar: Individual usage.....24.....5.5
7th pillar: Business usage.....32.....4.1
8th pillar: Government usage.....13.....5.4
D. Impact subindex.....30.....4.5
9th pillar: Economic impacts.....29.....4.0
10th pillar: Social impacts.....28.....4.9



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	18	4.9
1.02 Laws relating to ICTs*	20	5.1
1.03 Judicial independence*	39	4.8
1.04 Efficiency of legal system in settling disputes*	46	4.2
1.05 Efficiency of legal system in challenging regs*	55	3.7
1.06 Intellectual property protection*	28	4.9
1.07 Software piracy rate, % software installed	30	4.3
1.08 No. procedures to enforce a contract	98	4.0
1.09 No. days to enforce a contract	58	5.05
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	22	6.1
2.02 Venture capital availability*	37	3.2
2.03 Total tax rate, % profits	90	41.0
2.04 No. days to start a business	128	4.0
2.05 No. procedures to start a business	129	1.1
2.06 Intensity of local competition*	4	6.0
2.07 Tertiary education gross enrollment rate, %	68	39.4
2.08 Quality of management schools*	21	5.2
2.09 Gov't procurement of advanced tech*	35	3.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	41	5,265.5
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	3	625.8
3.04 Secure Internet servers/million pop.	9	1,627.8
3.05 Accessibility of digital content*	11	6.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	132	0.54
4.02 Fixed broadband Internet tariffs, PPP \$/month	42	24.81
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	8	5.3
5.02 Quality of math & science education*	8	5.5
5.03 Secondary education gross enrollment rate, %	57	95.0
5.04 Adult literacy rate, %	79	92.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	39	127.0
6.02 Individuals using Internet, %	36	70.0
6.03 Households w/ personal computer, %	30	78.0
6.04 Households w/ Internet access, %	24	77.0
6.05 Fixed broadband Internet subs./100 pop.	14	32.0
6.06 Mobile broadband subscriptions/100 pop.	45	35.3
6.07 Use of virtual social networks*	7	6.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	31	5.5
7.02 Capacity for innovation*	47	3.8
7.03 PCT patents, applications/million pop.	33	10.2
7.04 Business-to-business Internet use*	12	5.9
7.05 Business-to-consumer Internet use*	43	5.0
7.06 Extent of staff training*	35	4.4
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	4	5.7
8.02 Government Online Service Index, 0–1 (best)	41	0.61
8.03 Gov't success in ICT promotion*	5	5.8
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	25	5.1
9.02 ICT PCT patents, applications/million pop.	42	1.2
9.03 Impact of ICTs on new organizational models*	32	4.8
9.04 Knowledge-intensive jobs, % workforce	23	39.7
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	11	5.7
10.02 Internet access in schools*	20	5.9
10.03 ICT use & gov't efficiency*	6	5.6
10.04 E-Participation Index, 0–1 (best)	55	0.26

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Mauritania

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 142..2.6

Networked Readiness Index 2013 (out of 144)..... 135.....2.7

A. Environment subindex..... 140.....2.9

1st pillar: Political and regulatory environment..... 133.....2.9

2nd pillar: Business and innovation environment..... 143.....3.0

B. Readiness subindex..... 133.....2.8

3rd pillar: Infrastructure and digital content..... 139.....1.7

4th pillar: Affordability..... 104.....4.5

5th pillar: Skills..... 145.....2.1

C. Usage subindex..... 140.....2.5

6th pillar: Individual usage..... 116.....2.2

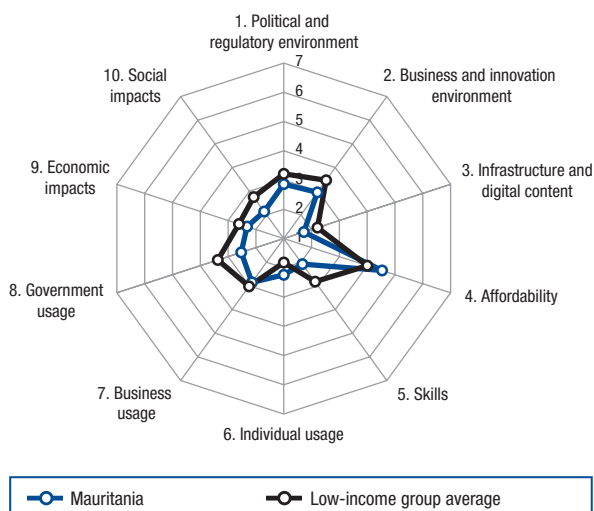
7th pillar: Business usage..... 139.....2.8

8th pillar: Government usage..... 146.....2.5

D. Impact subindex..... 144.....2.2

9th pillar: Economic impacts..... 142.....2.3

10th pillar: Social impacts..... 144.....2.1



The Networked Readiness Index in detail

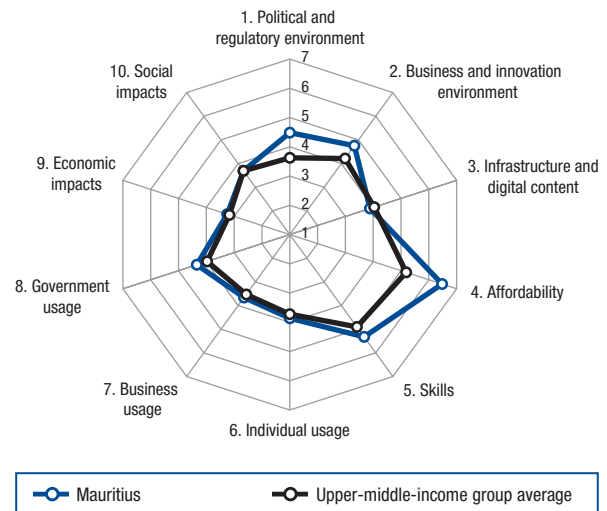
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	131	2.6
1.02 Laws relating to ICTs*	132	2.7
1.03 Judicial independence*	130	2.4
1.04 Efficiency of legal system in settling disputes*	127	2.8
1.05 Efficiency of legal system in challenging regs*	119	2.8
1.06 Intellectual property protection*	132	2.5
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	134	4.6
1.09 No. days to enforce a contract	19	3.70
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	98	4.5
2.02 Venture capital availability*	132	1.9
2.03 Total tax rate, % profits	140	68.2
2.04 No. days to start a business	92	19
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	108	4.5
2.07 Tertiary education gross enrollment rate, %	135	5.1
2.08 Quality of management schools*	143	2.5
2.09 Gov't procurement of advanced tech*	104	3.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	129	134.8
3.02 Mobile network coverage, % pop.	136	62.0
3.03 Int'l Internet bandwidth, kb/s per user	127	3.0
3.04 Secure Internet servers/million pop.	120	1.8
3.05 Accessibility of digital content*	126	3.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	105	0.36
4.02 Fixed broadband Internet tariffs, PPP \$/month	108	48.94
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	136	2.6
5.02 Quality of math & science education*	133	2.7
5.03 Secondary education gross enrollment rate, %	144	26.8
5.04 Adult literacy rate, %	130	58.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	83	106.0
6.02 Individuals using Internet, %	130	5.4
6.03 Households w/ personal computer, %	134	3.7
6.04 Households w/ Internet access, %	130	3.4
6.05 Fixed broadband Internet subs./100 pop.	122	0.2
6.06 Mobile broadband subscriptions/100 pop.	110	3.6
6.07 Use of virtual social networks*	124	4.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	109	4.2
7.02 Capacity for innovation*	137	2.6
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	86	4.7
7.05 Business-to-consumer Internet use*	136	3.1
7.06 Extent of staff training*	148	2.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	136	2.8
8.02 Government Online Service Index, 0-1 (best)	143	0.08
8.03 Gov't success in ICT promotion*	132	3.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	141	3.1
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	144	2.9
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	143	2.7
10.02 Internet access in schools*	141	2.0
10.03 ICT use & gov't efficiency*	142	2.8
10.04 E-Participation Index, 0-1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Mauritius

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	48	4.3
Networked Readiness Index 2013 (out of 144).....	55	4.1
A. Environment subindex	37	4.6
1st pillar: Political and regulatory environment.....	33	4.5
2nd pillar: Business and innovation environment.....	43	4.7
B. Readiness subindex	47	5.2
3rd pillar: Infrastructure and digital content.....	76	3.9
4th pillar: Affordability.....	11	6.5
5th pillar: Skills.....	52	5.3
C. Usage subindex	60	4.0
6th pillar: Individual usage.....	66	3.9
7th pillar: Business usage.....	64	3.7
8th pillar: Government usage.....	48	4.3
D. Impact subindex	70	3.5
9th pillar: Economic impacts.....	70	3.2
10th pillar: Social impacts.....	74	3.7



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*.....	21	4.8
1.02 Laws relating to ICTs*.....	45	4.5
1.03 Judicial independence*.....	35	5.0
1.04 Efficiency of legal system in settling disputes*.....	23	4.8
1.05 Efficiency of legal system in challenging regs*.....	22	4.4
1.06 Intellectual property protection*.....	49	4.0
1.07 Software piracy rate, % software installed.....	48	5.7
1.08 No. procedures to enforce a contract.....	47	3.5
1.09 No. days to enforce a contract.....	70	5.29
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*.....	46	5.3
2.02 Venture capital availability*.....	46	3.0
2.03 Total tax rate, % profits.....	35	28.2
2.04 No. days to start a business.....	22	6
2.05 No. procedures to start a business.....	34	5
2.06 Intensity of local competition*.....	30	5.5
2.07 Tertiary education gross enrollment rate, %.....	67	39.9
2.08 Quality of management schools*.....	61	4.4
2.09 Gov't procurement of advanced tech*.....	75	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita.....	80	2,265.8
3.02 Mobile network coverage, % pop.....	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user.....	80	16.1
3.04 Secure Internet servers/million pop.....	46	134.7
3.05 Accessibility of digital content*.....	76	5.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.....	50	0.18
4.02 Fixed broadband Internet tariffs, PPP \$/month.....	29	21.32
4.03 Internet & telephony competition, 0–2 (best).....	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*.....	37	4.3
5.02 Quality of math & science education*.....	43	4.5
5.03 Secondary education gross enrollment rate, %.....	55	95.9
5.04 Adult literacy rate, %.....	94	88.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.....	52	119.9
6.02 Individuals using Internet, %.....	80	41.4
6.03 Households w/ personal computer, %.....	71	40.6
6.04 Households w/ Internet access, %.....	65	42.0
6.05 Fixed broadband Internet subs./100 pop.....	54	11.2
6.06 Mobile broadband subscriptions/100 pop.....	67	22.9
6.07 Use of virtual social networks*.....	69	5.7
7th pillar: Business usage		
7.01 Firm-level technology absorption*.....	52	5.0
7.02 Capacity for innovation*.....	72	3.5
7.03 PCT patents, applications/million pop.....	122	0.0
7.04 Business-to-business Internet use*.....	60	5.0
7.05 Business-to-consumer Internet use*.....	99	4.0
7.06 Extent of staff training*.....	38	4.4
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*.....	31	4.6
8.02 Government Online Service Index, 0–1 (best).....	86	0.43
8.03 Gov't success in ICT promotion*.....	35	4.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*.....	59	4.6
9.02 ICT PCT patents, applications/million pop.....	93	0.0
9.03 Impact of ICTs on new organizational models*.....	60	4.3
9.04 Knowledge-intensive jobs, % workforce.....	76	20.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*.....	52	4.5
10.02 Internet access in schools*.....	67	4.3
10.03 ICT use & gov't efficiency*.....	54	4.4
10.04 E-Participation Index, 0–1 (best).....	97	0.08

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Mexico

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 79..3.9

Networked Readiness Index 2013 (out of 144)..... 63.....3.9

A. Environment subindex..... 75.....3.9

1st pillar: Political and regulatory environment..... 70.....3.7

2nd pillar: Business and innovation environment..... 85.....4.1

B. Readiness subindex 94.....4.3

3rd pillar: Infrastructure and digital content..... 81.....3.7

4th pillar: Affordability 93.....4.9

5th pillar: Skills 95.....4.4

C. Usage subindex 71.....3.7

6th pillar: Individual usage 89.....3.1

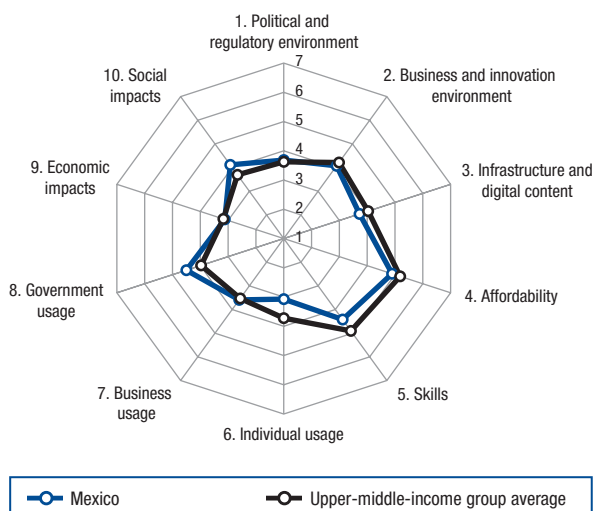
7th pillar: Business usage 70.....3.6

8th pillar: Government usage 40.....4.5

D. Impact subindex..... 59.....3.6

9th pillar: Economic impacts 80.....3.1

10th pillar: Social impacts 48.....4.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	114	2.9
1.02 Laws relating to ICTs*	59	4.2
1.03 Judicial independence*	90	3.3
1.04 Efficiency of legal system in settling disputes*	98	3.4
1.05 Efficiency of legal system in challenging regs*	78	3.3
1.06 Intellectual property protection*	77	3.6
1.07 Software piracy rate, % software installed	48	5.7
1.08 No. procedures to enforce a contract	78	3.8
1.09 No. days to enforce a contract	30	4.0
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	61	5.1
2.02 Venture capital availability*	76	2.6
2.03 Total tax rate, % profits	126	53.7
2.04 No. days to start a business	22	6
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	65	5.0
2.07 Tertiary education gross enrollment rate, %	83	27.7
2.08 Quality of management schools*	65	4.3
2.09 Gov't procurement of advanced tech*	63	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	76	2,449.5
3.02 Mobile network coverage, % pop.	33	99.9
3.03 Int'l Internet bandwidth, kb/s per user	81	15.7
3.04 Secure Internet servers/million pop.	71	28.1
3.05 Accessibility of digital content*	94	4.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	129	0.52
4.02 Fixed broadband Internet tariffs, PPP \$/month	57	28.53
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	119	3.0
5.02 Quality of math & science education*	131	2.7
5.03 Secondary education gross enrollment rate, %	88	84.1
5.04 Adult literacy rate, %	72	93.5

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	112	83.4
6.02 Individuals using Internet, %	85	38.4
6.03 Households w/ personal computer, %	83	32.2
6.04 Households w/ Internet access, %	79	26.0
6.05 Fixed broadband Internet subs./100 pop.	59	10.5
6.06 Mobile broadband subscriptions/100 pop.	87	9.8
6.07 Use of virtual social networks*	86	5.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	64	4.8
7.02 Capacity for innovation*	75	3.5
7.03 PCT patents, applications/million pop.	59	1.7
7.04 Business-to-business Internet use*	64	4.9
7.05 Business-to-consumer Internet use*	76	4.4
7.06 Extent of staff training*	72	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	76	3.9
8.02 Government Online Service Index, 0-1 (best)	28	0.73
8.03 Gov't success in ICT promotion*	81	4.2
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	55	4.6
9.02 ICT PCT patents, applications/million pop.	66	0.2
9.03 Impact of ICTs on new organizational models*	58	4.4
9.04 Knowledge-intensive jobs, % workforce	97	14.7
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	79	4.0
10.02 Internet access in schools*	90	3.8
10.03 ICT use & gov't efficiency*	65	4.2
10.04 E-Participation Index, 0-1 (best)	25	0.58

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

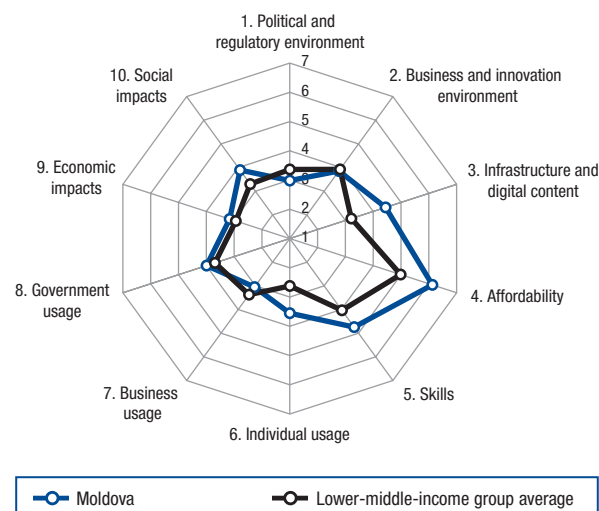
Moldova

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....77..3.9

Networked Readiness Index 2013 (out of 144).....77.....3.8

A. Environment subindex.....121.....3.4	
1st pillar: Political and regulatory environment.....126.....3.0	
2nd pillar: Business and innovation environment.....105.....3.9	
B. Readiness subindex.....55.....5.1	
3rd pillar: Infrastructure and digital content.....60.....4.4	
4th pillar: Affordability.....31.....6.1	
5th pillar: Skills.....84.....4.7	
C. Usage subindex.....83.....3.5	
6th pillar: Individual usage.....73.....3.6	
7th pillar: Business usage.....125.....3.1	
8th pillar: Government usage.....75.....4.0	
D. Impact subindex.....68.....3.5	
9th pillar: Economic impacts.....76.....3.2	
10th pillar: Social impacts.....60.....3.9	



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	120	2.8
1.02 Laws relating to ICTs*	93	3.6
1.03 Judicial independence*	145	1.9
1.04 Efficiency of legal system in settling disputes*	131	2.6
1.05 Efficiency of legal system in challenging regs*	137	2.5
1.06 Intellectual property protection*	125	2.7
1.07 Software piracy rate, % software installed	104	90
1.08 No. procedures to enforce a contract	24	31
1.09 No. days to enforce a contract	16	337
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	116	4.1
2.02 Venture capital availability*	118	2.1
2.03 Total tax rate, % profits	83	40.4
2.04 No. days to start a business	37	7
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	119	4.4
2.07 Tertiary education gross enrollment rate, %	70	38.2
2.08 Quality of management schools*	133	3.2
2.09 Gov't procurement of advanced tech*	139	2.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	87	1,624.9
3.02 Mobile network coverage, % pop.	85	98.0
3.03 Int'l Internet bandwidth, kb/s per user	23	94.2
3.04 Secure Internet servers/million pop.	77	23.0
3.05 Accessibility of digital content*	52	5.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	82	0.29
4.02 Fixed broadband Internet tariffs, PPP \$/month	26	20.47
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	115	3.0
5.02 Quality of math & science education*	74	4.1
5.03 Secondary education gross enrollment rate, %	99	74.6
5.04 Adult literacy rate, %	39	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	87	102.0
6.02 Individuals using Internet, %	77	43.4
6.03 Households w/ personal computer, %	68	44.5
6.04 Households w/ Internet access, %	65	42.0
6.05 Fixed broadband Internet subs./100 pop.	53	11.9
6.06 Mobile broadband subscriptions/100 pop.	102	5.1
6.07 Use of virtual social networks*	82	5.5
7th pillar: Business usage		
7.01 Firm-level technology absorption*	124	4.0
7.02 Capacity for innovation*	134	2.7
7.03 PCT patents, applications/million pop.	73	0.7
7.04 Business-to-business Internet use*	99	4.5
7.05 Business-to-consumer Internet use*	94	4.1
7.06 Extent of staff training*	126	3.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	90	3.7
8.02 Government Online Service Index, 0–1 (best)	61	0.52
8.03 Gov't success in ICT promotion*	82	4.2
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	117	3.7
9.02 ICT PCT patents, applications/million pop.	54	0.4
9.03 Impact of ICTs on new organizational models*	109	3.6
9.04 Knowledge-intensive jobs, % workforce	43	31.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	98	3.7
10.02 Internet access in schools*	56	4.6
10.03 ICT use & gov't efficiency*	90	3.9
10.04 E-Participation Index, 0–1 (best)	38	0.39

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Mongolia

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 61 .. 4.1

Networked Readiness Index 2013 (out of 144) 59 4.0

A. Environment subindex 72 3.9

1st pillar: Political and regulatory environment 98 3.4

2nd pillar: Business and innovation environment 57 4.4

B. Readiness subindex 44 5.3

3rd pillar: Infrastructure and digital content 69 4.2

4th pillar: Affordability 7 6.6

5th pillar: Skills 65 5.1

C. Usage subindex 85 3.5

6th pillar: Individual usage 90 3.0

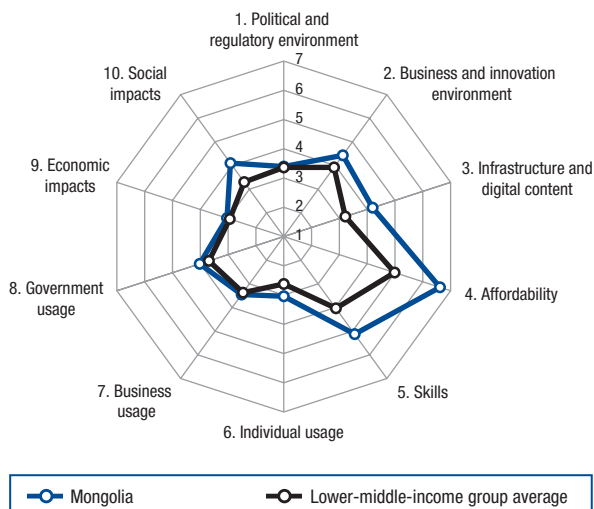
7th pillar: Business usage 83 3.4

8th pillar: Government usage 71 4.0

D. Impact subindex 63 3.6

9th pillar: Economic impacts 89 3.0

10th pillar: Social impacts 49 4.1



The Networked Readiness Index in detail

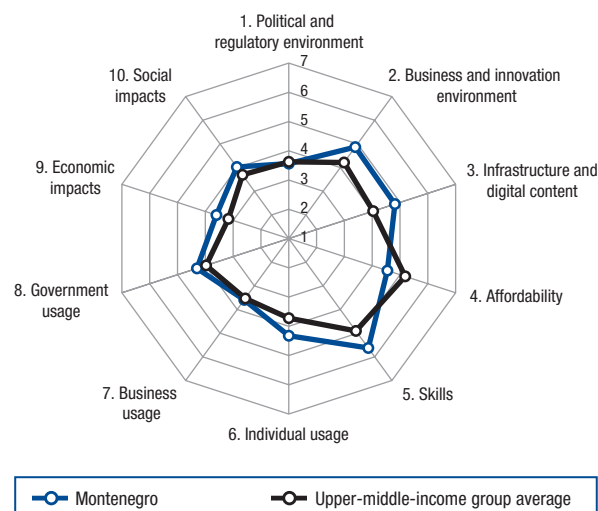
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	109	3.0
1.02 Laws relating to ICTs*	94	3.5
1.03 Judicial independence*	111	2.9
1.04 Efficiency of legal system in settling disputes*	110	3.2
1.05 Efficiency of legal system in challenging regs*	129	2.6
1.06 Intellectual property protection*	134	2.5
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	27	3.2
1.09 No. days to enforce a contract	13	3.4
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	90	4.6
2.02 Venture capital availability*	144	1.7
2.03 Total tax rate, % profits	22	24.6
2.04 No. days to start a business	58	1.1
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	98	4.6
2.07 Tertiary education gross enrollment rate, %	35	61.1
2.08 Quality of management schools*	136	2.9
2.09 Gov't procurement of advanced tech*	106	3.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	86	1,725.7
3.02 Mobile network coverage, % pop.	113	91.3
3.03 Int'l Internet bandwidth, kb/s per user	22	94.3
3.04 Secure Internet servers/million pop.	84	19.3
3.05 Accessibility of digital content*	72	5.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	24	0.10
4.02 Fixed broadband Internet tariffs, PPP \$/month	5	14.01
4.03 Internet & telephony competition, 0–2 (best)	95	1.56
5th pillar: Skills		
5.01 Quality of educational system*	137	2.6
5.02 Quality of math & science education*	68	4.1
5.03 Secondary education gross enrollment rate, %	25	103.5
5.04 Adult literacy rate, %	54	97.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	47	120.7
6.02 Individuals using Internet, %	110	16.4
6.03 Households w/ personal computer, %	84	30.3
6.04 Households w/ Internet access, %	96	14.0
6.05 Fixed broadband Internet subs./100 pop.	88	3.8
6.06 Mobile broadband subscriptions/100 pop.	75	18.4
6.07 Use of virtual social networks*	75	5.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	79	4.6
7.02 Capacity for innovation*	107	3.1
7.03 PCT patents, applications/million pop.	87	0.3
7.04 Business-to-business Internet use*	88	4.6
7.05 Business-to-consumer Internet use*	81	4.3
7.06 Extent of staff training*	73	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	95	3.7
8.02 Government Online Service Index, 0–1 (best)	45	0.59
8.03 Gov't success in ICT promotion*	103	3.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	92	4.1
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	112	3.6
9.04 Knowledge-intensive jobs, % workforce	64	24.0
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	81	4.0
10.02 Internet access in schools*	83	3.9
10.03 ICT use & gov't efficiency*	89	3.9
10.04 E-Participation Index, 0–1 (best)	24	0.61

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Montenegro

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	52 ..	4.3
Networked Readiness Index 2013 (out of 144).....	48.....	4.2
A. Environment subindex	52	4.2
1st pillar: Political and regulatory environment.....	80.....	3.6
2nd pillar: Business and innovation environment.....	34.....	4.9
B. Readiness subindex	61	5.0
3rd pillar: Infrastructure and digital content.....	46.....	4.8
4th pillar: Affordability.....	103.....	4.5
5th pillar: Skills.....	34.....	5.6
C. Usage subindex	52	4.1
6th pillar: Individual usage.....	55.....	4.3
7th pillar: Business usage.....	69.....	3.6
8th pillar: Government usage.....	51.....	4.3
D. Impact subindex	47	3.8
9th pillar: Economic impacts.....	39.....	3.6
10th pillar: Social impacts.....	56.....	4.0



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	43	4.1
1.02 Laws relating to ICTs*	58	4.2
1.03 Judicial independence*	75	3.6
1.04 Efficiency of legal system in settling disputes*	58	3.9
1.05 Efficiency of legal system in challenging regs*	63	3.5
1.06 Intellectual property protection*	76	3.6
1.07 Software piracy rate, % software installed	83	79
1.08 No. procedures to enforce a contract	142	49
1.09 No. days to enforce a contract	74	545
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	83	4.7
2.02 Venture capital availability*	36	3.2
2.03 Total tax rate, % profits	14	20.9
2.04 No. days to start a business	53	10
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	135	3.9
2.07 Tertiary education gross enrollment rate, %	47	55.5
2.08 Quality of management schools*	36	4.8
2.09 Gov't procurement of advanced tech*	32	3.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	53	4,279.4
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	37	60.6
3.04 Secure Internet servers/million pop.	67	30.6
3.05 Accessibility of digital content*	57	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	127	0.51
4.02 Fixed broadband Internet tariffs, PPP \$/month	89	36.65
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	35	4.4
5.02 Quality of math & science education*	23	4.9
5.03 Secondary education gross enrollment rate, %	69	90.9
5.04 Adult literacy rate, %	44	98.5

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	5	181.3
6.02 Individuals using Internet, %	52	56.8
6.03 Households w/ personal computer, %	63	51.3
6.04 Households w/ Internet access, %	50	55.0
6.05 Fixed broadband Internet subs./100 pop.	67	8.4
6.06 Mobile broadband subscriptions/100 pop.	60	27.5
6.07 Use of virtual social networks*	31	6.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	89	4.5
7.02 Capacity for innovation*	59	3.6
7.03 PCT patents, applications/million pop.	51	3.2
7.04 Business-to-business Internet use*	71	4.8
7.05 Business-to-consumer Internet use*	67	4.6
7.06 Extent of staff training*	63	4.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	44	4.4
8.02 Government Online Service Index, 0–1 (best)	64	0.51
8.03 Gov't success in ICT promotion*	64	4.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	71	4.4
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	72	4.2
9.04 Knowledge-intensive jobs, % workforce	27	37.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	60	4.4
10.02 Internet access in schools*	71	4.3
10.03 ICT use & gov't efficiency*	50	4.5
10.04 E-Participation Index, 0–1 (best)	47	0.32

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Morocco (updated)

Rank Value
(out of 148) (1-7)

Networked Readiness Index 2014 90..3.7

Networked Readiness Index 2013 (out of 144)..... 89.....3.6

A. Environment subindex 84.....3.8

1st pillar: Political and regulatory environment 81.....3.6

2nd pillar: Business and innovation environment 88.....4.0

B. Readiness subindex 95.....4.3

3rd pillar: Infrastructure and digital content 93.....3.4

4th pillar: Affordability 51.....5.8

5th pillar: Skills 111.....3.7

C. Usage subindex 70.....3.7

6th pillar: Individual usage 72.....3.6

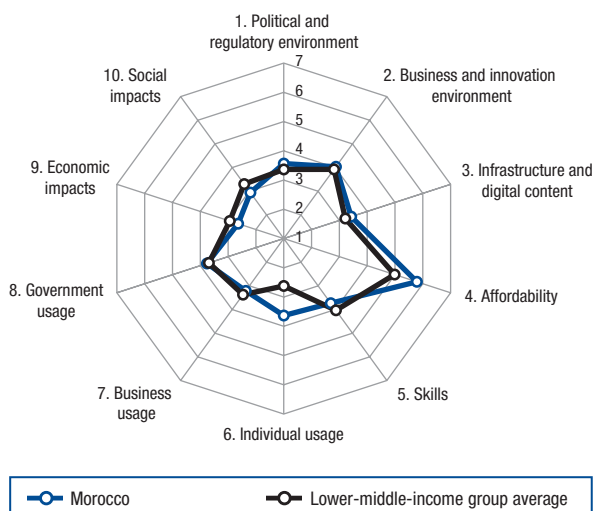
7th pillar: Business usage 111.....3.2

8th pillar: Government usage 48.....4.3

D. Impact subindex 103.....3.1

9th pillar: Economic impacts 123.....2.6

10th pillar: Social impacts 82.....3.5



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	83	3.4
1.02 Laws relating to ICTs*	80	3.8
1.03 Judicial independence*	87	3.4
1.04 Efficiency of legal system in settling disputes*	71	3.7
1.05 Efficiency of legal system in challenging regs*	74	3.4
1.06 Intellectual property protection*	90	3.3
1.07 Software piracy rate, % software installed	62	66
1.08 No. procedures to enforce a contract	98	40
1.09 No. days to enforce a contract	61	510
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	66	5.0
2.02 Venture capital availability*	56	2.8
2.03 Total tax rate, % profits	117	49.6
2.04 No. days to start a business	58	11
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	60	5.1
2.07 Tertiary education gross enrollment rate, %	103	16.2
2.08 Quality of management schools*	45	4.6
2.09 Gov't procurement of advanced tech*	96	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	103	775.8
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	85	14.9
3.04 Secure Internet servers/million pop.	109	3.6
3.05 Accessibility of digital content*	99	4.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	110	0.38
4.02 Fixed broadband Internet tariffs, PPP \$/month	27	20.64
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	110	3.1
5.02 Quality of math & science education*	52	4.3
5.03 Secondary education gross enrollment rate, %	104	68.9
5.04 Adult literacy rate, %	124	67.1

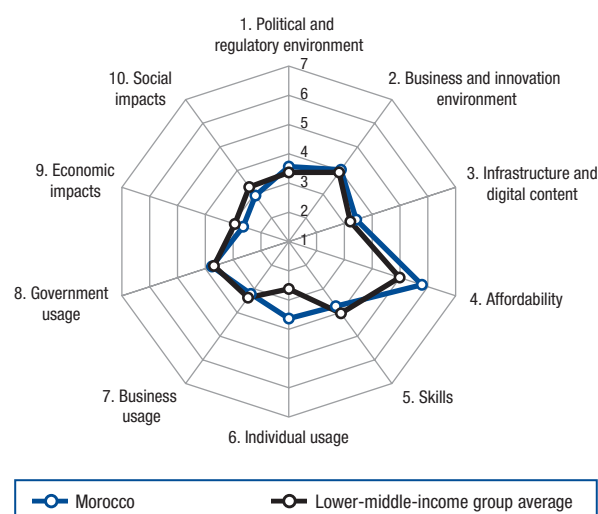
INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	50	120.0
6.02 Individuals using Internet, %	57	55.0
6.03 Households w/ personal computer, %	69	43.1
6.04 Households w/ Internet access, %	71	38.9
6.05 Fixed broadband Internet subs./100 pop.	97	2.1
6.06 Mobile broadband subscriptions/100 pop.	86	10.1
6.07 Use of virtual social networks*	87	5.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	95	4.4
7.02 Capacity for innovation*	129	2.8
7.03 PCT patents, applications/million pop.	78	0.5
7.04 Business-to-business Internet use*	115	4.3
7.05 Business-to-consumer Internet use*	106	3.9
7.06 Extent of staff training*	96	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	51	4.3
8.02 Government Online Service Index, 0-1 (best)	53	0.5
8.03 Gov't success in ICT promotion*	59	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	86	4.2
9.02 ICT PCT patents, applications/million pop.	72	0.1
9.03 Impact of ICTs on new organizational models*	101	3.7
9.04 Knowledge-intensive jobs, % workforce	111	6.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	106	3.6
10.02 Internet access in schools*	113	3.1
10.03 ICT use & gov't efficiency*	85	4.0
10.04 E-Participation Index, 0-1 (best)	38	0.4

Notes: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Following a correction on the data for indicators 8.02 "Government online service Index" and 10.04 "E-participation Index", the country profile for Morocco has been updated accordingly.

Morocco (initially reported)

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	99	3.6
Networked Readiness Index 2013 (out of 144).....	89	3.6
A. Environment subindex	84	3.8
1st pillar: Political and regulatory environment.....	81	3.6
2nd pillar: Business and innovation environment.....	88	4.0
B. Readiness subindex	95	4.3
3rd pillar: Infrastructure and digital content.....	93	3.4
4th pillar: Affordability.....	51	5.8
5th pillar: Skills.....	111	3.7
C. Usage subindex	82	3.5
6th pillar: Individual usage.....	72	3.6
7th pillar: Business usage.....	111	3.2
8th pillar: Government usage.....	92	3.8
D. Impact subindex	121	2.8
9th pillar: Economic impacts.....	123	2.6
10th pillar: Social impacts.....	115	2.9



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	83	3.4
1.02 Laws relating to ICTs*	80	3.8
1.03 Judicial independence*	87	3.4
1.04 Efficiency of legal system in settling disputes*	71	3.7
1.05 Efficiency of legal system in challenging regs*	74	3.4
1.06 Intellectual property protection*	90	3.3
1.07 Software piracy rate, % software installed	62	66
1.08 No. procedures to enforce a contract	98	40
1.09 No. days to enforce a contract	61	510
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	66	5.0
2.02 Venture capital availability*	56	2.8
2.03 Total tax rate, % profits	117	49.6
2.04 No. days to start a business	58	11
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	60	5.1
2.07 Tertiary education gross enrollment rate, %	103	16.2
2.08 Quality of management schools*	45	4.6
2.09 Gov't procurement of advanced tech*	96	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	103	775.8
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	85	14.9
3.04 Secure Internet servers/million pop.	109	3.6
3.05 Accessibility of digital content*	99	4.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	110	0.38
4.02 Fixed broadband Internet tariffs, PPP \$/month	27	20.64
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	110	3.1
5.02 Quality of math & science education*	52	4.3
5.03 Secondary education gross enrollment rate, %	104	68.9
5.04 Adult literacy rate, %	124	67.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	50	120.0
6.02 Individuals using Internet, %	57	55.0
6.03 Households w/ personal computer, %	69	43.1
6.04 Households w/ Internet access, %	71	38.9
6.05 Fixed broadband Internet subs./100 pop.	97	2.1
6.06 Mobile broadband subscriptions/100 pop.	86	10.1
6.07 Use of virtual social networks*	87	5.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	95	4.4
7.02 Capacity for innovation*	129	2.8
7.03 PCT patents, applications/million pop.	78	0.5
7.04 Business-to-business Internet use*	115	4.3
7.05 Business-to-consumer Internet use*	106	3.9
7.06 Extent of staff training*	96	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	51	4.3
8.02 Government Online Service Index, 0–1 (best)	125	0.25
8.03 Gov't success in ICT promotion*	59	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	86	4.2
9.02 ICT PCT patents, applications/million pop.	72	0.1
9.03 Impact of ICTs on new organizational models*	101	3.7
9.04 Knowledge-intensive jobs, % workforce	111	6.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	106	3.6
10.02 Internet access in schools*	113	3.1
10.03 ICT use & gov't efficiency*	85	4.0
10.04 E-Participation Index, 0–1 (best)	127	0.00

Notes: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Country profile for Morocco initially reported. Please see the previous page for the updated version.

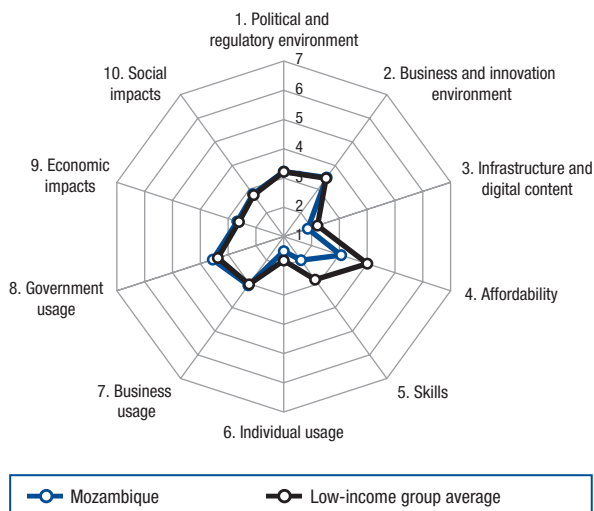
Mozambique

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 137..2.8

Networked Readiness Index 2013 (out of 144)..... 133.....2.8

A. Environment subindex	124	3.4
1st pillar: Political and regulatory environment.....	113.....	3.2
2nd pillar: Business and innovation environment.....	126.....	3.5
B. Readiness subindex	142	2.3
3rd pillar: Infrastructure and digital content.....	137.....	1.9
4th pillar: Affordability.....	132.....	3.1
5th pillar: Skills.....	147.....	2.0
C. Usage subindex	131	2.7
6th pillar: Individual usage.....	144.....	1.5
7th pillar: Business usage.....	124.....	3.1
8th pillar: Government usage.....	110.....	3.5
D. Impact subindex	123	2.7
9th pillar: Economic impacts.....	121.....	2.7
10th pillar: Social impacts.....	124.....	2.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	70	3.6
1.02 Laws relating to ICTs*	125	2.9
1.03 Judicial independence*	125	2.6
1.04 Efficiency of legal system in settling disputes*	105	3.3
1.05 Efficiency of legal system in challenging regs*	117	2.9
1.06 Intellectual property protection*	129	2.7
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	18	30
1.09 No. days to enforce a contract	129	950
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	104	4.4
2.02 Venture capital availability*	121	2.1
2.03 Total tax rate, % profits	75	37.5
2.04 No. days to start a business	68	13
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	126	4.2
2.07 Tertiary education gross enrollment rate, %	137	4.9
2.08 Quality of management schools*	137	2.8
2.09 Gov't procurement of advanced tech*	95	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	107	684.7
3.02 Mobile network coverage, % pop.	n/a	n/a
3.03 Int'l Internet bandwidth, kb/s per user	140	1.6
3.04 Secure Internet servers/million pop.	124	1.5
3.05 Accessibility of digital content*	125	3.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	76	0.26
4.02 Fixed broadband Internet tariffs, PPP \$/month	133	106.78
4.03 Internet & telephony competition, 0-2 (best)	121	1.17
5th pillar: Skills		
5.01 Quality of educational system*	129	2.7
5.02 Quality of math & science education*	137	2.6
5.03 Secondary education gross enrollment rate, %	146	25.9
5.04 Adult literacy rate, %	135	56.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	143	36.2
6.02 Individuals using Internet, %	132	4.8
6.03 Households w/ personal computer, %	127	5.9
6.04 Households w/ Internet access, %	124	4.7
6.05 Fixed broadband Internet subs./100 pop.	130	0.1
6.06 Mobile broadband subscriptions/100 pop.	118	1.8
6.07 Use of virtual social networks*	139	4.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	107	4.3
7.02 Capacity for innovation*	132	2.8
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	121	4.2
7.05 Business-to-consumer Internet use*	116	3.6
7.06 Extent of staff training*	120	3.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	109	3.4
8.02 Government Online Service Index, 0-1 (best)	98	0.37
8.03 Gov't success in ICT promotion*	92	4.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	122	3.6
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	125	3.4
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	129	3.3
10.02 Internet access in schools*	128	2.6
10.03 ICT use & gov't efficiency*	114	3.5
10.04 E-Participation Index, 0-1 (best)	82	0.13

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

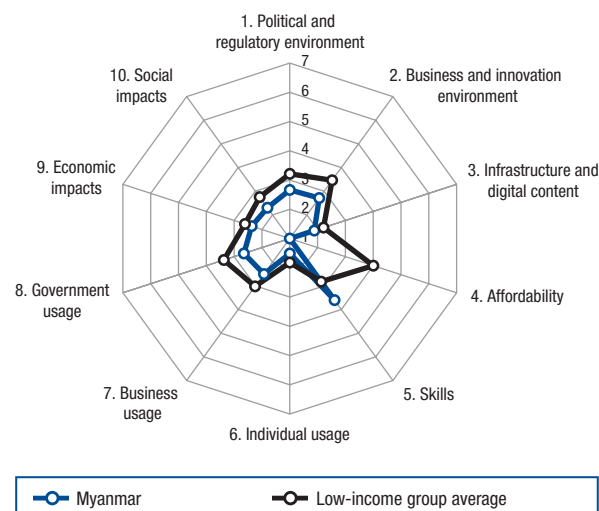
Myanmar

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 146..2.3

Networked Readiness Index 2013 (out of 144)..... n/a.....n/a

A. Environment subindex..... 146.....2.7	
1st pillar: Political and regulatory environment..... 137.....2.7	
2nd pillar: Business and innovation environment..... 146.....2.7	
B. Readiness subindex..... 148.....2.2	
3rd pillar: Infrastructure and digital content..... 136.....1.9	
4th pillar: Affordability..... 146.....1.0	
5th pillar: Skills..... 115.....3.6	
C. Usage subindex..... 146.....2.2	
6th pillar: Individual usage..... 143.....1.5	
7th pillar: Business usage..... 145.....2.5	
8th pillar: Government usage..... 143.....2.6	
D. Impact subindex..... 140.....2.3	
9th pillar: Economic impacts..... 139.....2.4	
10th pillar: Social impacts..... 141.....2.3	



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	93	3.3
1.02 Laws relating to ICTs*	147	2.0
1.03 Judicial independence*	113	2.8
1.04 Efficiency of legal system in settling disputes*	134	2.6
1.05 Efficiency of legal system in challenging regs*	143	2.2
1.06 Intellectual property protection*	126	2.7
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	131	4.5
1.09 No. days to enforce a contract	134	1,160
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	148	2.5
2.02 Venture capital availability*	148	1.5
2.03 Total tax rate, % profits	113	48.9
2.04 No. days to start a business	139	72
2.05 No. procedures to start a business	129	11
2.06 Intensity of local competition*	97	4.6
2.07 Tertiary education gross enrollment rate, %	108	13.8
2.08 Quality of management schools*	141	2.7
2.09 Gov't procurement of advanced tech*	145	2.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	128	140.0
3.02 Mobile network coverage, % pop.	145	2.3
3.03 Int'l Internet bandwidth, kb/s per user	95	9.4
3.04 Secure Internet servers/million pop.	146	0.1
3.05 Accessibility of digital content*	121	3.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min	n/a	n/a
4.02 Fixed broadband Internet tariffs, PPP \$/month	134	108.18
4.03 Internet & telephony competition, 0–2 (best)	144	0.00
5th pillar: Skills		
5.01 Quality of educational system*	125	2.7
5.02 Quality of math & science education*	134	2.7
5.03 Secondary education gross enrollment rate, %	122	50.2
5.04 Adult literacy rate, %	78	92.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	148	10.3
6.02 Individuals using Internet, %	147	1.1
6.03 Households w/ personal computer, %	142	2.3
6.04 Households w/ Internet access, %	142	1.8
6.05 Fixed broadband Internet subs./100 pop.	139	0.0
6.06 Mobile broadband subscriptions/100 pop.	136	0.0
6.07 Use of virtual social networks*	132	4.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	148	2.7
7.02 Capacity for innovation*	135	2.7
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	140	3.7
7.05 Business-to-consumer Internet use*	133	3.2
7.06 Extent of staff training*	146	2.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	133	2.9
8.02 Government Online Service Index, 0–1 (best)	140	0.10
8.03 Gov't success in ICT promotion*	125	3.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	140	3.1
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	135	3.0
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	137	3.0
10.02 Internet access in schools*	139	2.2
10.03 ICT use & gov't efficiency*	133	3.0
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Namibia

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 105..3.4

Networked Readiness Index 2013 (out of 144)..... 1113.3

A. Environment subindex 59.....4.1

1st pillar: Political and regulatory environment 37.....4.4

2nd pillar: Business and innovation environment 1123.8

B. Readiness subindex 116.....3.5

3rd pillar: Infrastructure and digital content..... 106.....3.1

4th pillar: Affordability 125.....3.4

5th pillar: Skills 104.....3.9

C. Usage subindex 103.....3.2

6th pillar: Individual usage 101.....2.7

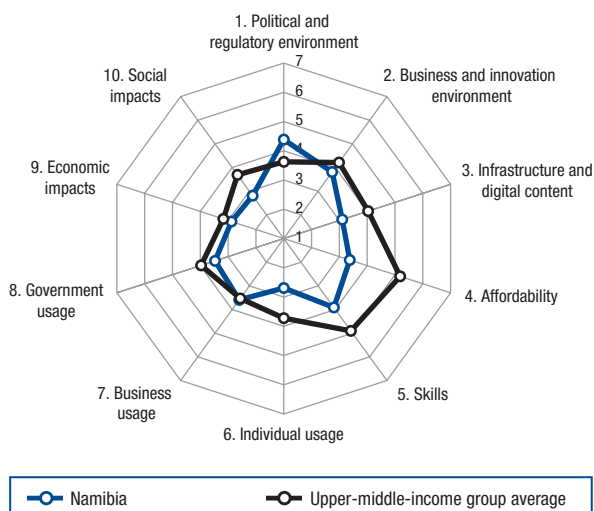
7th pillar: Business usage 68.....3.6

8th pillar: Government usage 116.....3.5

D. Impact subindex 117.....2.8

9th pillar: Economic impacts 105.....2.9

10th pillar: Social impacts 122.....2.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	40	4.2
1.02 Laws relating to ICTs*	90	3.7
1.03 Judicial independence*	41	4.7
1.04 Efficiency of legal system in settling disputes*	32	4.5
1.05 Efficiency of legal system in challenging regs*	42	3.9
1.06 Intellectual property protection*	41	4.3
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	36	3.3
1.09 No. days to enforce a contract	49	4.0
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	52	5.2
2.02 Venture capital availability*	88	2.5
2.03 Total tax rate, % profits	16	21.8
2.04 No. days to start a business	137	6.6
2.05 No. procedures to start a business	119	1.0
2.06 Intensity of local competition*	99	4.6
2.07 Tertiary education gross enrollment rate, %	121	9.3
2.08 Quality of management schools*	121	3.4
2.09 Gov't procurement of advanced tech*	97	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	110	644.8
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	122	3.6
3.04 Secure Internet servers/million pop.	82	19.9
3.05 Accessibility of digital content*	106	4.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	70	0.24
4.02 Fixed broadband Internet tariffs, PPP \$/month	127	78.18
4.03 Internet & telephony competition, 0-2 (best)	100	1.43
5th pillar: Skills		
5.01 Quality of educational system*	118	3.0
5.02 Quality of math & science education*	128	2.9
5.03 Secondary education gross enrollment rate, %	111	64.8
5.04 Adult literacy rate, %	95	88.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	98	95.0
6.02 Individuals using Internet, %	118	12.9
6.03 Households w/ personal computer, %	106	14.3
6.04 Households w/ Internet access, %	101	13.0
6.05 Fixed broadband Internet subs./100 pop.	105	1.2
6.06 Mobile broadband subscriptions/100 pop.	50	33.2
6.07 Use of virtual social networks*	85	5.5
7th pillar: Business usage		
7.01 Firm-level technology absorption*	58	4.9
7.02 Capacity for innovation*	84	3.4
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	50	5.2
7.05 Business-to-consumer Internet use*	90	4.2
7.06 Extent of staff training*	69	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	97	3.6
8.02 Government Online Service Index, 0-1 (best)	116	0.30
8.03 Gov't success in ICT promotion*	93	4.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	94	4.1
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	98	3.7
9.04 Knowledge-intensive jobs, % workforce	88	16.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	97	3.7
10.02 Internet access in schools*	111	3.2
10.03 ICT use & gov't efficiency*	129	3.1
10.04 E-Participation Index, 0-1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Nepal

Networked Readiness Index 2014..... 123..3.1

Networked Readiness Index 2013 (out of 144)..... 126.....2.9

A. Environment subindex..... 123.....3.4

1st pillar: Political and regulatory environment..... 125.....3.0

2nd pillar: Business and innovation environment..... 113.....3.8

B. Readiness subindex..... 111.....3.8

3rd pillar: Infrastructure and digital content..... 141.....1.7

4th pillar: Affordability..... 9.....6.5

5th pillar: Skills..... 121.....3.3

C. Usage subindex..... 133.....2.7

6th pillar: Individual usage..... 125.....2.0

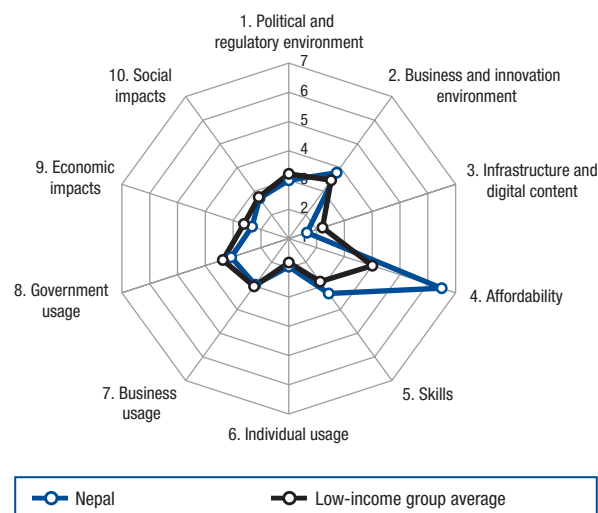
7th pillar: Business usage..... 132.....2.9

8th pillar: Government usage..... 130.....3.1

D. Impact subindex..... 135.....2.5

9th pillar: Economic impacts..... 141.....2.3

10th pillar: Social impacts..... 129.....2.7



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	137	2.4
1.02 Laws relating to ICTs*	134	2.7
1.03 Judicial independence*	92	3.3
1.04 Efficiency of legal system in settling disputes*	123	2.9
1.05 Efficiency of legal system in challenging regs*	104	3.0
1.06 Intellectual property protection*	117	2.9
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	91	3.9
1.09 No. days to enforce a contract	126	9.10
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	120	4.0
2.02 Venture capital availability*	102	2.3
2.03 Total tax rate, % profits	46	31.5
2.04 No. days to start a business	85	1.7
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	109	4.5
2.07 Tertiary education gross enrollment rate, %	106	14.5
2.08 Quality of management schools*	100	3.8
2.09 Gov't procurement of advanced tech*	132	2.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	130	122.0
3.02 Mobile network coverage, % pop.	141	35.1
3.03 Int'l Internet bandwidth, kb/s per user	141	1.6
3.04 Secure Internet servers/million pop.	116	2.5
3.05 Accessibility of digital content*	118	4.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	12	0.07
4.02 Fixed broadband Internet tariffs, PPP \$/month	9	14.72
4.03 Internet & telephony competition, 0-2 (best)	101	1.41
5th pillar: Skills		
5.01 Quality of educational system*	94	3.4
5.02 Quality of math & science education*	89	3.8
5.03 Secondary education gross enrollment rate, %	109	65.8
5.04 Adult literacy rate, %	133	57.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	132	59.6
6.02 Individuals using Internet, %	122	11.1
6.03 Households w/ personal computer, %	120	7.8
6.04 Households w/ Internet access, %	126	4.1
6.05 Fixed broadband Internet subs./100 pop.	116	0.5
6.06 Mobile broadband subscriptions/100 pop.	65	23.8
6.07 Use of virtual social networks*	134	4.5
7th pillar: Business usage		
7.01 Firm-level technology absorption*	128	3.9
7.02 Capacity for innovation*	125	2.9
7.03 PCT patents, applications/million pop.	116	0.0
7.04 Business-to-business Internet use*	128	4.0
7.05 Business-to-consumer Internet use*	123	3.5
7.06 Extent of staff training*	133	3.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	131	2.9
8.02 Government Online Service Index, 0-1 (best)	122	0.29
8.03 Gov't success in ICT promotion*	118	3.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	131	3.5
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	123	3.4
9.04 Knowledge-intensive jobs, % workforce	114	4.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	130	3.3
10.02 Internet access in schools*	105	3.4
10.03 ICT use & gov't efficiency*	135	3.0
10.04 E-Participation Index, 0-1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

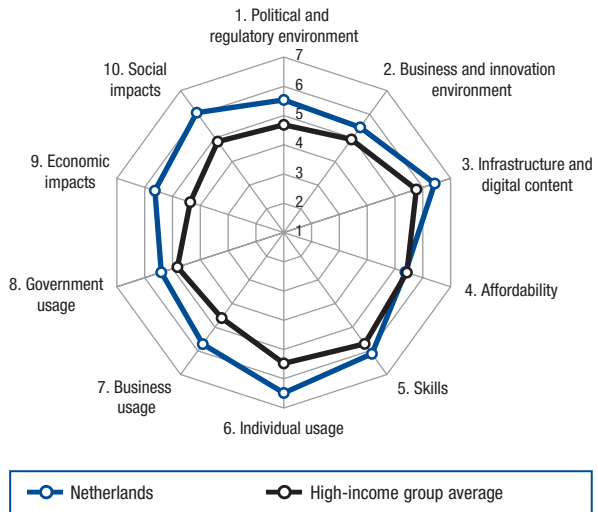
Netherlands

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 4..5.8

Networked Readiness Index 2013 (out of 144)..... 4.....5.8

A. Environment subindex	6	5.5
1st pillar: Political and regulatory environment.....	8.....	5.5
2nd pillar: Business and innovation environment.....	5.....	5.4
B. Readiness subindex	15	6.0
3rd pillar: Infrastructure and digital content.....	14.....	6.4
4th pillar: Affordability.....	69.....	5.4
5th pillar: Skills.....	7.....	6.1
C. Usage subindex	5	5.9
6th pillar: Individual usage.....	4.....	6.5
7th pillar: Business usage.....	6.....	5.7
8th pillar: Government usage.....	14.....	5.4
D. Impact subindex	3	5.8
9th pillar: Economic impacts.....	5.....	5.6
10th pillar: Social impacts.....	3.....	6.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	14	5.0
1.02 Laws relating to ICTs*	16	5.1
1.03 Judicial independence*	7	6.2
1.04 Efficiency of legal system in settling disputes*	9	5.6
1.05 Efficiency of legal system in challenging regs*	5	5.4
1.06 Intellectual property protection*	9	5.7
1.07 Software piracy rate, % software installed.....	14	27
1.08 No. procedures to enforce a contract.....	5	26
1.09 No. days to enforce a contract.....	65	514
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	9	6.4
2.02 Venture capital availability*	21	3.5
2.03 Total tax rate, % profits.....	79	39.3
2.04 No. days to start a business.....	9	4
2.05 No. procedures to start a business.....	22	4
2.06 Intensity of local competition*.....	5	6.0
2.07 Tertiary education gross enrollment rate, %.....	15	76.4
2.08 Quality of management schools*.....	9	5.7
2.09 Gov't procurement of advanced tech*.....	26	4.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita.....	35	6,092.2
3.02 Mobile network coverage, % pop.....	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user.....	13	172.9
3.04 Secure Internet servers/million pop.....	2	2,803.7
3.05 Accessibility of digital content*.....	5	6.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.....	106	0.36
4.02 Fixed broadband Internet tariffs, PPP \$/month.....	69	30.65
4.03 Internet & telephony competition, 0-2 (best).....	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*.....	12	5.2
5.02 Quality of math & science education*.....	14	5.3
5.03 Secondary education gross enrollment rate, %.....	3	128.4
5.04 Adult literacy rate, %.....	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.....	54	118.0
6.02 Individuals using Internet, %.....	4	93.0
6.03 Households w/ personal computer, %.....	1	97.2
6.04 Households w/ Internet access, %.....	3	94.0
6.05 Fixed broadband Internet subs./100 pop.....	2	39.8
6.06 Mobile broadband subscriptions/100 pop.....	21	61.3
6.07 Use of virtual social networks*.....	4	6.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*.....	22	5.7
7.02 Capacity for innovation*.....	9	5.1
7.03 PCT patents, applications/million pop.....	9	189.0
7.04 Business-to-business Internet use*.....	11	5.9
7.05 Business-to-consumer Internet use*.....	4	6.0
7.06 Extent of staff training*.....	9	5.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*.....	41	4.4
8.02 Government Online Service Index, 0-1 (best).....	5	0.96
8.03 Gov't success in ICT promotion*.....	25	5.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*.....	7	5.5
9.02 ICT PCT patents, applications/million pop.....	7	55.8
9.03 Impact of ICTs on new organizational models*.....	5	5.4
9.04 Knowledge-intensive jobs, % workforce.....	8	45.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*.....	5	5.8
10.02 Internet access in schools*.....	6	6.3
10.03 ICT use & gov't efficiency*.....	20	5.1
10.04 E-Participation Index, 0-1 (best).....	1	1.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

New Zealand

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....20..5.3

Networked Readiness Index 2013 (out of 144).....20.....5.2

A. Environment subindex.....2.....5.6

1st pillar: Political and regulatory environment.....2.....5.9

2nd pillar: Business and innovation environment.....8.....5.4

B. Readiness subindex.....45.....5.3

3rd pillar: Infrastructure and digital content.....12.....6.4

4th pillar: Affordability.....127.....3.2

5th pillar: Skills.....6.....6.1

C. Usage subindex.....16.....5.4

6th pillar: Individual usage.....13.....6.0

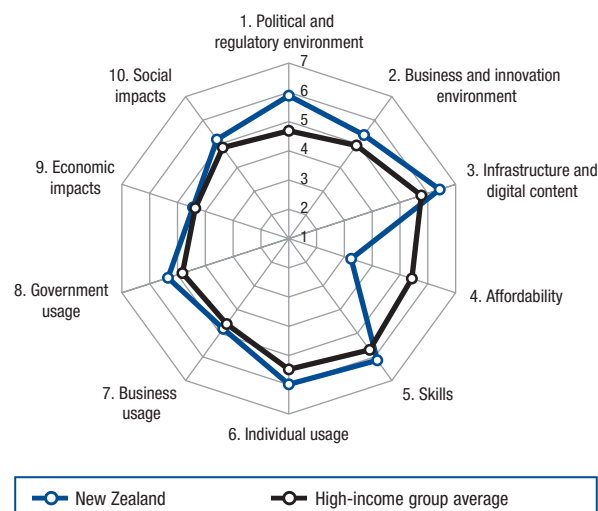
7th pillar: Business usage.....21.....4.8

8th pillar: Government usage.....18.....5.3

D. Impact subindex.....22.....4.8

9th pillar: Economic impacts.....26.....4.4

10th pillar: Social impacts.....17.....5.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	4	5.7
1.02 Laws relating to ICTs*	10	5.4
1.03 Judicial independence*	1	6.7
1.04 Efficiency of legal system in settling disputes*	4	5.8
1.05 Efficiency of legal system in challenging regs*	3	5.6
1.06 Intellectual property protection*	3	6.0
1.07 Software piracy rate, % software installed	4	22
1.08 No. procedures to enforce a contract	18	30
1.09 No. days to enforce a contract	2	216
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	21	6.1
2.02 Venture capital availability*	18	3.6
2.03 Total tax rate, % profits	59	34.6
2.04 No. days to start a business	1	1
2.05 No. procedures to start a business	1	1
2.06 Intensity of local competition*	31	5.4
2.07 Tertiary education gross enrollment rate, %	11	80.8
2.08 Quality of management schools*	24	5.2
2.09 Gov't procurement of advanced tech*	65	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	14	9,984.4
3.02 Mobile network coverage, % pop.	88	97.0
3.03 Int'l Internet bandwidth, kb/s per user	56	31.1
3.04 Secure Internet servers/million pop.	14	1,466.0
3.05 Accessibility of digital content*	32	5.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	138	0.62
4.02 Fixed broadband Internet tariffs, PPP \$/month	113	51.86
4.03 Internet & telephony competition, 0–2 (best)	97	1.53
5th pillar: Skills		
5.01 Quality of educational system*	11	5.2
5.02 Quality of math & science education*	12	5.4
5.03 Secondary education gross enrollment rate, %	4	119.8
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	71	110.4
6.02 Individuals using Internet, %	8	89.5
6.03 Households w/ personal computer, %	9	91.2
6.04 Households w/ Internet access, %	12	87.4
6.05 Fixed broadband Internet subs./100 pop.	18	27.8
6.06 Mobile broadband subscriptions/100 pop.	17	65.9
6.07 Use of virtual social networks*	18	6.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	19	5.7
7.02 Capacity for innovation*	21	4.6
7.03 PCT patents, applications/million pop.	22	69.8
7.04 Business-to-business Internet use*	19	5.7
7.05 Business-to-consumer Internet use*	15	5.7
7.06 Extent of staff training*	15	5.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	10	5.3
8.02 Government Online Service Index, 0–1 (best)	21	0.78
8.03 Gov't success in ICT promotion*	23	5.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	17	5.3
9.02 ICT PCT patents, applications/million pop.	23	11.8
9.03 Impact of ICTs on new organizational models*	20	5.0
9.04 Knowledge-intensive jobs, % workforce	15	42.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	17	5.4
10.02 Internet access in schools*	28	5.7
10.03 ICT use & gov't efficiency*	19	5.1
10.04 E-Participation Index, 0–1 (best)	25	0.58

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Nicaragua

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 124..3.1

Networked Readiness Index 2013 (out of 144)..... 125.....2.9

A. Environment subindex..... 128.....3.3

1st pillar: Political and regulatory environment..... 103.....3.3

2nd pillar: Business and innovation environment..... 136.....3.3

B. Readiness subindex 1213.3

3rd pillar: Infrastructure and digital content..... 82.....3.7

4th pillar: Affordability 140.....2.5

5th pillar: Skills 109.....3.8

C. Usage subindex 123.....2.8

6th pillar: Individual usage 122.....2.1

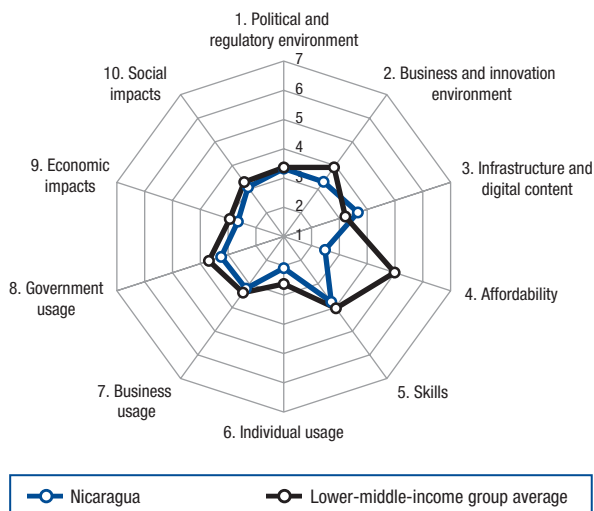
7th pillar: Business usage 113.....3.2

8th pillar: Government usage 123.....3.3

D. Impact subindex 113.....2.9

9th pillar: Economic impacts 122.....2.7

10th pillar: Social impacts 111.....3.1



The Networked Readiness Index in detail

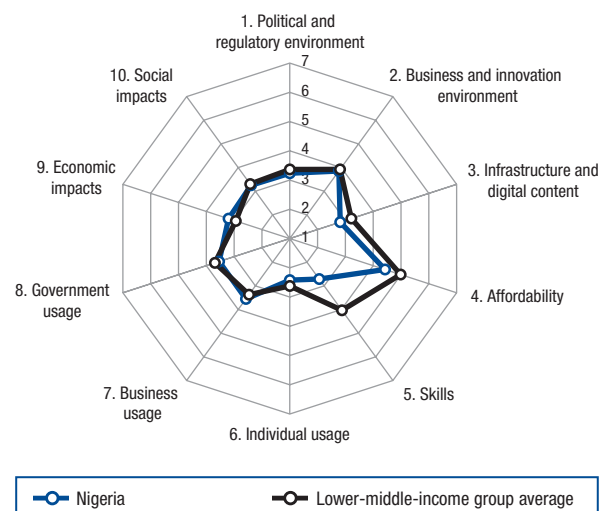
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	99	3.2
1.02 Laws relating to ICTs*	99	3.4
1.03 Judicial independence*	121	2.6
1.04 Efficiency of legal system in settling disputes*	89	3.4
1.05 Efficiency of legal system in challenging regs*	98	3.1
1.06 Intellectual property protection*	82	3.5
1.07 Software piracy rate, % software installed	83	79
1.08 No. procedures to enforce a contract	67	37
1.09 No. days to enforce a contract	34	409
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	133	3.7
2.02 Venture capital availability*	29	3.3
2.03 Total tax rate, % profits	137	64.9
2.04 No. days to start a business	123	36
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	136	3.8
2.07 Tertiary education gross enrollment rate, %	100	17.9
2.08 Quality of management schools*	103	3.7
2.09 Gov't procurement of advanced tech*	78	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	109	647.7
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	64	24.7
3.04 Secure Internet servers/million pop.	93	10.3
3.05 Accessibility of digital content*	113	4.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	144	0.91
4.02 Fixed broadband Internet tariffs, PPP \$/month	106	48.29
4.03 Internet & telephony competition, 0-2 (best)	65	1.88
5th pillar: Skills		
5.01 Quality of educational system*	107	3.1
5.02 Quality of math & science education*	118	3.1
5.03 Secondary education gross enrollment rate, %	103	68.9
5.04 Adult literacy rate, %	109	78.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	107	86.1
6.02 Individuals using Internet, %	116	13.5
6.03 Households w/ personal computer, %	115	9.9
6.04 Households w/ Internet access, %	114	7.4
6.05 Fixed broadband Internet subs./100 pop.	100	1.6
6.06 Mobile broadband subscriptions/100 pop.	123	1.0
6.07 Use of virtual social networks*	131	4.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	130	3.9
7.02 Capacity for innovation*	79	3.4
7.03 PCT patents, applications/million pop.	100	0.1
7.04 Business-to-business Internet use*	127	4.0
7.05 Business-to-consumer Internet use*	111	3.8
7.06 Extent of staff training*	85	3.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	111	3.4
8.02 Government Online Service Index, 0-1 (best)	113	0.31
8.03 Gov't success in ICT promotion*	122	3.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	126	3.5
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	116	3.6
9.04 Knowledge-intensive jobs, % workforce	96	14.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	111	3.6
10.02 Internet access in schools*	102	3.5
10.03 ICT use & gov't efficiency*	110	3.5
10.04 E-Participation Index, 0-1 (best)	82	0.13

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Nigeria

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	112	3.3
Networked Readiness Index 2013 (out of 144).....	113.....	3.3
A. Environment subindex	109	3.5
1st pillar: Political and regulatory environment.....	112.....	3.2
2nd pillar: Business and innovation environment.....	106.....	3.9
B. Readiness subindex	119	3.3
3rd pillar: Infrastructure and digital content.....	117.....	2.8
4th pillar: Affordability.....	107.....	4.4
5th pillar: Skills.....	132.....	2.7
C. Usage subindex	105	3.2
6th pillar: Individual usage.....	110.....	2.4
7th pillar: Business usage.....	73.....	3.6
8th pillar: Government usage.....	111.....	3.5
D. Impact subindex	91	3.2
9th pillar: Economic impacts.....	72.....	3.2
10th pillar: Social impacts.....	99.....	3.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	88	3.3
1.02 Laws relating to ICTs*	109	3.3
1.03 Judicial independence*	96	3.2
1.04 Efficiency of legal system in settling disputes*	77	3.6
1.05 Efficiency of legal system in challenging regs*	92	3.2
1.06 Intellectual property protection*	121	2.8
1.07 Software piracy rate, % software installed	91	82
1.08 No. procedures to enforce a contract	98	40
1.09 No. days to enforce a contract	48	447
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	87	4.6
2.02 Venture capital availability*	101	2.3
2.03 Total tax rate, % profits	56	33.8
2.04 No. days to start a business	111	28
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	76	4.9
2.07 Tertiary education gross enrollment rate, %	118	10.4
2.08 Quality of management schools*	102	3.7
2.09 Gov't procurement of advanced tech*	77	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	126	164.6
3.02 Mobile network coverage, % pop.	95	96.1
3.03 Int'l Internet bandwidth, kb/s per user	145	0.3
3.04 Secure Internet servers/million pop.	122	1.7
3.05 Accessibility of digital content*	102	4.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	51	0.18
4.02 Fixed broadband Internet tariffs, PPP \$/month	120	65.58
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	113	3.1
5.02 Quality of math & science education*	117	3.1
5.03 Secondary education gross enrollment rate, %	129	43.8
5.04 Adult literacy rate, %	128	61.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	125	66.8
6.02 Individuals using Internet, %	94	32.9
6.03 Households w/ personal computer, %	111	11.4
6.04 Households w/ Internet access, %	110	9.1
6.05 Fixed broadband Internet subs./100 pop.	140	0.0
6.06 Mobile broadband subscriptions/100 pop.	74	18.4
6.07 Use of virtual social networks*	72	5.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	80	4.6
7.02 Capacity for innovation*	80	3.4
7.03 PCT patents, applications/million pop.	114	0.0
7.04 Business-to-business Internet use*	93	4.6
7.05 Business-to-consumer Internet use*	83	4.3
7.06 Extent of staff training*	45	4.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	66	4.0
8.02 Government Online Service Index, 0–1 (best)	126	0.22
8.03 Gov't success in ICT promotion*	78	4.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	56	4.6
9.02 ICT PCT patents, applications/million pop.	91	0.0
9.03 Impact of ICTs on new organizational models*	80	4.0
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	104	3.7
10.02 Internet access in schools*	101	3.5
10.03 ICT use & gov't efficiency*	97	3.7
10.04 E-Participation Index, 0–1 (best)	71	0.18

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

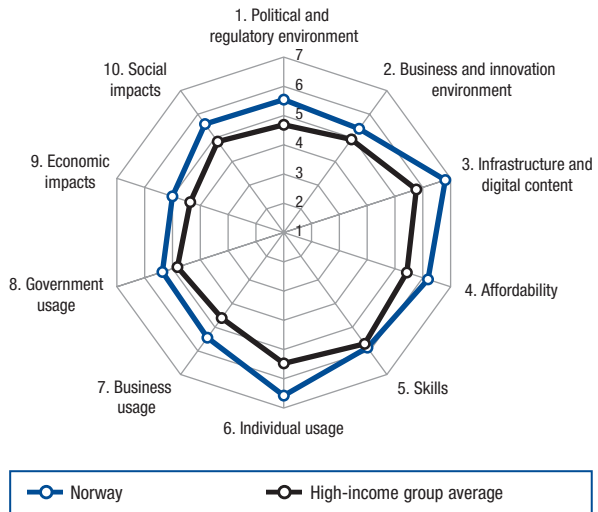
Norway

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 5...5.7

Networked Readiness Index 2013 (out of 144)..... 5.....5.7

A. Environment subindex	7	5.5
1st pillar: Political and regulatory environment.....	7	5.5
2nd pillar: Business and innovation environment.....	6	5.4
B. Readiness subindex	4	6.3
3rd pillar: Infrastructure and digital content.....	6	6.8
4th pillar: Affordability.....	28	6.2
5th pillar: Skills.....	17	5.9
C. Usage subindex	6	5.8
6th pillar: Individual usage.....	2	6.6
7th pillar: Business usage.....	12	5.4
8th pillar: Government usage.....	15	5.4
D. Impact subindex	12	5.3
9th pillar: Economic impacts.....	15	5.0
10th pillar: Social impacts.....	13	5.6



The Networked Readiness Index in detail

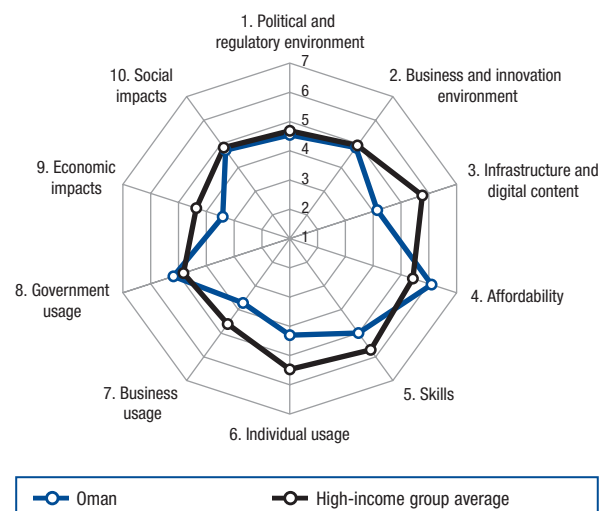
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	8	5.4
1.02 Laws relating to ICTs*	9	5.5
1.03 Judicial independence*	5	6.3
1.04 Efficiency of legal system in settling disputes*	7	5.6
1.05 Efficiency of legal system in challenging regs*	10	5.1
1.06 Intellectual property protection*	15	5.5
1.07 Software piracy rate, % software installed	14	27
1.08 No. procedures to enforce a contract	42	34
1.09 No. days to enforce a contract	10	280
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	3	6.5
2.02 Venture capital availability*	4	4.3
2.03 Total tax rate, % profits	86	40.7
2.04 No. days to start a business	37	7
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	39	5.3
2.07 Tertiary education gross enrollment rate, %	22	73.1
2.08 Quality of management schools*	20	5.2
2.09 Gov't procurement of advanced tech*	20	4.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	2	29,244.2
3.02 Mobile network coverage, % pop.	88	97.0
3.03 Int'l Internet bandwidth, kb/s per user	10	187.8
3.04 Secure Internet servers/million pop.	7	1,878.9
3.05 Accessibility of digital content*	3	6.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	25	0.10
4.02 Fixed broadband Internet tariffs, PPP \$/month	77	33.89
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	18	5.0
5.02 Quality of math & science education*	47	4.4
5.03 Secondary education gross enrollment rate, %	8	113.0
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	57	116.7
6.02 Individuals using Internet, %	2	95.0
6.03 Households w/ personal computer, %	5	92.0
6.04 Households w/ Internet access, %	4	93.0
6.05 Fixed broadband Internet subs./100 pop.	6	36.3
6.06 Mobile broadband subscriptions/100 pop.	10	84.8
6.07 Use of virtual social networks*	3	6.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	8	6.0
7.02 Capacity for innovation*	12	5.0
7.03 PCT patents, applications/million pop.	12	133.6
7.04 Business-to-business Internet use*	8	6.0
7.05 Business-to-consumer Internet use*	8	5.8
7.06 Extent of staff training*	8	5.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	20	4.9
8.02 Government Online Service Index, 0-1 (best)	13	0.86
8.03 Gov't success in ICT promotion*	20	5.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	11	5.4
9.02 ICT PCT patents, applications/million pop.	16	28.5
9.03 Impact of ICTs on new organizational models*	8	5.3
9.04 Knowledge-intensive jobs, % workforce	7	46.0
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	6	5.8
10.02 Internet access in schools*	5	6.3
10.03 ICT use & gov't efficiency*	21	5.1
10.04 E-Participation Index, 0-1 (best)	15	0.68

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Oman

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	40	4.6
Networked Readiness Index 2013 (out of 144).....	40	4.5
A. Environment subindex	33	4.7
1st pillar: Political and regulatory environment.....	32	4.5
2nd pillar: Business and innovation environment.....	36	4.8
B. Readiness subindex	57	5.1
3rd pillar: Infrastructure and digital content.....	70	4.1
4th pillar: Affordability.....	33	6.1
5th pillar: Skills.....	73	5.0
C. Usage subindex	37	4.4
6th pillar: Individual usage.....	56	4.3
7th pillar: Business usage.....	57	3.7
8th pillar: Government usage.....	20	5.2
D. Impact subindex	40	4.1
9th pillar: Economic impacts.....	56	3.4
10th pillar: Social impacts.....	33	4.7



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	12	5.1
1.02 Laws relating to ICTs*	35	4.8
1.03 Judicial independence*	29	5.3
1.04 Efficiency of legal system in settling disputes*	14	5.2
1.05 Efficiency of legal system in challenging regs*	18	4.7
1.06 Intellectual property protection*	24	5.2
1.07 Software piracy rate, % software installed	53	6.1
1.08 No. procedures to enforce a contract	147	5.1
1.09 No. days to enforce a contract	91	5.98
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	56	5.2
2.02 Venture capital availability*	14	3.9
2.03 Total tax rate, % profits	17	22.0
2.04 No. days to start a business	40	8
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	54	5.2
2.07 Tertiary education gross enrollment rate, %	81	28.1
2.08 Quality of management schools*	88	4.0
2.09 Gov't procurement of advanced tech*	12	4.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	30	7,231.6
3.02 Mobile network coverage, % pop.	86	97.6
3.03 Int'l Internet bandwidth, kb/s per user	97	8.9
3.04 Secure Internet servers/million pop.	58	56.1
3.05 Accessibility of digital content*	75	5.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	44	0.16
4.02 Fixed broadband Internet tariffs, PPP \$/month	59	29.01
4.03 Internet & telephony competition, 0–2 (best)	69	1.87
5th pillar: Skills		
5.01 Quality of educational system*	53	4.0
5.02 Quality of math & science education*	87	3.9
5.03 Secondary education gross enrollment rate, %	58	94.2
5.04 Adult literacy rate, %	100	86.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	14	159.3
6.02 Individuals using Internet, %	49	60.0
6.03 Households w/ personal computer, %	50	62.7
6.04 Households w/ Internet access, %	68	41.9
6.05 Fixed broadband Internet subs./100 pop.	95	2.1
6.06 Mobile broadband subscriptions/100 pop.	32	50.9
6.07 Use of virtual social networks*	95	5.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	53	5.0
7.02 Capacity for innovation*	61	3.6
7.03 PCT patents, applications/million pop.	71	1.0
7.04 Business-to-business Internet use*	65	4.9
7.05 Business-to-consumer Internet use*	89	4.2
7.06 Extent of staff training*	33	4.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	13	5.2
8.02 Government Online Service Index, 0–1 (best)	35	0.67
8.03 Gov't success in ICT promotion*	15	5.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	50	4.7
9.02 ICT PCT patents, applications/million pop.	67	0.2
9.03 Impact of ICTs on new organizational models*	57	4.4
9.04 Knowledge-intensive jobs, % workforce	59	24.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	34	5.1
10.02 Internet access in schools*	47	4.9
10.03 ICT use & gov't efficiency*	18	5.2
10.04 E-Participation Index, 0–1 (best)	36	0.45

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Pakistan

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 111 .. 3.3

Networked Readiness Index 2013 (out of 144) 105 3.3

A. Environment subindex 118 3.4

1st pillar: Political and regulatory environment 124 3.0

2nd pillar: Business and innovation environment 101 3.9

B. Readiness subindex 105 4.0

3rd pillar: Infrastructure and digital content 110 3.0

4th pillar: Affordability 19 6.4

5th pillar: Skills 136 2.5

C. Usage subindex 121 2.9

6th pillar: Individual usage 126 1.9

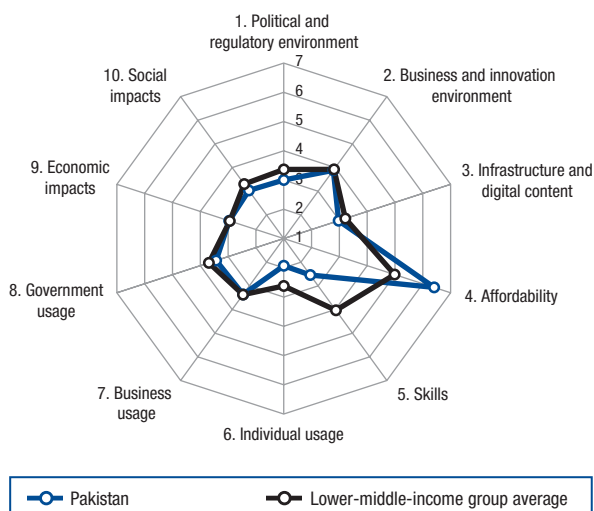
7th pillar: Business usage 97 3.4

8th pillar: Government usage 118 3.4

D. Impact subindex 105 3.0

9th pillar: Economic impacts 98 3.0

10th pillar: Social impacts 112 3.0



The Networked Readiness Index in detail

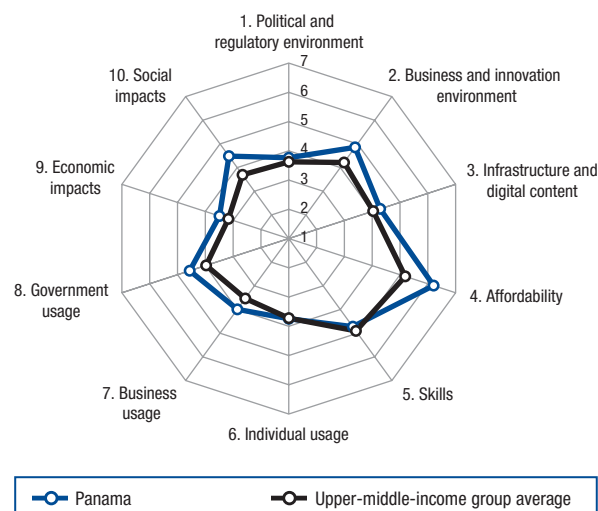
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	102	3.1
1.02 Laws relating to ICTs*	122	3.1
1.03 Judicial independence*	55	4.1
1.04 Efficiency of legal system in settling disputes*	112	3.1
1.05 Efficiency of legal system in challenging regs*	108	3.0
1.06 Intellectual property protection*	109	2.9
1.07 Software piracy rate, % software installed	98	86
1.08 No. procedures to enforce a contract	134	46
1.09 No. days to enforce a contract	131	976
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	79	4.8
2.02 Venture capital availability*	77	2.6
2.03 Total tax rate, % profits	60	34.7
2.04 No. days to start a business	98	21
2.05 No. procedures to start a business	119	10
2.06 Intensity of local competition*	79	4.9
2.07 Tertiary education gross enrollment rate, %	120	9.5
2.08 Quality of management schools*	72	4.3
2.09 Gov't procurement of advanced tech*	110	3.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	114	540.7
3.02 Mobile network coverage, % pop.	111	92.0
3.03 Int'l Internet bandwidth, kb/s per user	100	7.3
3.04 Secure Internet servers/million pop.	129	1.3
3.05 Accessibility of digital content*	93	4.7
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	10	0.06
4.02 Fixed broadband Internet tariffs, PPP \$/month	62	29.20
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	84	3.5
5.02 Quality of math & science education*	104	3.4
5.03 Secondary education gross enrollment rate, %	135	36.6
5.04 Adult literacy rate, %	136	54.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	124	67.1
6.02 Individuals using Internet, %	124	10.0
6.03 Households w/ personal computer, %	108	12.5
6.04 Households w/ Internet access, %	112	8.3
6.05 Fixed broadband Internet subs./100 pop.	115	0.5
6.06 Mobile broadband subscriptions/100 pop.	125	0.7
6.07 Use of virtual social networks*	116	5.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	81	4.6
7.02 Capacity for innovation*	49	3.7
7.03 PCT patents, applications/million pop.	112	0.0
7.04 Business-to-business Internet use*	104	4.4
7.05 Business-to-consumer Internet use*	103	4.0
7.06 Extent of staff training*	128	3.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	128	3.0
8.02 Government Online Service Index, 0-1 (best)	98	0.37
8.03 Gov't success in ICT promotion*	91	4.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	98	4.0
9.02 ICT PCT patents, applications/million pop.	90	0.0
9.03 Impact of ICTs on new organizational models*	92	3.9
9.04 Knowledge-intensive jobs, % workforce	79	19.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	128	3.3
10.02 Internet access in schools*	92	3.7
10.03 ICT use & gov't efficiency*	121	3.3
10.04 E-Participation Index, 0-1 (best)	82	0.13

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Panama

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	43	4.4
Networked Readiness Index 2013 (out of 144).....	46.....	4.2
A. Environment subindex	46	4.3
1st pillar: Political and regulatory environment.....	62.....	3.8
2nd pillar: Business and innovation environment.....	35.....	4.8
B. Readiness subindex	58	5.1
3rd pillar: Infrastructure and digital content.....	65.....	4.3
4th pillar: Affordability.....	27.....	6.2
5th pillar: Skills.....	86.....	4.7
C. Usage subindex	50	4.1
6th pillar: Individual usage.....	68.....	3.7
7th pillar: Business usage.....	39.....	4.0
8th pillar: Government usage.....	39.....	4.6
D. Impact subindex	41	4.0
9th pillar: Economic impacts.....	46.....	3.5
10th pillar: Social impacts.....	37.....	4.5



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	107	3.0
1.02 Laws relating to ICTs*	39	4.7
1.03 Judicial independence*	118	2.7
1.04 Efficiency of legal system in settling disputes*	61	3.9
1.05 Efficiency of legal system in challenging regs*	58	3.6
1.06 Intellectual property protection*	35	4.6
1.07 Software piracy rate, % software installed	72	72
1.08 No. procedures to enforce a contract	27	32
1.09 No. days to enforce a contract	109	686
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	31	5.9
2.02 Venture capital availability*	12	4.0
2.03 Total tax rate, % profits	85	40.5
2.04 No. days to start a business	22	6
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	71	5.0
2.07 Tertiary education gross enrollment rate, %	63	41.8
2.08 Quality of management schools*	63	4.3
2.09 Gov't procurement of advanced tech*	7	4.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	82	2,100.6
3.02 Mobile network coverage, % pop.	97	96.0
3.03 Int'l Internet bandwidth, kb/s per user	57	30.8
3.04 Secure Internet servers/million pop.	47	133.9
3.05 Accessibility of digital content*	58	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	66	0.22
4.02 Fixed broadband Internet tariffs, PPP \$/month	37	23.92
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	75	3.6
5.02 Quality of math & science education*	114	3.2
5.03 Secondary education gross enrollment rate, %	89	84.0
5.04 Adult literacy rate, %	68	94.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	7	178.0
6.02 Individuals using Internet, %	72	45.2
6.03 Households w/ personal computer, %	75	38.3
6.04 Households w/ Internet access, %	77	31.6
6.05 Fixed broadband Internet subs./100 pop.	72	7.8
6.06 Mobile broadband subscriptions/100 pop.	80	14.3
6.07 Use of virtual social networks*	27	6.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	28	5.6
7.02 Capacity for innovation*	50	3.7
7.03 PCT patents, applications/million pop.	64	1.2
7.04 Business-to-business Internet use*	44	5.3
7.05 Business-to-consumer Internet use*	25	5.4
7.06 Extent of staff training*	43	4.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	22	4.9
8.02 Government Online Service Index, 0–1 (best)	77	0.46
8.03 Gov't success in ICT promotion*	22	5.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	37	4.9
9.02 ICT PCT patents, applications/million pop.	46	0.9
9.03 Impact of ICTs on new organizational models*	47	4.5
9.04 Knowledge-intensive jobs, % workforce	58	24.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	41	4.8
10.02 Internet access in schools*	34	5.4
10.03 ICT use & gov't efficiency*	29	4.9
10.04 E-Participation Index, 0–1 (best)	47	0.32

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Paraguay

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 102..3.5

Networked Readiness Index 2013 (out of 144)..... 104.....3.4

A. Environment subindex..... 130.....3.3

1st pillar: Political and regulatory environment..... 136.....2.7

2nd pillar: Business and innovation environment..... 96.....3.9

B. Readiness subindex 82.....4.6

3rd pillar: Infrastructure and digital content..... 72.....4.1

4th pillar: Affordability 50.....5.8

5th pillar: Skills 105.....3.9

C. Usage subindex 109.....3.1

6th pillar: Individual usage 98.....2.8

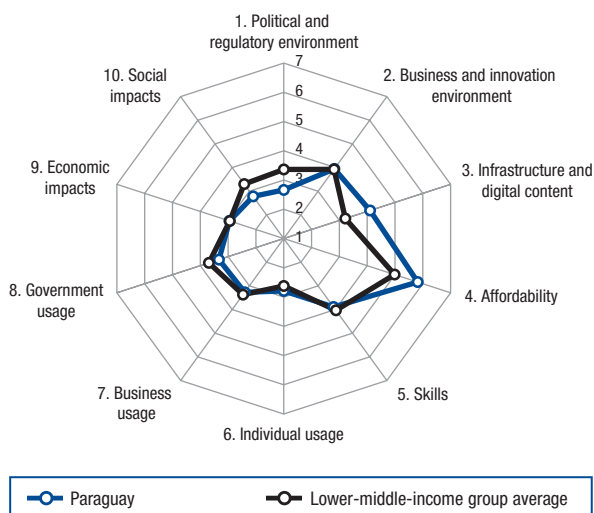
7th pillar: Business usage 105.....3.3

8th pillar: Government usage 120.....3.3

D. Impact subindex 115.....2.9

9th pillar: Economic impacts 99.....2.9

10th pillar: Social impacts 125.....2.8



The Networked Readiness Index in detail

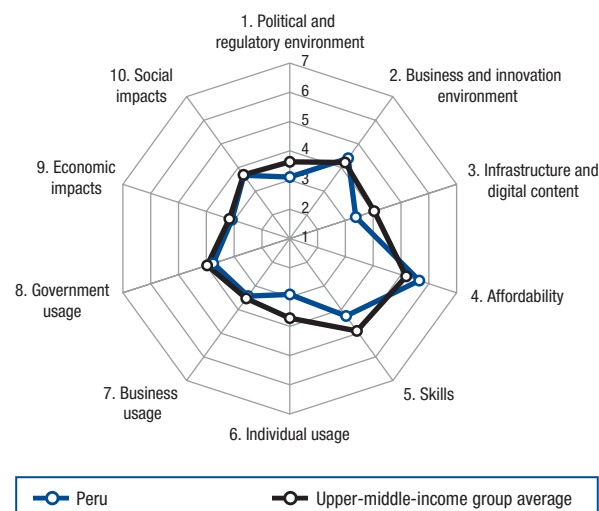
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	141	2.2
1.02 Laws relating to ICTs*	117	3.1
1.03 Judicial independence*	146	1.7
1.04 Efficiency of legal system in settling disputes*	141	2.5
1.05 Efficiency of legal system in challenging regs*	99	3.1
1.06 Intellectual property protection*	141	2.3
1.07 Software piracy rate, % software installed	93	83
1.08 No. procedures to enforce a contract	78	38
1.09 No. days to enforce a contract	88	591
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	114	4.1
2.02 Venture capital availability*	97	2.4
2.03 Total tax rate, % profits	62	35.0
2.04 No. days to start a business	120	35
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	57	5.2
2.07 Tertiary education gross enrollment rate, %	75	34.5
2.08 Quality of management schools*	132	3.2
2.09 Gov't procurement of advanced tech*	122	2.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	20	8,766.9
3.02 Mobile network coverage, % pop.	110	94.0
3.03 Int'l Internet bandwidth, kb/s per user	92	11.6
3.04 Secure Internet servers/million pop.	91	10.9
3.05 Accessibility of digital content*	109	4.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	62	0.22
4.02 Fixed broadband Internet tariffs, PPP \$/month	76	32.63
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	138	2.6
5.02 Quality of math & science education*	142	2.3
5.03 Secondary education gross enrollment rate, %	106	67.8
5.04 Adult literacy rate, %	70	93.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	89	101.6
6.02 Individuals using Internet, %	96	27.1
6.03 Households w/ personal computer, %	89	24.3
6.04 Households w/ Internet access, %	83	22.8
6.05 Fixed broadband Internet subs./100 pop.	104	1.2
6.06 Mobile broadband subscriptions/100 pop.	99	6.0
6.07 Use of virtual social networks*	92	5.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	103	4.3
7.02 Capacity for innovation*	115	3.0
7.03 PCT patents, applications/million pop.	97	0.1
7.04 Business-to-business Internet use*	109	4.4
7.05 Business-to-consumer Internet use*	77	4.4
7.06 Extent of staff training*	109	3.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	135	2.8
8.02 Government Online Service Index, 0-1 (best)	80	0.46
8.03 Gov't success in ICT promotion*	127	3.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	82	4.2
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	85	4.0
9.04 Knowledge-intensive jobs, % workforce	92	15.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	120	3.5
10.02 Internet access in schools*	130	2.6
10.03 ICT use & gov't efficiency*	130	3.1
10.04 E-Participation Index, 0-1 (best)	77	0.16

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Peru

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	90	3.7
Networked Readiness Index 2013 (out of 144).....	103.....	3.4
A. Environment subindex	93	3.7
1st pillar: Political and regulatory environment.....	119.....	3.1
2nd pillar: Business and innovation environment.....	61.....	4.4
B. Readiness subindex	90	4.4
3rd pillar: Infrastructure and digital content.....	95.....	3.4
4th pillar: Affordability.....	59.....	5.6
5th pillar: Skills.....	99.....	4.3
C. Usage subindex	98	3.4
6th pillar: Individual usage.....	94.....	2.9
7th pillar: Business usage.....	89.....	3.4
8th pillar: Government usage.....	94.....	3.8
D. Impact subindex	81	3.4
9th pillar: Economic impacts.....	84.....	3.1
10th pillar: Social impacts.....	75.....	3.7



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	144	2.1
1.02 Laws relating to ICTs*	84	3.7
1.03 Judicial independence*	126	2.5
1.04 Efficiency of legal system in settling disputes*	107	3.2
1.05 Efficiency of legal system in challenging regs*	109	3.0
1.06 Intellectual property protection*	120	2.8
1.07 Software piracy rate, % software installed	65	67
1.08 No. procedures to enforce a contract	111	41
1.09 No. days to enforce a contract	42	426
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	85	4.6
2.02 Venture capital availability*	50	2.9
2.03 Total tax rate, % profits	70	36.4
2.04 No. days to start a business	103	25
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	61	5.1
2.07 Tertiary education gross enrollment rate, %	62	42.6
2.08 Quality of management schools*	67	4.3
2.09 Gov't procurement of advanced tech*	98	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	92	1,324.4
3.02 Mobile network coverage, % pop.	92	97.0
3.03 Int'l Internet bandwidth, kb/s per user	91	13.1
3.04 Secure Internet servers/million pop.	80	21.7
3.05 Accessibility of digital content*	108	4.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	86	0.30
4.02 Fixed broadband Internet tariffs, PPP \$/month	65	29.78
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	134	2.7
5.02 Quality of math & science education*	140	2.4
5.03 Secondary education gross enrollment rate, %	70	90.7
5.04 Adult literacy rate, %	91	89.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	93	98.0
6.02 Individuals using Internet, %	86	38.2
6.03 Households w/ personal computer, %	85	29.9
6.04 Households w/ Internet access, %	89	20.2
6.05 Fixed broadband Internet subs./100 pop.	82	4.7
6.06 Mobile broadband subscriptions/100 pop.	114	2.9
6.07 Use of virtual social networks*	100	5.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	83	4.6
7.02 Capacity for innovation*	106	3.1
7.03 PCT patents, applications/million pop.	90	0.3
7.04 Business-to-business Internet use*	73	4.8
7.05 Business-to-consumer Internet use*	72	4.5
7.06 Extent of staff training*	90	3.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	114	3.3
8.02 Government Online Service Index, 0–1 (best)	61	0.52
8.03 Gov't success in ICT promotion*	107	3.8
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	72	4.4
9.02 ICT PCT patents, applications/million pop.	78	0.1
9.03 Impact of ICTs on new organizational models*	55	4.4
9.04 Knowledge-intensive jobs, % workforce	94	15.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	82	4.0
10.02 Internet access in schools*	94	3.7
10.03 ICT use & gov't efficiency*	102	3.6
10.04 E-Participation Index, 0–1 (best)	38	0.39

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

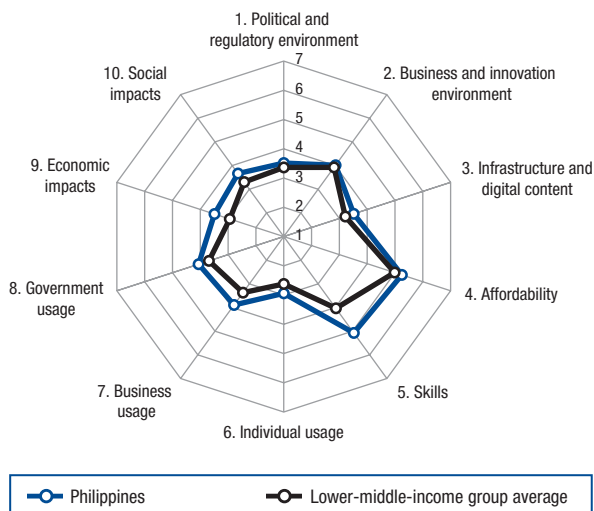
Philippines

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 78..3.9

Networked Readiness Index 2013 (out of 144)..... 86.....3.7

A. Environment subindex	90	3.8
1st pillar: Political and regulatory environment.....	87.....	3.5
2nd pillar: Business and innovation environment.....	92.....	4.0
B. Readiness subindex	81	4.6
3rd pillar: Infrastructure and digital content.....	89.....	3.5
4th pillar: Affordability.....	75.....	5.2
5th pillar: Skills.....	69.....	5.1
C. Usage subindex	76	3.6
6th pillar: Individual usage.....	91.....	2.9
7th pillar: Business usage.....	43.....	3.9
8th pillar: Government usage.....	67.....	4.1
D. Impact subindex	62	3.6
9th pillar: Economic impacts.....	48.....	3.5
10th pillar: Social impacts.....	76.....	3.7



The Networked Readiness Index in detail

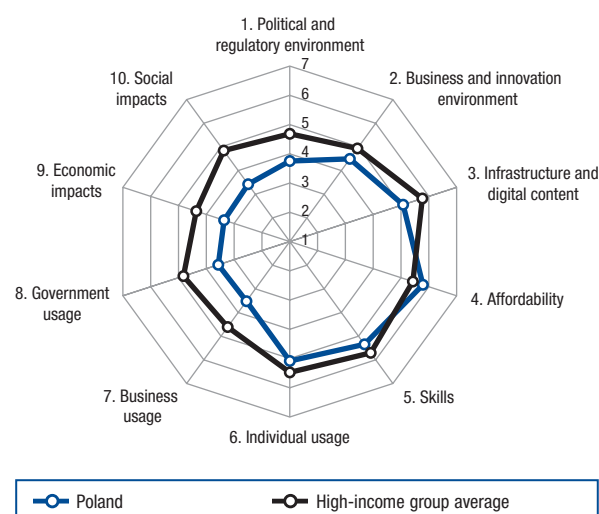
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	79	3.5
1.02 Laws relating to ICTs*	72	4.0
1.03 Judicial independence*	99	3.2
1.04 Efficiency of legal system in settling disputes*	76	3.6
1.05 Efficiency of legal system in challenging regs*	71	3.5
1.06 Intellectual property protection*	78	3.6
1.07 Software piracy rate, % software installed	70	70
1.08 No. procedures to enforce a contract	67	37
1.09 No. days to enforce a contract	122	842
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	47	5.3
2.02 Venture capital availability*	40	3.1
2.03 Total tax rate, % profits	104	44.5
2.04 No. days to start a business	120	35
2.05 No. procedures to start a business	144	15
2.06 Intensity of local competition*	63	5.1
2.07 Tertiary education gross enrollment rate, %	80	28.2
2.08 Quality of management schools*	39	4.7
2.09 Gov't procurement of advanced tech*	85	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	105	727.8
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	86	14.3
3.04 Secure Internet servers/million pop.	96	8.6
3.05 Accessibility of digital content*	73	5.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	83	0.29
4.02 Fixed broadband Internet tariffs, PPP \$/month	95	39.32
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	40	4.3
5.02 Quality of math & science education*	96	3.7
5.03 Secondary education gross enrollment rate, %	87	84.6
5.04 Adult literacy rate, %	64	95.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	79	106.5
6.02 Individuals using Internet, %	87	36.2
6.03 Households w/ personal computer, %	100	16.9
6.04 Households w/ Internet access, %	92	18.9
6.05 Fixed broadband Internet subs./100 pop.	94	2.2
6.06 Mobile broadband subscriptions/100 pop.	108	3.8
6.07 Use of virtual social networks*	22	6.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	40	5.2
7.02 Capacity for innovation*	48	3.8
7.03 PCT patents, applications/million pop.	84	0.3
7.04 Business-to-business Internet use*	51	5.2
7.05 Business-to-consumer Internet use*	63	4.7
7.06 Extent of staff training*	27	4.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	80	3.8
8.02 Government Online Service Index, 0-1 (best)	67	0.50
8.03 Gov't success in ICT promotion*	70	4.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	42	4.8
9.02 ICT PCT patents, applications/million pop.	74	0.1
9.03 Impact of ICTs on new organizational models*	28	4.8
9.04 Knowledge-intensive jobs, % workforce	68	22.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	74	4.1
10.02 Internet access in schools*	74	4.2
10.03 ICT use & gov't efficiency*	71	4.1
10.04 E-Participation Index, 0-1 (best)	63	0.21

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Poland

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	54 ..	4.2
Networked Readiness Index 2013 (out of 144).....	49.....	4.2
A. Environment subindex	55	4.1
1st pillar: Political and regulatory environment.....	65.....	3.8
2nd pillar: Business and innovation environment.....	52.....	4.5
B. Readiness subindex	39	5.4
3rd pillar: Infrastructure and digital content.....	38.....	5.1
4th pillar: Affordability.....	52.....	5.8
5th pillar: Skills.....	48.....	5.3
C. Usage subindex	54	4.1
6th pillar: Individual usage.....	36.....	5.1
7th pillar: Business usage.....	75.....	3.5
8th pillar: Government usage.....	108.....	3.6
D. Impact subindex	78	3.4
9th pillar: Economic impacts.....	62.....	3.4
10th pillar: Social impacts.....	88.....	3.4



The Networked Readiness Index in detail

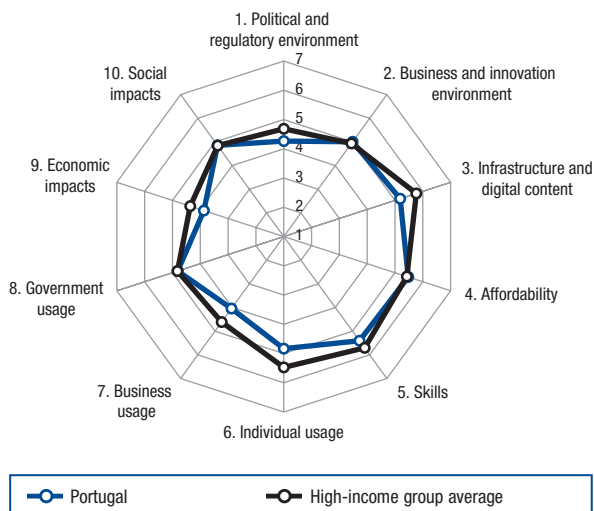
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	96	3.2
1.02 Laws relating to ICTs*	83	3.8
1.03 Judicial independence*	54	4.1
1.04 Efficiency of legal system in settling disputes*	119	3.0
1.05 Efficiency of legal system in challenging regs*	111	2.9
1.06 Intellectual property protection*	72	3.7
1.07 Software piracy rate, % software installed	40	5.3
1.08 No. procedures to enforce a contract	36	3.3
1.09 No. days to enforce a contract	108	6.85
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	102	4.4
2.02 Venture capital availability*	104	2.3
2.03 Total tax rate, % profits	91	41.6
2.04 No. days to start a business	113	3.0
2.05 No. procedures to start a business	22	4
2.06 Intensity of local competition*	38	5.3
2.07 Tertiary education gross enrollment rate, %	20	73.5
2.08 Quality of management schools*	89	4.0
2.09 Gov't procurement of advanced tech*	103	3.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	55	4,192.8
3.02 Mobile network coverage, % pop.	52	99.5
3.03 Int'l Internet bandwidth, kb/s per user	31	70.6
3.04 Secure Internet servers/million pop.	31	299.6
3.05 Accessibility of digital content*	70	5.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	56	0.19
4.02 Fixed broadband Internet tariffs, PPP \$/month	71	31.60
4.03 Internet & telephony competition, 0–2 (best)	82	1.77
5th pillar: Skills		
5.01 Quality of educational system*	87	3.4
5.02 Quality of math & science education*	69	4.1
5.03 Secondary education gross enrollment rate, %	48	97.4
5.04 Adult literacy rate, %	5	99.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	28	140.3
6.02 Individuals using Internet, %	41	65.0
6.03 Households w/ personal computer, %	37	73.0
6.04 Households w/ Internet access, %	34	70.0
6.05 Fixed broadband Internet subs./100 pop.	42	15.5
6.06 Mobile broadband subscriptions/100 pop.	19	63.5
6.07 Use of virtual social networks*	109	5.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	114	4.1
7.02 Capacity for innovation*	62	3.6
7.03 PCT patents, applications/million pop.	38	6.9
7.04 Business-to-business Internet use*	103	4.4
7.05 Business-to-consumer Internet use*	46	4.9
7.06 Extent of staff training*	75	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	125	3.1
8.02 Government Online Service Index, 0–1 (best)	55	0.54
8.03 Gov't success in ICT promotion*	123	3.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	105	3.9
9.02 ICT PCT patents, applications/million pop.	40	1.3
9.03 Impact of ICTs on new organizational models*	96	3.8
9.04 Knowledge-intensive jobs, % workforce	32	35.1
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	108	3.6
10.02 Internet access in schools*	55	4.6
10.03 ICT use & gov't efficiency*	119	3.4
10.04 E-Participation Index, 0–1 (best)	71	0.18

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Portugal

	Rank (out of 148)	Value (1-7)
Networked Readiness Index 2014	33	4.7
Networked Readiness Index 2013 (out of 144)	33	4.7
A. Environment subindex	35	4.6
1st pillar: Political and regulatory environment	39	4.3
2nd pillar: Business and innovation environment	25	5.0
B. Readiness subindex	43	5.3
3rd pillar: Infrastructure and digital content	36	5.2
4th pillar: Affordability	62	5.5
5th pillar: Skills	46	5.4
C. Usage subindex	32	4.6
6th pillar: Individual usage	42	4.8
7th pillar: Business usage	35	4.0
8th pillar: Government usage	33	4.8
D. Impact subindex	33	4.4
9th pillar: Economic impacts	34	3.9
10th pillar: Social impacts	30	4.8



The Networked Readiness Index in detail

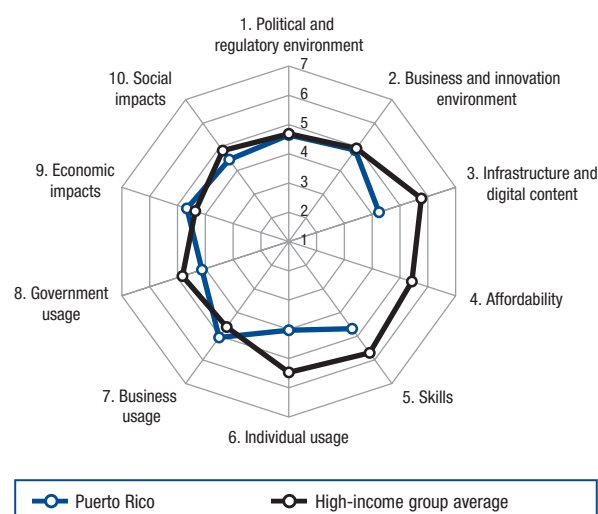
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	74	3.5
1.02 Laws relating to ICTs*	25	5.0
1.03 Judicial independence*	51	4.2
1.04 Efficiency of legal system in settling disputes*	122	2.9
1.05 Efficiency of legal system in challenging regs*	85	3.3
1.06 Intellectual property protection*	38	4.5
1.07 Software piracy rate, % software installed	25	4.0
1.08 No. procedures to enforce a contract	42	3.4
1.09 No. days to enforce a contract	76	5.47
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	15	6.2
2.02 Venture capital availability*	109	2.2
2.03 Total tax rate, % profits	93	42.3
2.04 No. days to start a business	5	3
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	77	4.9
2.07 Tertiary education gross enrollment rate, %	29	65.9
2.08 Quality of management schools*	11	5.5
2.09 Gov't procurement of advanced tech*	50	3.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	52	4,325.8
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	8	195.5
3.04 Secure Internet servers/million pop.	37	240.9
3.05 Accessibility of digital content*	27	6.0
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	85	0.29
4.02 Fixed broadband Internet tariffs, PPP \$/month	78	33.97
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	58	4.0
5.02 Quality of math & science education*	73	4.1
5.03 Secondary education gross enrollment rate, %	12	109.7
5.04 Adult literacy rate, %	63	95.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	58	116.1
6.02 Individuals using Internet, %	42	64.0
6.03 Households w/ personal computer, %	46	66.0
6.04 Households w/ Internet access, %	47	61.0
6.05 Fixed broadband Internet subs./100 pop.	33	22.5
6.06 Mobile broadband subscriptions/100 pop.	52	32.8
6.07 Use of virtual social networks*	52	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	29	5.5
7.02 Capacity for innovation*	42	3.9
7.03 PCT patents, applications/million pop.	30	12.7
7.04 Business-to-business Internet use*	29	5.6
7.05 Business-to-consumer Internet use*	32	5.2
7.06 Extent of staff training*	70	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	36	4.5
8.02 Government Online Service Index, 0-1 (best)	38	0.65
8.03 Gov't success in ICT promotion*	24	5.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	23	5.1
9.02 ICT PCT patents, applications/million pop.	30	3.4
9.03 Impact of ICTs on new organizational models*	27	4.8
9.04 Knowledge-intensive jobs, % workforce	45	31.0
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	27	5.2
10.02 Internet access in schools*	29	5.7
10.03 ICT use & gov't efficiency*	15	5.3
10.04 E-Participation Index, 0-1 (best)	41	0.37

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Puerto Rico

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	41	4.5
Networked Readiness Index 2013 (out of 144).....	36	4.6
A. Environment subindex	32	4.7
1st pillar: Political and regulatory environment.....	29	4.6
2nd pillar: Business and innovation environment.....	33	4.9
B. Readiness subindex	89	4.5
3rd pillar: Infrastructure and digital content.....	66	4.2
4th pillar: Affordability.....	n/a	n/a
5th pillar: Skills.....	90	4.7
C. Usage subindex	36	4.4
6th pillar: Individual usage.....	63	4.0
7th pillar: Business usage.....	19	5.0
8th pillar: Government usage.....	63	4.1
D. Impact subindex	26	4.6
9th pillar: Economic impacts.....	21	4.7
10th pillar: Social impacts.....	38	4.5



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	104	3.1
1.02 Laws relating to ICTs*	28	5.0
1.03 Judicial independence*	42	4.7
1.04 Efficiency of legal system in settling disputes*	16	5.2
1.05 Efficiency of legal system in challenging regs*	14	4.8
1.06 Intellectual property protection*	7	5.9
1.07 Software piracy rate, % software installed	29	4.2
1.08 No. procedures to enforce a contract	91	3.9
1.09 No. days to enforce a contract	98	6.20
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	25	6.0
2.02 Venture capital availability*	48	2.9
2.03 Total tax rate, % profits	120	50.7
2.04 No. days to start a business	22	6
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	9	5.9
2.07 Tertiary education gross enrollment rate, %	5	86.5
2.08 Quality of management schools*	44	4.6
2.09 Gov't procurement of advanced tech*	82	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	38	5,536.8
3.02 Mobile network coverage, % pop.	135	68.4
3.03 Int'l Internet bandwidth, kb/s per user	15	136.9
3.04 Secure Internet servers/million pop.	49	112.9
3.05 Accessibility of digital content*	30	5.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	n/a	n/a
4.02 Fixed broadband Internet tariffs, PPP \$/month	n/a	n/a
4.03 Internet & telephony competition, 0–2 (best)	n/a	n/a
5th pillar: Skills		
5.01 Quality of educational system*	63	3.8
5.02 Quality of math & science education*	93	3.8
5.03 Secondary education gross enrollment rate, %	94	78.3
5.04 Adult literacy rate, %	86	90.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	113	82.6
6.02 Individuals using Internet, %	63	51.4
6.03 Households w/ personal computer, %	54	60.0
6.04 Households w/ Internet access, %	48	60.7
6.05 Fixed broadband Internet subs./100 pop.	43	15.5
6.06 Mobile broadband subscriptions/100 pop.	81	13.7
6.07 Use of virtual social networks*	15	6.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	23	5.7
7.02 Capacity for innovation*	25	4.4
7.03 PCT patents, applications/million pop.	n/a	n/a
7.04 Business-to-business Internet use*	39	5.3
7.05 Business-to-consumer Internet use*	39	5.1
7.06 Extent of staff training*	18	4.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	73	3.9
8.02 Government Online Service Index, 0–1 (best)	n/a	n/a
8.03 Gov't success in ICT promotion*	73	4.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	44	4.8
9.02 ICT PCT patents, applications/million pop.	n/a	n/a
9.03 Impact of ICTs on new organizational models*	26	4.9
9.04 Knowledge-intensive jobs, % workforce	41	31.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	51	4.5
10.02 Internet access in schools*	59	4.5
10.03 ICT use & gov't efficiency*	58	4.3
10.04 E-Participation Index, 0–1 (best)	n/a	n/a

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

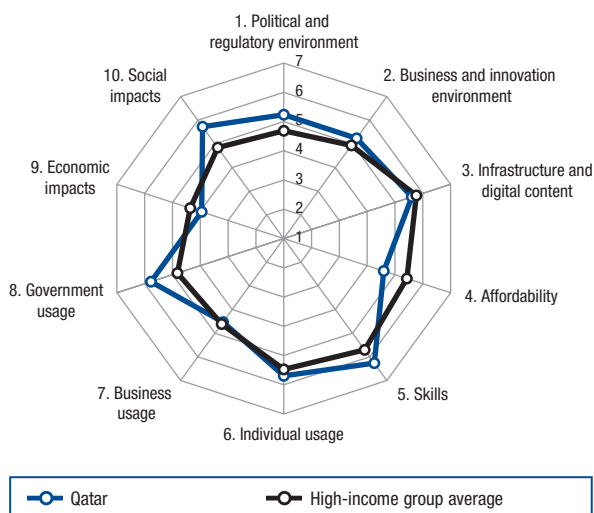
Qatar

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 23..5.2

Networked Readiness Index 2013 (out of 144)..... 23.....5.1

A. Environment subindex	13	5.2
1st pillar: Political and regulatory environment.....	14.....	5.2
2nd pillar: Business and innovation environment.....	17.....	5.2
B. Readiness subindex	36	5.5
3rd pillar: Infrastructure and digital content.....	31.....	5.6
4th pillar: Affordability.....	100.....	4.6
5th pillar: Skills.....	5.....	6.3
C. Usage subindex	18	5.3
6th pillar: Individual usage.....	21.....	5.7
7th pillar: Business usage.....	26.....	4.5
8th pillar: Government usage.....	4.....	5.8
D. Impact subindex	21	4.8
9th pillar: Economic impacts.....	32.....	4.0
10th pillar: Social impacts.....	8.....	5.7



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	3	5.7
1.02 Laws relating to ICTs*	6	5.6
1.03 Judicial independence*	12	6.1
1.04 Efficiency of legal system in settling disputes*	10	5.4
1.05 Efficiency of legal system in challenging regs*	7	5.2
1.06 Intellectual property protection*	4	6.0
1.07 Software piracy rate, % software installed	38	5.0
1.08 No. procedures to enforce a contract	122	4.3
1.09 No. days to enforce a contract	80	5.70
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	20	6.1
2.02 Venture capital availability*	2	4.5
2.03 Total tax rate, % profits	3	11.3
2.04 No. days to start a business	49	9
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	16	5.8
2.07 Tertiary education gross enrollment rate, %	113	12.1
2.08 Quality of management schools*	8	5.7
2.09 Gov't procurement of advanced tech*	1	5.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	6	16,081.4
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	50	33.2
3.04 Secure Internet servers/million pop.	44	140.9
3.05 Accessibility of digital content*	18	6.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	37	0.14
4.02 Fixed broadband Internet tariffs, PPP \$/month	112	49.90
4.03 Internet & telephony competition, 0-2 (best)	128	0.93
5th pillar: Skills		
5.01 Quality of educational system*	4	5.8
5.02 Quality of math & science education*	6	5.6
5.03 Secondary education gross enrollment rate, %	9	111.6
5.04 Adult literacy rate, %	57	96.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	40	126.9
6.02 Individuals using Internet, %	9	88.1
6.03 Households w/ personal computer, %	8	91.5
6.04 Households w/ Internet access, %	10	88.1
6.05 Fixed broadband Internet subs./100 pop.	60	10.5
6.06 Mobile broadband subscriptions/100 pop.	20	61.8
6.07 Use of virtual social networks*	17	6.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	10	5.9
7.02 Capacity for innovation*	17	4.8
7.03 PCT patents, applications/million pop.	46	5.4
7.04 Business-to-business Internet use*	16	5.9
7.05 Business-to-consumer Internet use*	37	5.1
7.06 Extent of staff training*	5	5.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	2	5.9
8.02 Government Online Service Index, 0-1 (best)	27	0.74
8.03 Gov't success in ICT promotion*	3	6.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	8	5.5
9.02 ICT PCT patents, applications/million pop.	31	2.9
9.03 Impact of ICTs on new organizational models*	2	5.5
9.04 Knowledge-intensive jobs, % workforce	61	24.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	1	6.1
10.02 Internet access in schools*	15	6.0
10.03 ICT use & gov't efficiency*	3	6.0
10.04 E-Participation Index, 0-1 (best)	22	0.63

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Romania

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 75..3.9

Networked Readiness Index 2013 (out of 144)..... 75.....3.9

A. Environment subindex..... 85.....3.8

1st pillar: Political and regulatory environment..... 101.....3.4

2nd pillar: Business and innovation environment..... 72.....4.2

B. Readiness subindex..... 52.....5.1

3rd pillar: Infrastructure and digital content..... 51.....4.7

4th pillar: Affordability..... 68.....5.4

5th pillar: Skills..... 54.....5.3

C. Usage subindex..... 68.....3.8

6th pillar: Individual usage..... 62.....4.2

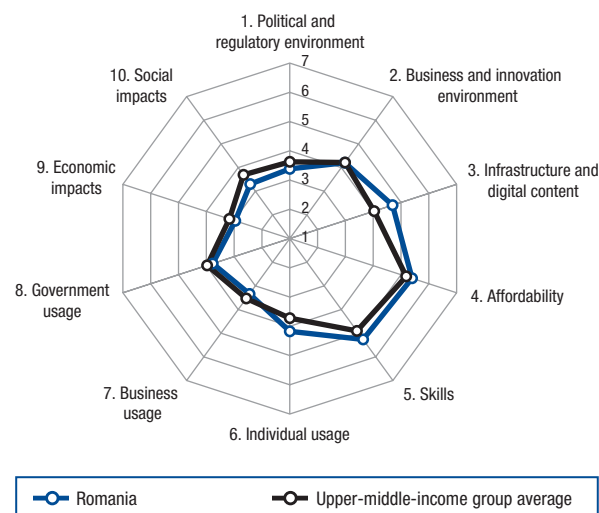
7th pillar: Business usage..... 98.....3.3

8th pillar: Government usage..... 90.....3.8

D. Impact subindex..... 100.....3.1

9th pillar: Economic impacts..... 97.....3.0

10th pillar: Social impacts..... 96.....3.3



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	127	2.7
1.02 Laws relating to ICTs*	63	4.1
1.03 Judicial independence*	114	2.8
1.04 Efficiency of legal system in settling disputes*	128	2.8
1.05 Efficiency of legal system in challenging regs*	128	2.6
1.06 Intellectual property protection*	110	2.9
1.07 Software piracy rate, % software installed	58	63
1.08 No. procedures to enforce a contract	27	32
1.09 No. days to enforce a contract	64	512
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	107	4.3
2.02 Venture capital availability*	92	2.4
2.03 Total tax rate, % profits	95	42.9
2.04 No. days to start a business	49	9
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	115	4.4
2.07 Tertiary education gross enrollment rate, %	53	51.6
2.08 Quality of management schools*	104	3.7
2.09 Gov't procurement of advanced tech*	99	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	70	2,899.2
3.02 Mobile network coverage, % pop.	33	99.9
3.03 Int'l Internet bandwidth, kb/s per user	16	114.9
3.04 Secure Internet servers/million pop.	56	66.6
3.05 Accessibility of digital content*	55	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	133	0.54
4.02 Fixed broadband Internet tariffs, PPP \$/month	13	15.74
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	99	3.3
5.02 Quality of math & science education*	57	4.3
5.03 Secondary education gross enrollment rate, %	53	96.0
5.04 Adult literacy rate, %	52	97.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	85	105.0
6.02 Individuals using Internet, %	64	50.0
6.03 Households w/ personal computer, %	57	57.0
6.04 Households w/ Internet access, %	51	54.0
6.05 Fixed broadband Internet subs./100 pop.	41	16.2
6.06 Mobile broadband subscriptions/100 pop.	61	27.0
6.07 Use of virtual social networks*	84	5.5
7th pillar: Business usage		
7.01 Firm-level technology absorption*	104	4.3
7.02 Capacity for innovation*	90	3.4
7.03 PCT patents, applications/million pop.	56	2.1
7.04 Business-to-business Internet use*	84	4.7
7.05 Business-to-consumer Internet use*	42	5.0
7.06 Extent of staff training*	134	3.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	103	3.5
8.02 Government Online Service Index, 0–1 (best)	61	0.52
8.03 Gov't success in ICT promotion*	114	3.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	103	3.9
9.02 ICT PCT patents, applications/million pop.	48	0.7
9.03 Impact of ICTs on new organizational models*	115	3.6
9.04 Knowledge-intensive jobs, % workforce	70	22.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	110	3.6
10.02 Internet access in schools*	60	4.5
10.03 ICT use & gov't efficiency*	103	3.6
10.04 E-Participation Index, 0–1 (best)	97	0.08

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Russian Federation

Rank Value
(out of 148) (1-7)

Networked Readiness Index 2014 50..4.3

Networked Readiness Index 2013 (out of 144)..... 54.....4.1

A. Environment subindex..... 87.....3.8

1st pillar: Political and regulatory environment..... 100.....3.4

2nd pillar: Business and innovation environment..... 73.....4.2

B. Readiness subindex..... 37.....5.5

3rd pillar: Infrastructure and digital content..... 47.....4.8

4th pillar: Affordability..... 14.....6.4

5th pillar: Skills..... 64.....5.1

C. Usage subindex..... 53.....4.1

6th pillar: Individual usage..... 46.....4.6

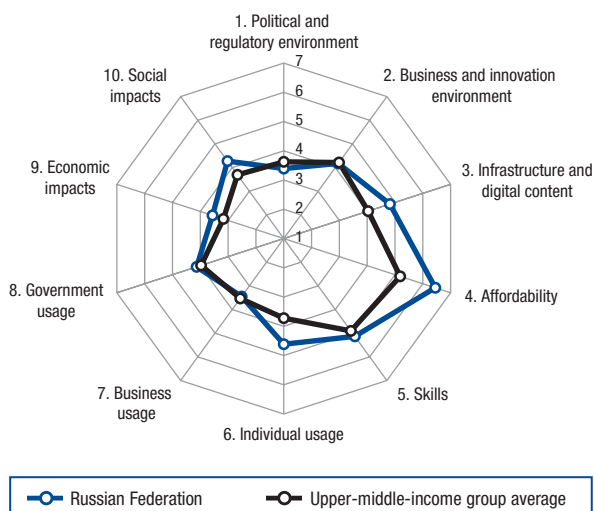
7th pillar: Business usage..... 84.....3.4

8th pillar: Government usage..... 61.....4.1

D. Impact subindex..... 44.....3.9

9th pillar: Economic impacts..... 41.....3.6

10th pillar: Social impacts..... 41.....4.3



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	95	3.3
1.02 Laws relating to ICTs*	95	3.5
1.03 Judicial independence*	119	2.7
1.04 Efficiency of legal system in settling disputes*	118	3.0
1.05 Efficiency of legal system in challenging regs*	120	2.8
1.06 Intellectual property protection*	113	2.9
1.07 Software piracy rate, % software installed	58	63
1.08 No. procedures to enforce a contract	55	36
1.09 No. days to enforce a contract	8	270
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	124	4.0
2.02 Venture capital availability*	70	2.6
2.03 Total tax rate, % profits	120	50.7
2.04 No. days to start a business	76	15
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	113	4.5
2.07 Tertiary education gross enrollment rate, %	16	75.5
2.08 Quality of management schools*	113	3.6
2.09 Gov't procurement of advanced tech*	108	3.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	29	7,365.7
3.02 Mobile network coverage, % pop.	101	95.0
3.03 Int'l Internet bandwidth, kb/s per user	51	32.8
3.04 Secure Internet servers/million pop.	64	38.9
3.05 Accessibility of digital content*	66	5.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	34	0.14
4.02 Fixed broadband Internet tariffs, PPP \$/month	17	16.29
4.03 Internet & telephony competition, 0-2 (best)	98	1.50
5th pillar: Skills		
5.01 Quality of educational system*	85	3.5
5.02 Quality of math & science education*	56	4.3
5.03 Secondary education gross enrollment rate, %	86	84.9
5.04 Adult literacy rate, %	10	99.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	4	182.9
6.02 Individuals using Internet, %	62	53.3
6.03 Households w/ personal computer, %	52	60.6
6.04 Households w/ Internet access, %	54	51.2
6.05 Fixed broadband Internet subs./100 pop.	45	14.5
6.06 Mobile broadband subscriptions/100 pop.	27	52.8
6.07 Use of virtual social networks*	89	5.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	126	3.9
7.02 Capacity for innovation*	64	3.5
7.03 PCT patents, applications/million pop.	39	6.8
7.04 Business-to-business Internet use*	94	4.6
7.05 Business-to-consumer Internet use*	49	4.9
7.06 Extent of staff training*	88	3.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	102	3.5
8.02 Government Online Service Index, 0-1 (best)	37	0.66
8.03 Gov't success in ICT promotion*	100	3.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	113	3.8
9.02 ICT PCT patents, applications/million pop.	34	1.5
9.03 Impact of ICTs on new organizational models*	93	3.9
9.04 Knowledge-intensive jobs, % workforce	17	42.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	102	3.7
10.02 Internet access in schools*	54	4.6
10.03 ICT use & gov't efficiency*	93	3.8
10.04 E-Participation Index, 0-1 (best)	19	0.66

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Rwanda

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....85..3.8

Networked Readiness Index 2013 (out of 144).....88.....3.7

A. Environment subindex.....28....4.8

1st pillar: Political and regulatory environment.....17.....5.2

2nd pillar: Business and innovation environment.....55.....4.5

B. Readiness subindex.....125....3.1

3rd pillar: Infrastructure and digital content.....108.....3.0

4th pillar: Affordability.....128.....3.1

5th pillar: Skills.....123.....3.3

C. Usage subindex.....97....3.4

6th pillar: Individual usage.....138.....1.7

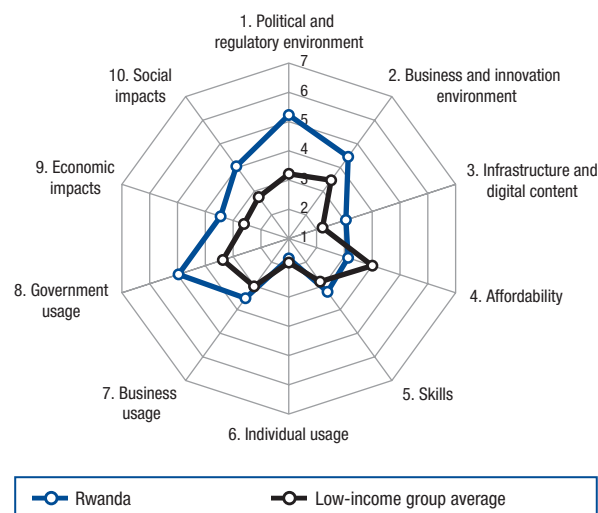
7th pillar: Business usage.....76.....3.5

8th pillar: Government usage.....29.....5.0

D. Impact subindex.....51....3.8

9th pillar: Economic impacts.....53.....3.5

10th pillar: Social impacts.....53.....4.1



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	9	5.3
1.02 Laws relating to ICTs*	37	4.8
1.03 Judicial independence*	33	5.0
1.04 Efficiency of legal system in settling disputes*	17	5.1
1.05 Efficiency of legal system in challenging regs*	20	4.5
1.06 Intellectual property protection*	33	4.7
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	3	23
1.09 No. days to enforce a contract	4	230
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	62	5.1
2.02 Venture capital availability*	35	3.2
2.03 Total tax rate, % profits	41	29.9
2.04 No. days to start a business	2	2
2.05 No. procedures to start a business	3	2
2.06 Intensity of local competition*	90	4.7
2.07 Tertiary education gross enrollment rate, %	132	6.9
2.08 Quality of management schools*	91	3.9
2.09 Gov't procurement of advanced tech*	5	4.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	144	22.8
3.02 Mobile network coverage, % pop.	80	98.4
3.03 Int'l Internet bandwidth, kb/s per user	103	6.6
3.04 Secure Internet servers/million pop.	119	2.0
3.05 Accessibility of digital content*	105	4.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	95	0.33
4.02 Fixed broadband Internet tariffs, PPP \$/month	143	398.83
4.03 Internet & telephony competition, 0–2 (best)	62	1.93
5th pillar: Skills		
5.01 Quality of educational system*	51	4.1
5.02 Quality of math & science education*	70	4.1
5.03 Secondary education gross enrollment rate, %	139	31.8
5.04 Adult literacy rate, %	120	71.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	137	49.7
6.02 Individuals using Internet, %	127	8.0
6.03 Households w/ personal computer, %	140	2.4
6.04 Households w/ Internet access, %	138	2.4
6.05 Fixed broadband Internet subs./100 pop.	137	0.0
6.06 Mobile broadband subscriptions/100 pop.	113	3.2
6.07 Use of virtual social networks*	120	4.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	61	4.8
7.02 Capacity for innovation*	76	3.5
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	90	4.6
7.05 Business-to-consumer Internet use*	102	4.0
7.06 Extent of staff training*	71	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	5	5.6
8.02 Government Online Service Index, 0–1 (best)	105	0.34
8.03 Gov't success in ICT promotion*	1	6.2
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	34	4.9
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	53	4.4
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	33	5.1
10.02 Internet access in schools*	68	4.3
10.03 ICT use & gov't efficiency*	4	5.7
10.04 E-Participation Index, 0–1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

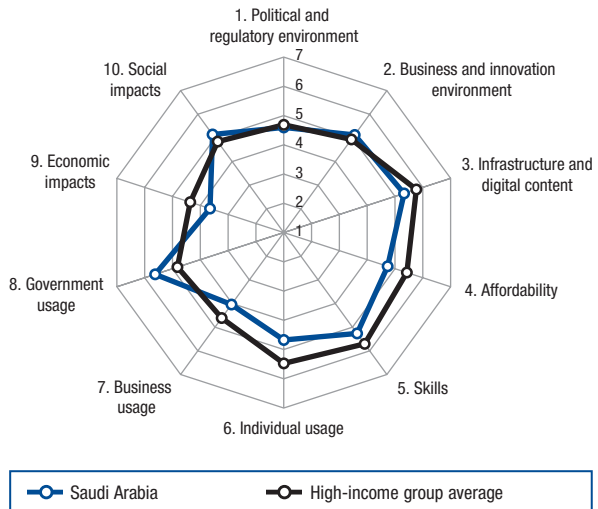
Saudi Arabia

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 32..4.8

Networked Readiness Index 2013 (out of 144)..... 314.8

A. Environment subindex	27	4.9
1st pillar: Political and regulatory environment.....	31.....	4.6
2nd pillar: Business and innovation environment.....	23.....	5.1
B. Readiness subindex	54	5.1
3rd pillar: Infrastructure and digital content.....	33.....	5.3
4th pillar: Affordability.....	96.....	4.7
5th pillar: Skills.....	55.....	5.3
C. Usage subindex	31	4.8
6th pillar: Individual usage.....	44.....	4.7
7th pillar: Business usage.....	34.....	4.0
8th pillar: Government usage.....	6.....	5.6
D. Impact subindex	32	4.4
9th pillar: Economic impacts.....	37.....	3.6
10th pillar: Social impacts.....	22.....	5.1



The Networked Readiness Index in detail

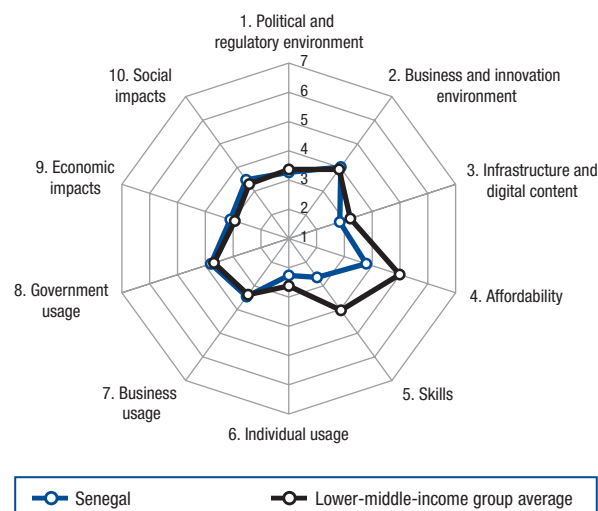
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	32	4.3
1.02 Laws relating to ICTs*	27	5.0
1.03 Judicial independence*	28	5.3
1.04 Efficiency of legal system in settling disputes*	36	4.5
1.05 Efficiency of legal system in challenging regs*	28	4.4
1.06 Intellectual property protection*	27	5.0
1.07 Software piracy rate, % software installed	39	5.1
1.08 No. procedures to enforce a contract	98	4.0
1.09 No. days to enforce a contract	102	6.35
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	32	5.8
2.02 Venture capital availability*	25	3.4
2.03 Total tax rate, % profits	6	14.5
2.04 No. days to start a business	97	2.1
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	18	5.7
2.07 Tertiary education gross enrollment rate, %	55	50.9
2.08 Quality of management schools*	64	4.3
2.09 Gov't procurement of advanced tech*	6	4.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	17	9,008.0
3.02 Mobile network coverage, % pop.	55	99.4
3.03 Int'l Internet bandwidth, kb/s per user	49	36.4
3.04 Secure Internet servers/million pop.	68	30.5
3.05 Accessibility of digital content*	39	5.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	52	0.18
4.02 Fixed broadband Internet tariffs, PPP \$/month	110	49.34
4.03 Internet & telephony competition, 0-2 (best)	104	1.33
5th pillar: Skills		
5.01 Quality of educational system*	39	4.3
5.02 Quality of math & science education*	64	4.2
5.03 Secondary education gross enrollment rate, %	7	114.3
5.04 Adult literacy rate, %	98	87.2

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	2	187.4
6.02 Individuals using Internet, %	60	54.0
6.03 Households w/ personal computer, %	43	67.7
6.04 Households w/ Internet access, %	38	66.6
6.05 Fixed broadband Internet subs./100 pop.	73	6.9
6.06 Mobile broadband subscriptions/100 pop.	36	45.4
6.07 Use of virtual social networks*	33	6.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	15	5.8
7.02 Capacity for innovation*	43	3.9
7.03 PCT patents, applications/million pop.	42	6.2
7.04 Business-to-business Internet use*	23	5.7
7.05 Business-to-consumer Internet use*	54	4.8
7.06 Extent of staff training*	57	4.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	8	5.4
8.02 Government Online Service Index, 0-1 (best)	19	0.80
8.03 Gov't success in ICT promotion*	7	5.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	24	5.1
9.02 ICT PCT patents, applications/million pop.	33	2.0
9.03 Impact of ICTs on new organizational models*	23	4.9
9.04 Knowledge-intensive jobs, % workforce	67	22.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	16	5.5
10.02 Internet access in schools*	49	4.8
10.03 ICT use & gov't efficiency*	7	5.5
10.04 E-Participation Index, 0-1 (best)	22	0.63

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Senegal

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	114	3.3
Networked Readiness Index 2013 (out of 144).....	107.....	3.3
A. Environment subindex	100	3.6
1st pillar: Political and regulatory environment.....	106.....	3.3
2nd pillar: Business and innovation environment.....	89.....	4.0
B. Readiness subindex	127	3.1
3rd pillar: Infrastructure and digital content.....	116.....	2.8
4th pillar: Affordability.....	117.....	3.8
5th pillar: Skills.....	134.....	2.6
C. Usage subindex	106	3.2
6th pillar: Individual usage.....	115.....	2.3
7th pillar: Business usage.....	85.....	3.4
8th pillar: Government usage.....	88.....	3.8
D. Impact subindex	85	3.3
9th pillar: Economic impacts.....	82.....	3.1
10th pillar: Social impacts.....	86.....	3.5



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	80	3.4
1.02 Laws relating to ICTs*	100	3.4
1.03 Judicial independence*	103	3.1
1.04 Efficiency of legal system in settling disputes*	52	3.9
1.05 Efficiency of legal system in challenging regs*	59	3.6
1.06 Intellectual property protection*	96	3.2
1.07 Software piracy rate, % software installed	81	78
1.08 No. procedures to enforce a contract	122	43
1.09 No. days to enforce a contract	117	770
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	54	5.2
2.02 Venture capital availability*	108	2.2
2.03 Total tax rate, % profits	111	48.5
2.04 No. days to start a business	22	6
2.05 No. procedures to start a business	22	4
2.06 Intensity of local competition*	58	5.1
2.07 Tertiary education gross enrollment rate, %	127	7.6
2.08 Quality of management schools*	43	4.6
2.09 Gov't procurement of advanced tech*	42	3.8
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	123	226.1
3.02 Mobile network coverage, % pop.	114	91.1
3.03 Int'l Internet bandwidth, kb/s per user	114	5.1
3.04 Secure Internet servers/million pop.	118	2.1
3.05 Accessibility of digital content*	96	4.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min	91	0.32
4.02 Fixed broadband Internet tariffs, PPP \$/month	121	65.73
4.03 Internet & telephony competition, 0–2 (best)	84	1.76
5th pillar: Skills		
5.01 Quality of educational system*	80	3.5
5.02 Quality of math & science education*	79	4.0
5.03 Secondary education gross enrollment rate, %	130	41.0
5.04 Adult literacy rate, %	139	49.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	111	83.6
6.02 Individuals using Internet, %	103	19.2
6.03 Households w/ personal computer, %	116	9.0
6.04 Households w/ Internet access, %	119	5.8
6.05 Fixed broadband Internet subs./100 pop.	112	0.7
6.06 Mobile broadband subscriptions/100 pop.	111	3.6
6.07 Use of virtual social networks*	73	5.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	39	5.2
7.02 Capacity for innovation*	92	3.3
7.03 PCT patents, applications/million pop.	102	0.1
7.04 Business-to-business Internet use*	83	4.7
7.05 Business-to-consumer Internet use*	92	4.2
7.06 Extent of staff training*	125	3.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	91	3.7
8.02 Government Online Service Index, 0–1 (best)	104	0.35
8.03 Gov't success in ICT promotion*	47	4.6
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	54	4.6
9.02 ICT PCT patents, applications/million pop.	82	0.0
9.03 Impact of ICTs on new organizational models*	104	3.7
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	77	4.0
10.02 Internet access in schools*	93	3.7
10.03 ICT use & gov't efficiency*	88	3.9
10.04 E-Participation Index, 0–1 (best)	63	0.21

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Serbia

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 80..3.9

Networked Readiness Index 2013 (out of 144)..... 87.....3.7

A. Environment subindex..... 106.....3.6

1st pillar: Political and regulatory environment..... 118.....3.1

2nd pillar: Business and innovation environment..... 87.....4.0

B. Readiness subindex..... 53.....5.1

3rd pillar: Infrastructure and digital content..... 49.....4.8

4th pillar: Affordability..... 67.....5.4

5th pillar: Skills..... 63.....5.2

C. Usage subindex..... 72.....3.7

6th pillar: Individual usage..... 54.....4.4

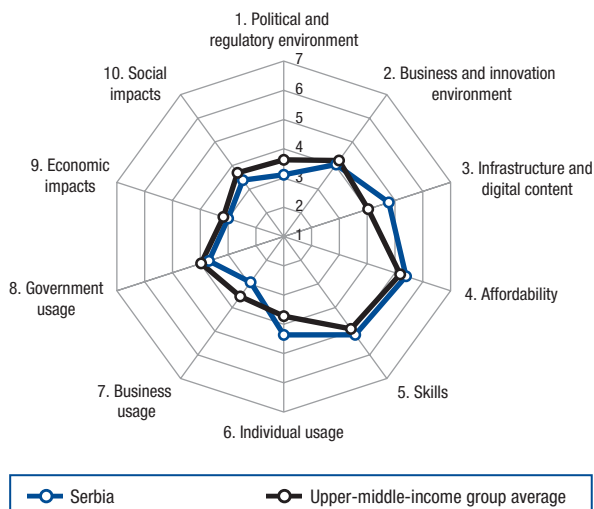
7th pillar: Business usage..... 133.....2.9

8th pillar: Government usage..... 100.....3.7

D. Impact subindex..... 93.....3.2

9th pillar: Economic impacts..... 93.....3.0

10th pillar: Social impacts..... 90.....3.4



The Networked Readiness Index in detail

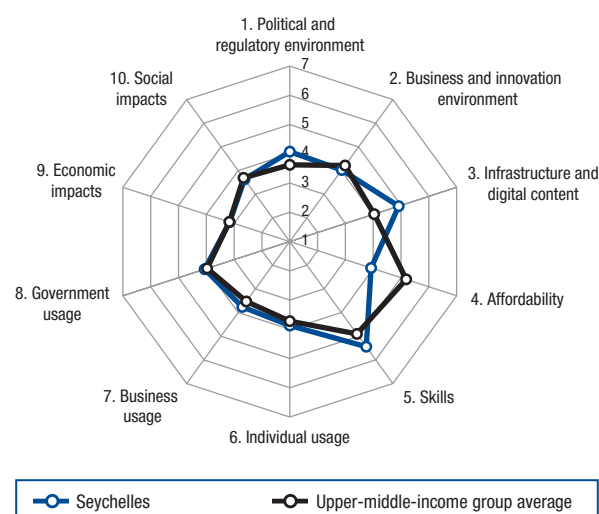
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	98	3.2
1.02 Laws relating to ICTs*	103	3.4
1.03 Judicial independence*	124	2.6
1.04 Efficiency of legal system in settling disputes*	137	2.5
1.05 Efficiency of legal system in challenging regs*	136	2.5
1.06 Intellectual property protection*	115	2.9
1.07 Software piracy rate, % software installed	72	72
1.08 No. procedures to enforce a contract	55	36
1.09 No. days to enforce a contract	102	635
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	118	4.1
2.02 Venture capital availability*	129	1.9
2.03 Total tax rate, % profits	73	36.8
2.04 No. days to start a business	62	12
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	138	3.8
2.07 Tertiary education gross enrollment rate, %	52	52.4
2.08 Quality of management schools*	114	3.6
2.09 Gov't procurement of advanced tech*	123	2.8
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	42	5,238.4
3.02 Mobile network coverage, % pop.	49	99.7
3.03 Int'l Internet bandwidth, kb/s per user	24	89.6
3.04 Secure Internet servers/million pop.	65	37.7
3.05 Accessibility of digital content*	101	4.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	68	0.23
4.02 Fixed broadband Internet tariffs, PPP \$/month	97	40.27
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	111	3.1
5.02 Quality of math & science education*	55	4.3
5.03 Secondary education gross enrollment rate, %	67	91.7
5.04 Adult literacy rate, %	48	98.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	55	117.9
6.02 Individuals using Internet, %	67	48.1
6.03 Households w/ personal computer, %	53	60.3
6.04 Households w/ Internet access, %	57	48.0
6.05 Fixed broadband Internet subs./100 pop.	50	12.9
6.06 Mobile broadband subscriptions/100 pop.	30	52.1
6.07 Use of virtual social networks*	112	5.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	137	3.7
7.02 Capacity for innovation*	133	2.8
7.03 PCT patents, applications/million pop.	55	2.2
7.04 Business-to-business Internet use*	112	4.3
7.05 Business-to-consumer Internet use*	109	3.8
7.06 Extent of staff training*	140	3.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	120	3.2
8.02 Government Online Service Index, 0–1 (best)	48	0.58
8.03 Gov't success in ICT promotion*	128	3.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	124	3.6
9.02 ICT PCT patents, applications/million pop.	59	0.4
9.03 Impact of ICTs on new organizational models*	131	3.2
9.04 Knowledge-intensive jobs, % workforce	46	30.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	103	3.7
10.02 Internet access in schools*	84	3.9
10.03 ICT use & gov't efficiency*	109	3.5
10.04 E-Participation Index, 0–1 (best)	59	0.24

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Seychelles

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	66	4.0
Networked Readiness Index 2013 (out of 144).....	79.....	3.8
A. Environment subindex	62	4.0
1st pillar: Political and regulatory environment.....	49.....	4.1
2nd pillar: Business and innovation environment.....	90.....	4.0
B. Readiness subindex	74	4.8
3rd pillar: Infrastructure and digital content.....	43.....	4.9
4th pillar: Affordability.....	113.....	3.9
5th pillar: Skills.....	44.....	5.4
C. Usage subindex	64	3.9
6th pillar: Individual usage.....	65.....	3.9
7th pillar: Business usage.....	55.....	3.8
8th pillar: Government usage.....	68.....	4.1
D. Impact subindex	77	3.4
9th pillar: Economic impacts.....	77.....	3.2
10th pillar: Social impacts.....	79.....	3.6



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	37	4.3
1.02 Laws relating to ICTs*	69	4.0
1.03 Judicial independence*	52	4.1
1.04 Efficiency of legal system in settling disputes*	47	4.1
1.05 Efficiency of legal system in challenging regs*	41	4.0
1.06 Intellectual property protection*	46	4.1
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	67	3.7
1.09 No. days to enforce a contract	127	9.15
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	68	5.0
2.02 Venture capital availability*	42	3.1
2.03 Total tax rate, % profits	25	25.7
2.04 No. days to start a business	127	3.9
2.05 No. procedures to start a business	119	1.0
2.06 Intensity of local competition*	100	4.6
2.07 Tertiary education gross enrollment rate, %	146	1.4
2.08 Quality of management schools*	75	4.2
2.09 Gov't procurement of advanced tech*	33	3.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	71	2,806.5
3.02 Mobile network coverage, % pop.	81	98.0
3.03 Int'l Internet bandwidth, kb/s per user	82	15.6
3.04 Secure Internet servers/million pop.	17	1,127.8
3.05 Accessibility of digital content*	83	4.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	139	0.62
4.02 Fixed broadband Internet tariffs, PPP \$/month	67	30.53
4.03 Internet & telephony competition, 0–2 (best)	124	1.08
5th pillar: Skills		
5.01 Quality of educational system*	31	4.4
5.02 Quality of math & science education*	65	4.2
5.03 Secondary education gross enrollment rate, %	31	101.3
5.04 Adult literacy rate, %	81	91.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	22	147.8
6.02 Individuals using Internet, %	69	47.1
6.03 Households w/ personal computer, %	62	51.9
6.04 Households w/ Internet access, %	67	41.9
6.05 Fixed broadband Internet subs./100 pop.	55	11.0
6.06 Mobile broadband subscriptions/100 pop.	89	8.6
6.07 Use of virtual social networks*	94	5.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	55	4.9
7.02 Capacity for innovation*	58	3.6
7.03 PCT patents, applications/million pop.	27	25.7
7.04 Business-to-business Internet use*	96	4.6
7.05 Business-to-consumer Internet use*	113	3.7
7.06 Extent of staff training*	39	4.4
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	38	4.5
8.02 Government Online Service Index, 0–1 (best)	106	0.33
8.03 Gov't success in ICT promotion*	42	4.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	87	4.2
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	99	3.7
9.04 Knowledge-intensive jobs, % workforce	53	26.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	57	4.5
10.02 Internet access in schools*	69	4.3
10.03 ICT use & gov't efficiency*	59	4.3
10.04 E-Participation Index, 0–1 (best)	97	0.08

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Sierra Leone

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 134..2.9

Networked Readiness Index 2013 (out of 144)..... 143.....2.5

A. Environment subindex..... 108.....3.6

1st pillar: Political and regulatory environment..... 82.....3.6

2nd pillar: Business and innovation environment..... 124.....3.6

B. Readiness subindex 141.....2.6

3rd pillar: Infrastructure and digital content..... 138.....1.8

4th pillar: Affordability 114.....3.9

5th pillar: Skills 146.....2.0

C. Usage subindex 135.....2.6

6th pillar: Individual usage 135.....1.7

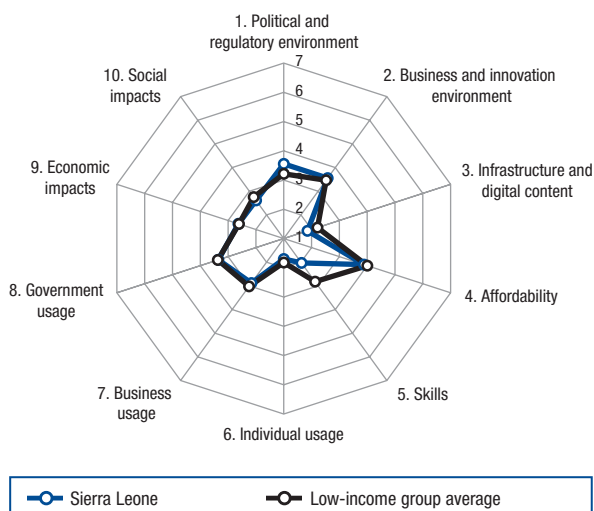
7th pillar: Business usage 134.....2.9

8th pillar: Government usage 119.....3.3

D. Impact subindex 130.....2.6

9th pillar: Economic impacts 124.....2.6

10th pillar: Social impacts 133.....2.6



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	48	4.0
1.02 Laws relating to ICTs*	120	3.1
1.03 Judicial independence*	104	3.1
1.04 Efficiency of legal system in settling disputes*	69	3.7
1.05 Efficiency of legal system in challenging regs*	125	2.7
1.06 Intellectual property protection*	87	3.4
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	91	3.9
1.09 No. days to enforce a contract	66	5.15
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	137	3.6
2.02 Venture capital availability*	145	1.7
2.03 Total tax rate, % profits	50	32.4
2.04 No. days to start a business	63	12
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	130	4.1
2.07 Tertiary education gross enrollment rate, %	136	5.0
2.08 Quality of management schools*	131	3.2
2.09 Gov't procurement of advanced tech*	84	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	145	21.3
3.02 Mobile network coverage, % pop.	132	70.0
3.03 Int'l Internet bandwidth, kb/s per user	137	2.0
3.04 Secure Internet servers/million pop.	138	0.7
3.05 Accessibility of digital content*	137	3.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	2	0.00
4.02 Fixed broadband Internet tariffs, PPP \$/month	125	70.50
4.03 Internet & telephony competition, 0–2 (best)	129	0.92
5th pillar: Skills		
5.01 Quality of educational system*	116	3.0
5.02 Quality of math & science education*	135	2.6
5.03 Secondary education gross enrollment rate, %	136	35.0
5.04 Adult literacy rate, %	141	43.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	142	37.0
6.02 Individuals using Internet, %	145	1.3
6.03 Households w/ personal computer, %	146	0.8
6.04 Households w/ Internet access, %	n/a	n/a
6.05 Fixed broadband Internet subs./100 pop.	147	0.0
6.06 Mobile broadband subscriptions/100 pop.	n/a	n/a
6.07 Use of virtual social networks*	135	4.5
7th pillar: Business usage		
7.01 Firm-level technology absorption*	134	3.8
7.02 Capacity for innovation*	131	2.8
7.03 PCT patents, applications/million pop.	109	0.0
7.04 Business-to-business Internet use*	131	4.0
7.05 Business-to-consumer Internet use*	143	2.7
7.06 Extent of staff training*	117	3.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	75	3.9
8.02 Government Online Service Index, 0–1 (best)	135	0.17
8.03 Gov't success in ICT promotion*	87	4.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	123	3.6
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	129	3.3
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	133	3.2
10.02 Internet access in schools*	133	2.3
10.03 ICT use & gov't efficiency*	105	3.6
10.04 E-Participation Index, 0–1 (best)	107	0.05

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Singapore

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....2..6.0

Networked Readiness Index 2013 (out of 144).....2.....6.0

A. Environment subindex.....1.....5.9

1st pillar: Political and regulatory environment.....1.....5.9

2nd pillar: Business and innovation environment.....1.....5.8

B. Readiness subindex.....6.....6.2

3rd pillar: Infrastructure and digital content.....16.....6.3

4th pillar: Affordability.....46.....5.9

5th pillar: Skills.....2.....6.4

C. Usage subindex.....4.....5.9

6th pillar: Individual usage.....10.....6.1

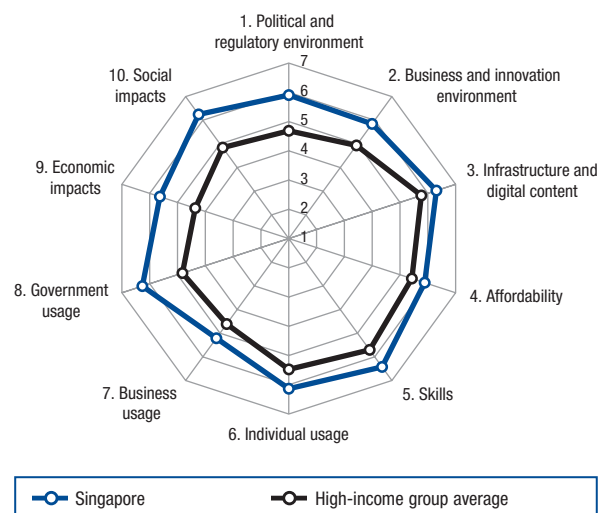
7th pillar: Business usage.....15.....5.2

8th pillar: Government usage.....1.....6.3

D. Impact subindex.....1.....5.9

9th pillar: Economic impacts.....6.....5.6

10th pillar: Social impacts.....1.....6.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	1	6.1
1.02 Laws relating to ICTs*	2	5.8
1.03 Judicial independence*	17	5.7
1.04 Efficiency of legal system in settling disputes*	1	6.1
1.05 Efficiency of legal system in challenging regs*	12	4.9
1.06 Intellectual property protection*	2	6.1
1.07 Software piracy rate, % software installed	18	33
1.08 No. procedures to enforce a contract	1	21
1.09 No. days to enforce a contract	1	150
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	16	6.2
2.02 Venture capital availability*	6	4.2
2.03 Total tax rate, % profits	30	27.1
2.04 No. days to start a business	5	3
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	19	5.6
2.07 Tertiary education gross enrollment rate, %	23	72.0
2.08 Quality of management schools*	6	5.7
2.09 Gov't procurement of advanced tech*	2	5.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	19	8,873.8
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	4	387.6
3.04 Secure Internet servers/million pop.	25	635.3
3.05 Accessibility of digital content*	9	6.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	46	0.16
4.02 Fixed broadband Internet tariffs, PPP \$/month	85	35.55
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	3	5.8
5.02 Quality of math & science education*	1	6.3
5.03 Secondary education gross enrollment rate, %	17	107.0
5.04 Adult literacy rate, %	60	95.9

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	18	152.1
6.02 Individuals using Internet, %	29	74.2
6.03 Households w/ personal computer, %	11	87.7
6.04 Households w/ Internet access, %	11	87.7
6.05 Fixed broadband Internet subs./100 pop.	21	25.4
6.06 Mobile broadband subscriptions/100 pop.	1	126.1
6.07 Use of virtual social networks*	14	6.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	13	5.8
7.02 Capacity for innovation*	18	4.8
7.03 PCT patents, applications/million pop.	13	120.9
7.04 Business-to-business Internet use*	14	5.9
7.05 Business-to-consumer Internet use*	29	5.3
7.06 Extent of staff training*	6	5.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	3	5.9
8.02 Government Online Service Index, 0–1 (best)	1	1.00
8.03 Gov't success in ICT promotion*	4	5.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	10	5.5
9.02 ICT PCT patents, applications/million pop.	9	51.1
9.03 Impact of ICTs on new organizational models*	11	5.3
9.04 Knowledge-intensive jobs, % workforce	2	51.0
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	3	5.9
10.02 Internet access in schools*	4	6.3
10.03 ICT use & gov't efficiency*	1	6.1
10.04 E-Participation Index, 0–1 (best)	3	0.95

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Slovak Republic

Rank Value
(out of 148) (1-7)

Networked Readiness Index 2014 59.. 4.1

Networked Readiness Index 2013 (out of 144)..... 61 4.0

A. Environment subindex 74 3.9

1st pillar: Political and regulatory environment 83 3.6

2nd pillar: Business and innovation environment 68 4.3

B. Readiness subindex 66 4.9

3rd pillar: Infrastructure and digital content 62 4.4

4th pillar: Affordability 71 5.3

5th pillar: Skills 72 5.0

C. Usage subindex 49 4.1

6th pillar: Individual usage 35 5.1

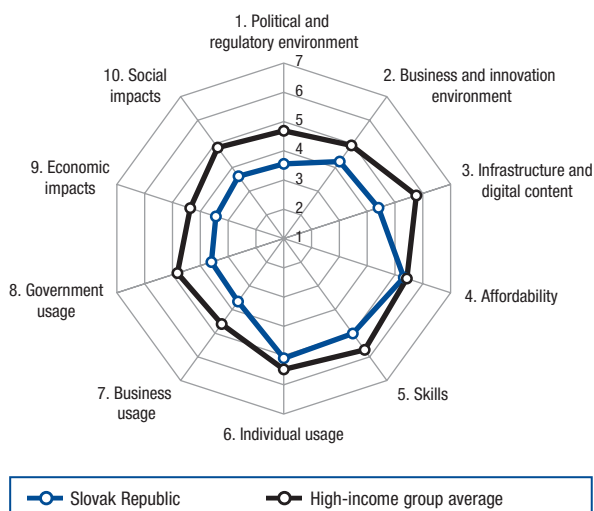
7th pillar: Business usage 65 3.7

8th pillar: Government usage 106 3.6

D. Impact subindex 66 3.5

9th pillar: Economic impacts 54 3.4

10th pillar: Social impacts 78 3.6



The Networked Readiness Index in detail

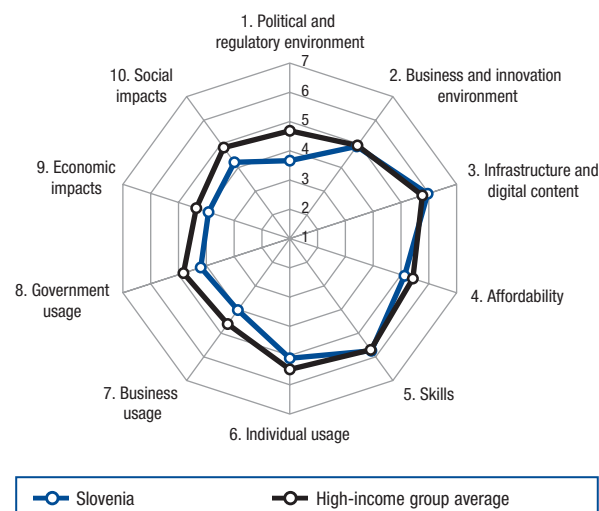
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	115	2.9
1.02 Laws relating to ICTs*	81	3.8
1.03 Judicial independence*	133	2.3
1.04 Efficiency of legal system in settling disputes*	143	2.4
1.05 Efficiency of legal system in challenging regs*	142	2.2
1.06 Intellectual property protection*	65	3.7
1.07 Software piracy rate, % software installed	25	4.0
1.08 No. procedures to enforce a contract	27	3.2
1.09 No. days to enforce a contract	74	5.45
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	70	5.0
2.02 Venture capital availability*	64	2.7
2.03 Total tax rate, % profits	109	47.2
2.04 No. days to start a business	89	19
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	29	5.5
2.07 Tertiary education gross enrollment rate, %	49	55.1
2.08 Quality of management schools*	109	3.7
2.09 Gov't procurement of advanced tech*	134	2.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	43	5,231.7
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	93	11.5
3.04 Secure Internet servers/million pop.	38	226.2
3.05 Accessibility of digital content*	35	5.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	73	0.25
4.02 Fixed broadband Internet tariffs, PPP \$/month	93	38.16
4.03 Internet & telephony competition, 0-2 (best)	78	1.82
5th pillar: Skills		
5.01 Quality of educational system*	130	2.7
5.02 Quality of math & science education*	86	3.9
5.03 Secondary education gross enrollment rate, %	60	93.5
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	65	111.9
6.02 Individuals using Internet, %	22	80.0
6.03 Households w/ personal computer, %	29	79.0
6.04 Households w/ Internet access, %	25	76.6
6.05 Fixed broadband Internet subs./100 pop.	44	14.7
6.06 Mobile broadband subscriptions/100 pop.	41	39.7
6.07 Use of virtual social networks*	58	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	72	4.7
7.02 Capacity for innovation*	96	3.2
7.03 PCT patents, applications/million pop.	35	8.8
7.04 Business-to-business Internet use*	34	5.5
7.05 Business-to-consumer Internet use*	36	5.1
7.06 Extent of staff training*	91	3.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	117	3.3
8.02 Government Online Service Index, 0-1 (best)	66	0.50
8.03 Gov't success in ICT promotion*	121	3.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	84	4.2
9.02 ICT PCT patents, applications/million pop.	35	1.5
9.03 Impact of ICTs on new organizational models*	83	4.0
9.04 Knowledge-intensive jobs, % workforce	38	32.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	90	3.9
10.02 Internet access in schools*	31	5.5
10.03 ICT use & gov't efficiency*	118	3.4
10.04 E-Participation Index, 0-1 (best)	82	0.13

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Slovenia

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	36	4.6
Networked Readiness Index 2013 (out of 144).....	37	4.5
A. Environment subindex	47	4.3
1st pillar: Political and regulatory environment.....	72	3.7
2nd pillar: Business and innovation environment.....	30	4.9
B. Readiness subindex	28	5.6
3rd pillar: Infrastructure and digital content.....	24	5.9
4th pillar: Affordability.....	82	5.1
5th pillar: Skills.....	26	5.7
C. Usage subindex	35	4.4
6th pillar: Individual usage.....	34	5.1
7th pillar: Business usage.....	37	4.0
8th pillar: Government usage.....	57	4.2
D. Impact subindex	39	4.1
9th pillar: Economic impacts.....	33	3.9
10th pillar: Social impacts.....	43	4.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	123	2.8
1.02 Laws relating to ICTs*	43	4.6
1.03 Judicial independence*	76	3.6
1.04 Efficiency of legal system in settling disputes*	135	2.6
1.05 Efficiency of legal system in challenging regs*	131	2.6
1.06 Intellectual property protection*	42	4.2
1.07 Software piracy rate, % software installed	33	4.6
1.08 No. procedures to enforce a contract	27	3.2
1.09 No. days to enforce a contract	136	1,270
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	39	5.6
2.02 Venture capital availability*	127	2.0
2.03 Total tax rate, % profits	51	32.5
2.04 No. days to start a business	22	6
2.05 No. procedures to start a business	3	2
2.06 Intensity of local competition*	49	5.2
2.07 Tertiary education gross enrollment rate, %	6	85.1
2.08 Quality of management schools*	74	4.2
2.09 Gov't procurement of advanced tech*	121	2.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	27	7,544.1
3.02 Mobile network coverage, % pop.	49	99.7
3.03 Int'l Internet bandwidth, kb/s per user	21	94.7
3.04 Secure Internet servers/million pop.	26	556.8
3.05 Accessibility of digital content*	33	5.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	84	0.29
4.02 Fixed broadband Internet tariffs, PPP \$/month	102	41.73
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	55	4.0
5.02 Quality of math & science education*	18	5.1
5.03 Secondary education gross enrollment rate, %	43	97.9
5.04 Adult literacy rate, %	8	99.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	74	108.6
6.02 Individuals using Internet, %	36	70.0
6.03 Households w/ personal computer, %	31	76.0
6.04 Households w/ Internet access, %	28	74.0
6.05 Fixed broadband Internet subs./100 pop.	26	24.3
6.06 Mobile broadband subscriptions/100 pop.	43	37.0
6.07 Use of virtual social networks*	64	5.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	62	4.8
7.02 Capacity for innovation*	54	3.7
7.03 PCT patents, applications/million pop.	23	58.6
7.04 Business-to-business Internet use*	36	5.5
7.05 Business-to-consumer Internet use*	45	4.9
7.06 Extent of staff training*	105	3.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	106	3.5
8.02 Government Online Service Index, 0–1 (best)	35	0.67
8.03 Gov't success in ICT promotion*	86	4.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	69	4.4
9.02 ICT PCT patents, applications/million pop.	24	8.7
9.03 Impact of ICTs on new organizational models*	68	4.2
9.04 Knowledge-intensive jobs, % workforce	21	41.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	48	4.6
10.02 Internet access in schools*	16	6.0
10.03 ICT use & gov't efficiency*	83	4.0
10.04 E-Participation Index, 0–1 (best)	63	0.21

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

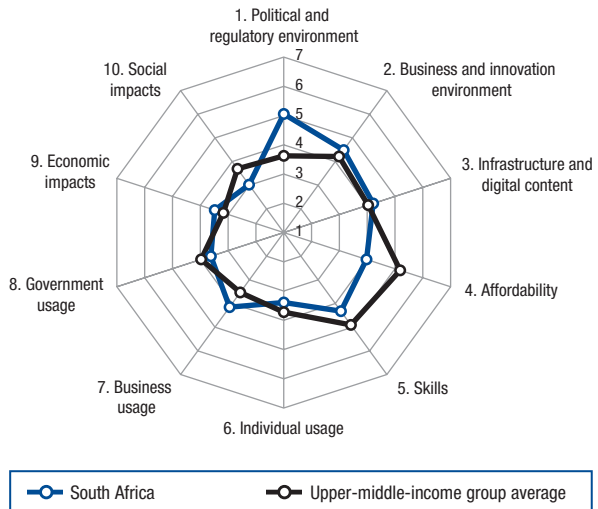
South Africa

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 70..4.0

Networked Readiness Index 2013 (out of 144)..... 70.....3.9

- A. Environment subindex..... 31.....4.8**
 - 1st pillar: Political and regulatory environment..... 20.....5.0
 - 2nd pillar: Business and innovation environment..... 53.....4.5
- B. Readiness subindex 98.....4.2**
 - 3rd pillar: Infrastructure and digital content..... 68.....4.2
 - 4th pillar: Affordability 112.....4.0
 - 5th pillar: Skills 97.....4.3
- C. Usage subindex 70.....3.7**
 - 6th pillar: Individual usage 78.....3.4
 - 7th pillar: Business usage 30.....4.2
 - 8th pillar: Government usage 103.....3.6
- D. Impact subindex 89.....3.3**
 - 9th pillar: Economic impacts 49.....3.5
 - 10th pillar: Social impacts 113.....3.0



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	38	4.2
1.02 Laws relating to ICTs*	34	4.8
1.03 Judicial independence*	22	5.5
1.04 Efficiency of legal system in settling disputes*	12	5.3
1.05 Efficiency of legal system in challenging regs*	13	4.9
1.06 Intellectual property protection*	18	5.5
1.07 Software piracy rate, % software installed	20	35
1.08 No. procedures to enforce a contract	15	29
1.09 No. days to enforce a contract	92	600
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	40	5.6
2.02 Venture capital availability*	28	3.3
2.03 Total tax rate, % profits	44	30.1
2.04 No. days to start a business	92	19
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	45	5.3
2.07 Tertiary education gross enrollment rate, %	105	15.4
2.08 Quality of management schools*	23	5.2
2.09 Gov't procurement of advanced tech*	119	2.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	46	5,131.3
3.02 Mobile network coverage, % pop.	48	99.8
3.03 Int'l Internet bandwidth, kb/s per user	73	18.1
3.04 Secure Internet servers/million pop.	53	83.7
3.05 Accessibility of digital content*	87	4.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	128	0.51
4.02 Fixed broadband Internet tariffs, PPP \$/month	91	37.25
4.03 Internet & telephony competition, 0-2 (best)	125	1.07
5th pillar: Skills		
5.01 Quality of educational system*	146	2.1
5.02 Quality of math & science education*	148	1.9
5.03 Secondary education gross enrollment rate, %	28	101.9
5.04 Adult literacy rate, %	76	93.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	33	130.6
6.02 Individuals using Internet, %	81	41.0
6.03 Households w/ personal computer, %	91	23.6
6.04 Households w/ Internet access, %	80	25.5
6.05 Fixed broadband Internet subs./100 pop.	96	2.1
6.06 Mobile broadband subscriptions/100 pop.	62	25.2
6.07 Use of virtual social networks*	83	5.5
7th pillar: Business usage		
7.01 Firm-level technology absorption*	35	5.4
7.02 Capacity for innovation*	33	4.1
7.03 PCT patents, applications/million pop.	40	6.4
7.04 Business-to-business Internet use*	30	5.6
7.05 Business-to-consumer Internet use*	62	4.7
7.06 Extent of staff training*	17	4.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	116	3.3
8.02 Government Online Service Index, 0-1 (best)	80	0.46
8.03 Gov't success in ICT promotion*	109	3.8
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	47	4.7
9.02 ICT PCT patents, applications/million pop.	39	1.4
9.03 Impact of ICTs on new organizational models*	50	4.5
9.04 Knowledge-intensive jobs, % workforce	54	25.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	122	3.4
10.02 Internet access in schools*	116	3.1
10.03 ICT use & gov't efficiency*	104	3.6
10.04 E-Participation Index, 0-1 (best)	77	0.16

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Spain

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....34..4.7

Networked Readiness Index 2013 (out of 144).....38.....4.5

A. Environment subindex.....45.....4.3

1st pillar: Political and regulatory environment.....47.....4.1

2nd pillar: Business and innovation environment.....51.....4.5

B. Readiness subindex.....30.....5.6

3rd pillar: Infrastructure and digital content.....32.....5.5

4th pillar: Affordability.....41.....6.0

5th pillar: Skills.....50.....5.3

C. Usage subindex.....33.....4.5

6th pillar: Individual usage.....32.....5.2

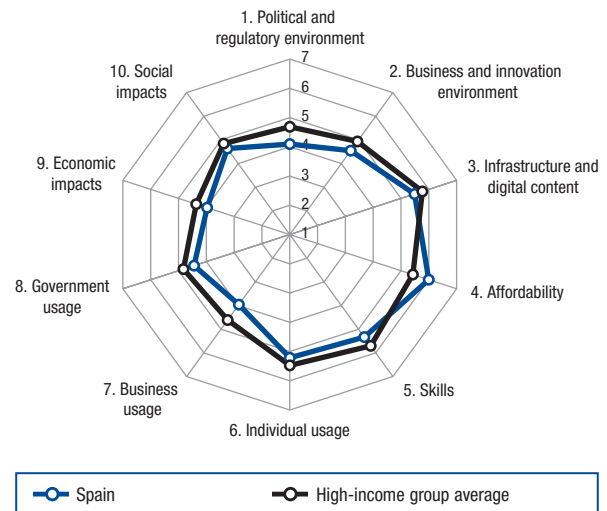
7th pillar: Business usage.....40.....4.0

8th pillar: Government usage.....44.....4.4

D. Impact subindex.....34.....4.3

9th pillar: Economic impacts.....31.....4.0

10th pillar: Social impacts.....36.....4.6



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	56	3.8
1.02 Laws relating to ICTs*	38	4.8
1.03 Judicial independence*	72	3.7
1.04 Efficiency of legal system in settling disputes*	70	3.7
1.05 Efficiency of legal system in challenging regs*	69	3.5
1.06 Intellectual property protection*	50	4.0
1.07 Software piracy rate, % software installed	32	4.4
1.08 No. procedures to enforce a contract	98	4.0
1.09 No. days to enforce a contract	61	5.10
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	33	5.8
2.02 Venture capital availability*	105	2.3
2.03 Total tax rate, % profits	131	58.6
2.04 No. days to start a business	101	23
2.05 No. procedures to start a business	119	10
2.06 Intensity of local competition*	28	5.5
2.07 Tertiary education gross enrollment rate, %	9	82.6
2.08 Quality of management schools*	4	5.8
2.09 Gov't procurement of advanced tech*	102	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	34	6,350.4
3.02 Mobile network coverage, % pop.	43	99.8
3.03 Int'l Internet bandwidth, kb/s per user	27	81.4
3.04 Secure Internet servers/million pop.	32	294.4
3.05 Accessibility of digital content*	34	5.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	40	0.14
4.02 Fixed broadband Internet tariffs, PPP \$/month	81	34.63
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	77	3.6
5.02 Quality of math & science education*	88	3.9
5.03 Secondary education gross enrollment rate, %	2	128.5
5.04 Adult literacy rate, %	51	97.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	75	108.4
6.02 Individuals using Internet, %	34	72.0
6.03 Households w/ personal computer, %	36	74.0
6.04 Households w/ Internet access, %	37	68.0
6.05 Fixed broadband Internet subs./100 pop.	24	24.4
6.06 Mobile broadband subscriptions/100 pop.	25	53.6
6.07 Use of virtual social networks*	47	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	49	5.0
7.02 Capacity for innovation*	57	3.7
7.03 PCT patents, applications/million pop.	25	39.2
7.04 Business-to-business Internet use*	41	5.3
7.05 Business-to-consumer Internet use*	40	5.1
7.06 Extent of staff training*	97	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	79	3.8
8.02 Government Online Service Index, 0–1 (best)	23	0.76
8.03 Gov't success in ICT promotion*	101	3.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	27	5.1
9.02 ICT PCT patents, applications/million pop.	25	8.4
9.03 Impact of ICTs on new organizational models*	33	4.7
9.04 Knowledge-intensive jobs, % workforce	39	32.5
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	36	5.1
10.02 Internet access in schools*	46	4.9
10.03 ICT use & gov't efficiency*	49	4.5
10.04 E-Participation Index, 0–1 (best)	31	0.50

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Sri Lanka

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 76..3.9

Networked Readiness Index 2013 (out of 144)..... 69.....3.9

A. Environment subindex..... 79.....3.8

1st pillar: Political and regulatory environment..... 74.....3.6

2nd pillar: Business and innovation environment..... 82.....4.1

B. Readiness subindex..... 69.....4.9

3rd pillar: Infrastructure and digital content..... 104.....3.1

4th pillar: Affordability..... 38.....6.0

5th pillar: Skills..... 40.....5.5

C. Usage subindex..... 81.....3.5

6th pillar: Individual usage..... 112.....2.4

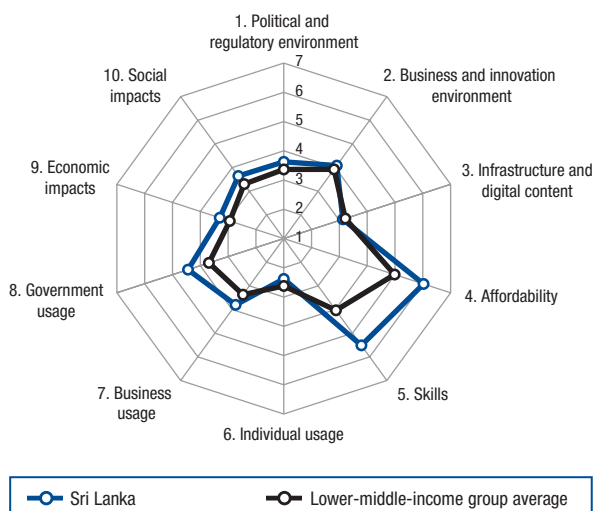
7th pillar: Business usage..... 50.....3.8

8th pillar: Government usage..... 43.....4.4

D. Impact subindex..... 69.....3.5

9th pillar: Economic impacts..... 66.....3.3

10th pillar: Social impacts..... 77.....3.6



The Networked Readiness Index in detail

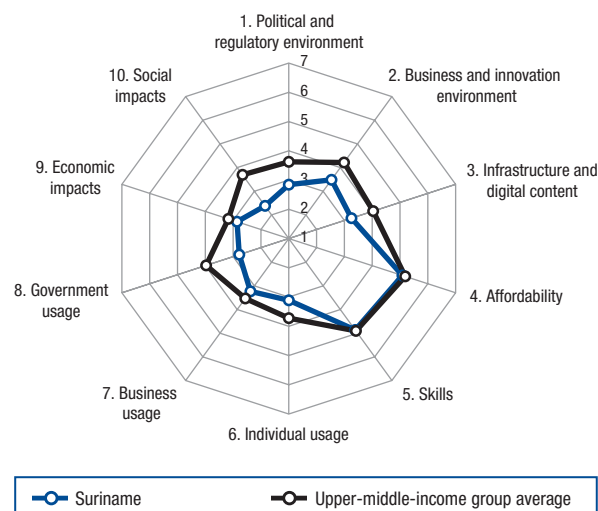
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	24	4.7
1.02 Laws relating to ICTs*	76	3.9
1.03 Judicial independence*	62	3.9
1.04 Efficiency of legal system in settling disputes*	31	4.6
1.05 Efficiency of legal system in challenging regs*	39	4.0
1.06 Intellectual property protection*	63	3.8
1.07 Software piracy rate, % software installed	95	84
1.08 No. procedures to enforce a contract	98	40
1.09 No. days to enforce a contract	142	1,318
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	72	4.9
2.02 Venture capital availability*	91	2.5
2.03 Total tax rate, % profits	128	55.1
2.04 No. days to start a business	40	8
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	20	5.6
2.07 Tertiary education gross enrollment rate, %	107	14.4
2.08 Quality of management schools*	37	4.8
2.09 Gov't procurement of advanced tech*	16	4.3
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	112	558.1
3.02 Mobile network coverage, % pop.	81	98.0
3.03 Int'l Internet bandwidth, kb/s per user	107	6.0
3.04 Secure Internet servers/million pop.	97	7.7
3.05 Accessibility of digital content*	95	4.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	4	0.04
4.02 Fixed broadband Internet tariffs, PPP \$/month	1	8.22
4.03 Internet & telephony competition, 0-2 (best)	133	0.88
5th pillar: Skills		
5.01 Quality of educational system*	28	4.6
5.02 Quality of math & science education*	46	4.5
5.03 Secondary education gross enrollment rate, %	39	99.1
5.04 Adult literacy rate, %	83	91.2

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	101	91.6
6.02 Individuals using Internet, %	104	18.3
6.03 Households w/ personal computer, %	105	15.0
6.04 Households w/ Internet access, %	106	10.3
6.05 Fixed broadband Internet subs./100 pop.	99	1.7
6.06 Mobile broadband subscriptions/100 pop.	93	7.8
6.07 Use of virtual social networks*	114	5.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	47	5.1
7.02 Capacity for innovation*	44	3.8
7.03 PCT patents, applications/million pop.	76	0.6
7.04 Business-to-business Internet use*	58	5.0
7.05 Business-to-consumer Internet use*	60	4.7
7.06 Extent of staff training*	52	4.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	19	4.9
8.02 Government Online Service Index, 0-1 (best)	94	0.38
8.03 Gov't success in ICT promotion*	18	5.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	48	4.7
9.02 ICT PCT patents, applications/million pop.	79	0.1
9.03 Impact of ICTs on new organizational models*	45	4.5
9.04 Knowledge-intensive jobs, % workforce	81	19.1
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	43	4.8
10.02 Internet access in schools*	108	3.4
10.03 ICT use & gov't efficiency*	25	4.9
10.04 E-Participation Index, 0-1 (best)	97	0.08

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Suriname

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	113	3.3
Networked Readiness Index 2013 (out of 144).....	117.....	3.1
A. Environment subindex	137	3.2
1st pillar: Political and regulatory environment.....	134.....	2.8
2nd pillar: Business and innovation environment.....	127.....	3.5
B. Readiness subindex	92	4.4
3rd pillar: Infrastructure and digital content.....	101.....	3.3
4th pillar: Affordability.....	86.....	5.1
5th pillar: Skills.....	77.....	4.9
C. Usage subindex	114	3.0
6th pillar: Individual usage.....	86.....	3.1
7th pillar: Business usage.....	108.....	3.2
8th pillar: Government usage.....	141.....	2.8
D. Impact subindex	129	2.6
9th pillar: Economic impacts.....	107.....	2.9
10th pillar: Social impacts.....	138.....	2.4



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	118	2.8
1.02 Laws relating to ICTs*	138	2.5
1.03 Judicial independence*	58	4.0
1.04 Efficiency of legal system in settling disputes*	108	3.2
1.05 Efficiency of legal system in challenging regs*	102	3.0
1.06 Intellectual property protection*	118	2.9
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	126	4.4
1.09 No. days to enforce a contract	148	1.715
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	110	4.3
2.02 Venture capital availability*	126	2.0
2.03 Total tax rate, % profits	33	27.9
2.04 No. days to start a business	148	208
2.05 No. procedures to start a business	137	13
2.06 Intensity of local competition*	91	4.7
2.07 Tertiary education gross enrollment rate, %	114	12.1
2.08 Quality of management schools*	80	4.1
2.09 Gov't procurement of advanced tech*	117	3.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	67	3,081.7
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	136	2.0
3.04 Secure Internet servers/million pop.	66	37.4
3.05 Accessibility of digital content*	120	3.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	53	0.18
4.02 Fixed broadband Internet tariffs, PPP \$/month	94	38.59
4.03 Internet & telephony competition, 0–2 (best)	120	1.18
5th pillar: Skills		
5.01 Quality of educational system*	102	3.2
5.02 Quality of math & science education*	81	4.0
5.03 Secondary education gross enrollment rate, %	85	85.4
5.04 Adult literacy rate, %	65	94.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	80	106.5
6.02 Individuals using Internet, %	90	34.7
6.03 Households w/ personal computer, %	78	34.3
6.04 Households w/ Internet access, %	88	20.2
6.05 Fixed broadband Internet subs./100 pop.	76	5.5
6.06 Mobile broadband subscriptions/100 pop.	79	15.0
6.07 Use of virtual social networks*	107	5.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	105	4.3
7.02 Capacity for innovation*	113	3.1
7.03 PCT patents, applications/million pop.	79	0.5
7.04 Business-to-business Internet use*	126	4.0
7.05 Business-to-consumer Internet use*	119	3.6
7.06 Extent of staff training*	74	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	134	2.8
8.02 Government Online Service Index, 0–1 (best)	136	0.16
8.03 Gov't success in ICT promotion*	120	3.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	119	3.7
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	118	3.5
9.04 Knowledge-intensive jobs, % workforce	71	21.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	134	3.1
10.02 Internet access in schools*	131	2.6
10.03 ICT use & gov't efficiency*	143	2.8
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

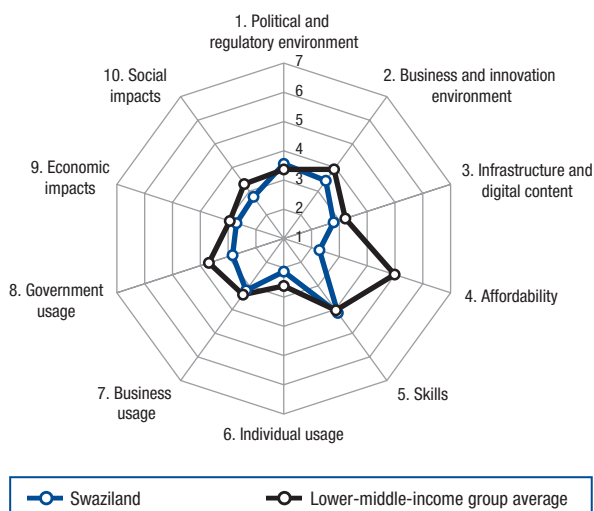
Swaziland

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 126..3.0

Networked Readiness Index 2013 (out of 144)..... 136.....2.7

A. Environment subindex	113	3.5
1st pillar: Political and regulatory environment.....	84.....	3.5
2nd pillar: Business and innovation environment.....	129.....	3.4
B. Readiness subindex	128	3.1
3rd pillar: Infrastructure and digital content.....	118.....	2.8
4th pillar: Affordability.....	143.....	2.3
5th pillar: Skills.....	100.....	4.1
C. Usage subindex	128	2.7
6th pillar: Individual usage.....	119.....	2.1
7th pillar: Business usage.....	117.....	3.2
8th pillar: Government usage.....	140.....	2.8
D. Impact subindex	124	2.7
9th pillar: Economic impacts.....	118.....	2.7
10th pillar: Social impacts.....	126.....	2.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	76	3.5
1.02 Laws relating to ICTs*	116	3.2
1.03 Judicial independence*	81	3.5
1.04 Efficiency of legal system in settling disputes*	63	3.8
1.05 Efficiency of legal system in challenging regs*	70	3.5
1.06 Intellectual property protection*	52	4.0
1.07 Software piracy rate, % software installed.....	n/a	n/a
1.08 No. procedures to enforce a contract.....	98	4.0
1.09 No. days to enforce a contract.....	130	956
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	122	4.0
2.02 Venture capital availability*	53	2.8
2.03 Total tax rate, % profits.....	71	36.5
2.04 No. days to start a business.....	126	38
2.05 No. procedures to start a business.....	133	12
2.06 Intensity of local competition*.....	117	4.4
2.07 Tertiary education gross enrollment rate, %.....	133	6.0
2.08 Quality of management schools*.....	128	3.3
2.09 Gov't procurement of advanced tech*.....	107	3.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita.....	116	383.4
3.02 Mobile network coverage, % pop.....	93	96.8
3.03 Int'l Internet bandwidth, kb/s per user.....	138	1.8
3.04 Secure Internet servers/million pop.....	100	6.5
3.05 Accessibility of digital content*.....	122	3.9
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.....	109	0.37
4.02 Fixed broadband Internet tariffs, PPP \$/month.....	136	113.67
4.03 Internet & telephony competition, 0–2 (best).....	143	0.08
5th pillar: Skills		
5.01 Quality of educational system*.....	81	3.5
5.02 Quality of math & science education*.....	91	3.8
5.03 Secondary education gross enrollment rate, %.....	113	59.9
5.04 Adult literacy rate, %.....	96	87.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.....	126	65.4
6.02 Individuals using Internet, %.....	102	20.8
6.03 Households w/ personal computer, %.....	110	11.9
6.04 Households w/ Internet access, %.....	104	11.4
6.05 Fixed broadband Internet subs./100 pop.....	119	0.3
6.06 Mobile broadband subscriptions/100 pop.....	84	11.9
6.07 Use of virtual social networks*.....	122	4.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*.....	123	4.0
7.02 Capacity for innovation*.....	95	3.2
7.03 PCT patents, applications/million pop.....	122	0.0
7.04 Business-to-business Internet use*.....	114	4.3
7.05 Business-to-consumer Internet use*.....	125	3.5
7.06 Extent of staff training*.....	86	3.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*.....	118	3.2
8.02 Government Online Service Index, 0–1 (best).....	138	0.14
8.03 Gov't success in ICT promotion*.....	124	3.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*.....	130	3.5
9.02 ICT PCT patents, applications/million pop.....	93	0.0
9.03 Impact of ICTs on new organizational models*.....	113	3.6
9.04 Knowledge-intensive jobs, % workforce.....	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*.....	127	3.3
10.02 Internet access in schools*.....	112	3.2
10.03 ICT use & gov't efficiency*.....	125	3.2
10.04 E-Participation Index, 0–1 (best).....	107	0.05

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Sweden

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 3..5.9

Networked Readiness Index 2013 (out of 144)..... 3.....5.9

A. Environment subindex..... 8.....5.4

1st pillar: Political and regulatory environment..... 6.....5.6

2nd pillar: Business and innovation environment..... 15.....5.3

B. Readiness subindex..... 3.....6.4

3rd pillar: Infrastructure and digital content..... 3.....6.8

4th pillar: Affordability..... 10.....6.5

5th pillar: Skills..... 21.....5.8

C. Usage subindex..... 1.....6.1

6th pillar: Individual usage..... 1.....6.6

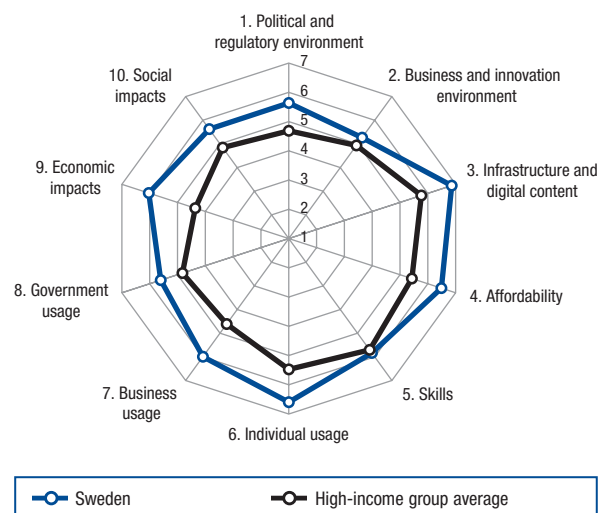
7th pillar: Business usage..... 3.....6.0

8th pillar: Government usage..... 7.....5.6

D. Impact subindex..... 4.....5.8

9th pillar: Economic impacts..... 2.....6.0

10th pillar: Social impacts..... 10.....5.6



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	6	5.4
1.02 Laws relating to ICTs*	11	5.4
1.03 Judicial independence*	9	6.2
1.04 Efficiency of legal system in settling disputes*	5	5.7
1.05 Efficiency of legal system in challenging regs*	4	5.4
1.06 Intellectual property protection*	16	5.5
1.07 Software piracy rate, % software installed	7	24
1.08 No. procedures to enforce a contract	18	30
1.09 No. days to enforce a contract	13	314
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	2	6.5
2.02 Venture capital availability*	5	4.3
2.03 Total tax rate, % profits	123	52.0
2.04 No. days to start a business	81	16
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	23	5.6
2.07 Tertiary education gross enrollment rate, %	18	73.9
2.08 Quality of management schools*	15	5.4
2.09 Gov't procurement of advanced tech*	22	4.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	5	17,383.3
3.02 Mobile network coverage, % pop.	28	100.0
3.03 Int'l Internet bandwidth, kb/s per user	7	279.3
3.04 Secure Internet servers/million pop.	11	1,511.9
3.05 Accessibility of digital content*	12	6.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	16	0.08
4.02 Fixed broadband Internet tariffs, PPP \$/month	53	27.57
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	17	5.0
5.02 Quality of math & science education*	41	4.6
5.03 Secondary education gross enrollment rate, %	49	96.9
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	44	124.6
6.02 Individuals using Internet, %	3	94.0
6.03 Households w/ personal computer, %	5	92.0
6.04 Households w/ Internet access, %	6	92.0
6.05 Fixed broadband Internet subs./100 pop.	13	32.3
6.06 Mobile broadband subscriptions/100 pop.	5	104.9
6.07 Use of virtual social networks*	5	6.5
7th pillar: Business usage		
7.01 Firm-level technology absorption*	1	6.2
7.02 Capacity for innovation*	7	5.5
7.03 PCT patents, applications/million pop.	2	294.5
7.04 Business-to-business Internet use*	3	6.1
7.05 Business-to-consumer Internet use*	5	6.0
7.06 Extent of staff training*	7	5.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	11	5.3
8.02 Government Online Service Index, 0–1 (best)	16	0.84
8.03 Gov't success in ICT promotion*	10	5.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	3	5.7
9.02 ICT PCT patents, applications/million pop.	3	88.8
9.03 Impact of ICTs on new organizational models*	4	5.4
9.04 Knowledge-intensive jobs, % workforce	4	47.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	9	5.7
10.02 Internet access in schools*	8	6.2
10.03 ICT use & gov't efficiency*	10	5.5
10.04 E-Participation Index, 0–1 (best)	15	0.68

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

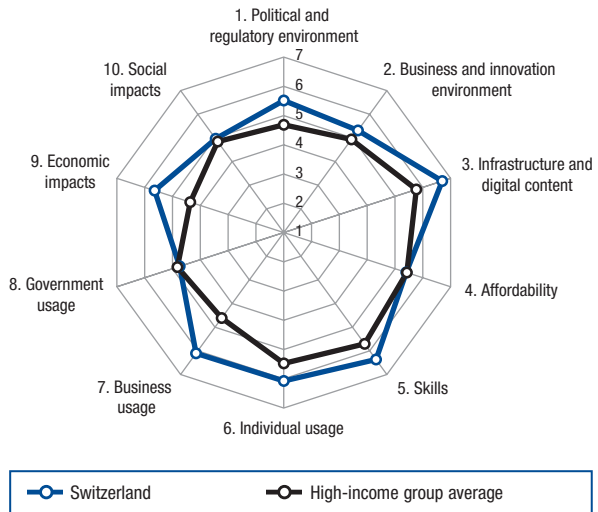
Switzerland

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 6..5.6

Networked Readiness Index 2013 (out of 144)..... 6.....5.7

- A. Environment subindex..... 9.....5.4**
 - 1st pillar: Political and regulatory environment..... 9.....5.5
 - 2nd pillar: Business and innovation environment..... 12.....5.3
- B. Readiness subindex 10.....6.2**
 - 3rd pillar: Infrastructure and digital content..... 9.....6.7
 - 4th pillar: Affordability 66.....5.4
 - 5th pillar: Skills 3.....6.4
- C. Usage subindex 10.....5.6**
 - 6th pillar: Individual usage 11.....6.1
 - 7th pillar: Business usage 1.....6.1
 - 8th pillar: Government usage 35.....4.7
- D. Impact subindex 11.....5.3**
 - 9th pillar: Economic impacts 3.....5.6
 - 10th pillar: Social impacts 26.....5.0



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	13	5.0
1.02 Laws relating to ICTs*	22	5.1
1.03 Judicial independence*	11	6.1
1.04 Efficiency of legal system in settling disputes*	6	5.7
1.05 Efficiency of legal system in challenging regs*	6	5.3
1.06 Intellectual property protection*	5	6.0
1.07 Software piracy rate, % software installed	10	25
1.08 No. procedures to enforce a contract	27	32
1.09 No. days to enforce a contract	24	390
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	4	6.4
2.02 Venture capital availability*	22	3.4
2.03 Total tax rate, % profits	38	29.1
2.04 No. days to start a business	86	18
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	21	5.6
2.07 Tertiary education gross enrollment rate, %	51	54.3
2.08 Quality of management schools*	1	6.1
2.09 Gov't procurement of advanced tech*	36	3.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	21	8,501.2
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	6	312.0
3.04 Secure Internet servers/million pop.	4	2,282.2
3.05 Accessibility of digital content*	7	6.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	119	0.43
4.02 Fixed broadband Internet tariffs, PPP \$/month	40	24.48
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	1	6.0
5.02 Quality of math & science education*	5	5.8
5.03 Secondary education gross enrollment rate, %	51	96.2
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	35	130.2
6.02 Individuals using Internet, %	13	85.2
6.03 Households w/ personal computer, %	16	85.8
6.04 Households w/ Internet access, %	8	90.0
6.05 Fixed broadband Internet subs./100 pop.	1	39.9
6.06 Mobile broadband subscriptions/100 pop.	42	39.6
6.07 Use of virtual social networks*	24	6.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	3	6.1
7.02 Capacity for innovation*	1	5.8
7.03 PCT patents, applications/million pop.	3	293.5
7.04 Business-to-business Internet use*	2	6.2
7.05 Business-to-consumer Internet use*	13	5.8
7.06 Extent of staff training*	1	5.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	52	4.3
8.02 Government Online Service Index, 0-1 (best)	32	0.67
8.03 Gov't success in ICT promotion*	33	4.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	18	5.3
9.02 ICT PCT patents, applications/million pop.	6	61.6
9.03 Impact of ICTs on new organizational models*	31	4.8
9.04 Knowledge-intensive jobs, % workforce	3	49.8
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	13	5.7
10.02 Internet access in schools*	12	6.1
10.03 ICT use & gov't efficiency*	23	5.0
10.04 E-Participation Index, 0-1 (best)	44	0.34

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Taiwan, China

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 14..5.5

Networked Readiness Index 2013 (out of 144)..... 10.....5.5

A. Environment subindex..... 25..... 4.9

1st pillar: Political and regulatory environment..... 34..... 4.4

2nd pillar: Business and innovation environment..... 4..... 5.5

B. Readiness subindex..... 7..... 6.2

3rd pillar: Infrastructure and digital content..... 5..... 6.8

4th pillar: Affordability..... 53..... 5.7

5th pillar: Skills..... 14..... 6.0

C. Usage subindex..... 17..... 5.3

6th pillar: Individual usage..... 28..... 5.4

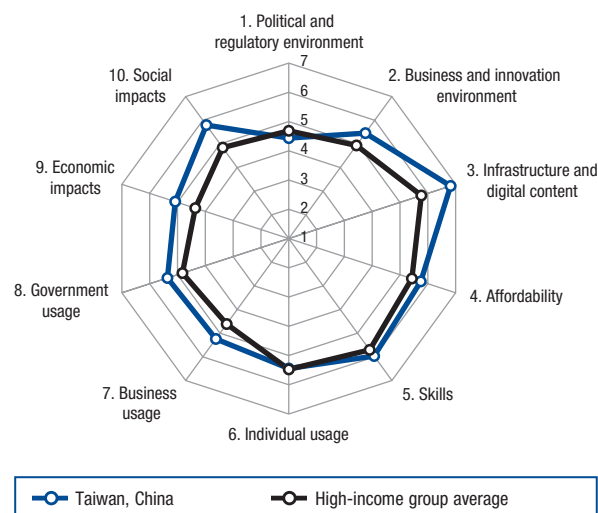
7th pillar: Business usage..... 14..... 5.2

8th pillar: Government usage..... 16..... 5.4

D. Impact subindex..... 7..... 5.4

9th pillar: Economic impacts..... 12..... 5.1

10th pillar: Social impacts..... 6..... 5.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	81	3.4
1.02 Laws relating to ICTs*	14	5.2
1.03 Judicial independence*	45	4.5
1.04 Efficiency of legal system in settling disputes*	45	4.2
1.05 Efficiency of legal system in challenging regs*	52	3.7
1.06 Intellectual property protection*	23	5.2
1.07 Software piracy rate, % software installed	22	3.7
1.08 No. procedures to enforce a contract	131	4.5
1.09 No. days to enforce a contract	61	5.1
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	43	5.5
2.02 Venture capital availability*	9	4.1
2.03 Total tax rate, % profits	62	35.0
2.04 No. days to start a business	53	10
2.05 No. procedures to start a business	10	3
2.06 Intensity of local competition*	2	6.1
2.07 Tertiary education gross enrollment rate, %	7	83.4
2.08 Quality of management schools*	32	4.9
2.09 Gov't procurement of advanced tech*	8	4.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	11	10,859.0
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	42	44.3
3.04 Secure Internet servers/million pop.	n/a	n/a
3.05 Accessibility of digital content*	16	6.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	90	0.32
4.02 Fixed broadband Internet tariffs, PPP \$/month	47	26.05
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	30	4.5
5.02 Quality of math & science education*	11	5.4
5.03 Secondary education gross enrollment rate, %	37	100.0
5.04 Adult literacy rate, %	45	98.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	42	126.5
6.02 Individuals using Internet, %	27	76.0
6.03 Households w/ personal computer, %	33	75.2
6.04 Households w/ Internet access, %	31	72.2
6.05 Fixed broadband Internet subs./100 pop.	28	23.9
6.06 Mobile broadband subscriptions/100 pop.	33	49.9
6.07 Use of virtual social networks*	34	6.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	18	5.8
7.02 Capacity for innovation*	19	4.8
7.03 PCT patents, applications/million pop.	n/a	n/a
7.04 Business-to-business Internet use*	13	5.9
7.05 Business-to-consumer Internet use*	7	5.9
7.06 Extent of staff training*	31	4.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	12	5.2
8.02 Government Online Service Index, 0–1 (best)	n/a	n/a
8.03 Gov't success in ICT promotion*	11	5.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	12	5.4
9.02 ICT PCT patents, applications/million pop.	n/a	n/a
9.03 Impact of ICTs on new organizational models*	10	5.3
9.04 Knowledge-intensive jobs, % workforce	37	33.7
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	8	5.8
10.02 Internet access in schools*	7	6.2
10.03 ICT use & gov't efficiency*	12	5.4
10.04 E-Participation Index, 0–1 (best)	n/a	n/a

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Tanzania

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 125..3.0

Networked Readiness Index 2013 (out of 144)..... 127.....2.9

A. Environment subindex..... 115.....3.5

1st pillar: Political and regulatory environment..... 85.....3.5

2nd pillar: Business and innovation environment..... 132.....3.4

B. Readiness subindex 123.....3.2

3rd pillar: Infrastructure and digital content..... 120.....2.7

4th pillar: Affordability 111.....4.0

5th pillar: Skills 129.....2.8

C. Usage subindex 124.....2.8

6th pillar: Individual usage 137.....1.7

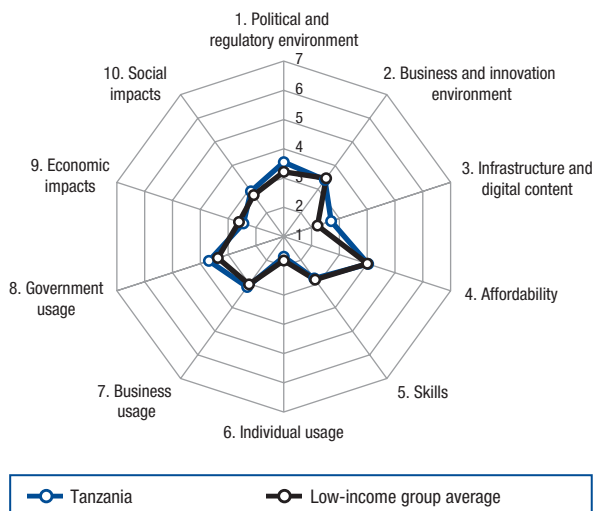
7th pillar: Business usage 120.....3.1

8th pillar: Government usage 98.....3.7

D. Impact subindex 128.....2.7

9th pillar: Economic impacts 132.....2.5

10th pillar: Social impacts 117.....2.9



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	75	3.5
1.02 Laws relating to ICTs*	113	3.2
1.03 Judicial independence*	94	3.2
1.04 Efficiency of legal system in settling disputes*	75	3.6
1.05 Efficiency of legal system in challenging regs*	82	3.3
1.06 Intellectual property protection*	93	3.2
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	78	3.8
1.09 No. days to enforce a contract	66	5.15
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	125	3.9
2.02 Venture capital availability*	73	2.6
2.03 Total tax rate, % profits	105	44.9
2.04 No. days to start a business	107	26
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	127	4.2
2.07 Tertiary education gross enrollment rate, %	142	3.9
2.08 Quality of management schools*	129	3.3
2.09 Gov't procurement of advanced tech*	76	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	132	114.4
3.02 Mobile network coverage, % pop.	101	95.0
3.03 Int'l Internet bandwidth, kb/s per user	119	4.0
3.04 Secure Internet servers/million pop.	135	0.8
3.05 Accessibility of digital content*	134	3.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	92	0.32
4.02 Fixed broadband Internet tariffs, PPP \$/month	109	49.03
4.03 Internet & telephony competition, 0–2 (best)	130	0.91
5th pillar: Skills		
5.01 Quality of educational system*	100	3.2
5.02 Quality of math & science education*	138	2.5
5.03 Secondary education gross enrollment rate, %	137	35.0
5.04 Adult literacy rate, %	115	73.2

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	135	57.0
6.02 Individuals using Internet, %	135	4.0
6.03 Households w/ personal computer, %	136	3.2
6.04 Households w/ Internet access, %	132	3.3
6.05 Fixed broadband Internet subs./100 pop.	141	0.0
6.06 Mobile broadband subscriptions/100 pop.	109	3.7
6.07 Use of virtual social networks*	136	4.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	127	3.9
7.02 Capacity for innovation*	101	3.2
7.03 PCT patents, applications/million pop.	115	0.0
7.04 Business-to-business Internet use*	125	4.1
7.05 Business-to-consumer Internet use*	120	3.5
7.06 Extent of staff training*	95	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	92	3.7
8.02 Government Online Service Index, 0–1 (best)	102	0.35
8.03 Gov't success in ICT promotion*	77	4.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	108	3.9
9.02 ICT PCT patents, applications/million pop.	85	0.0
9.03 Impact of ICTs on new organizational models*	97	3.7
9.04 Knowledge-intensive jobs, % workforce	117	2.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	123	3.4
10.02 Internet access in schools*	118	3.1
10.03 ICT use & gov't efficiency*	95	3.7
10.04 E-Participation Index, 0–1 (best)	97	0.08

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Thailand

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014.....67..4.0

Networked Readiness Index 2013 (out of 144).....74.....3.9

A. Environment subindex.....56.....4.1

1st pillar: Political and regulatory environment.....79.....3.6

2nd pillar: Business and innovation environment.....45.....4.7

B. Readiness subindex.....63.....5.0

3rd pillar: Infrastructure and digital content.....73.....4.1

4th pillar: Affordability.....47.....5.9

5th pillar: Skills.....74.....4.9

C. Usage subindex.....80.....3.6

6th pillar: Individual usage.....85.....3.2

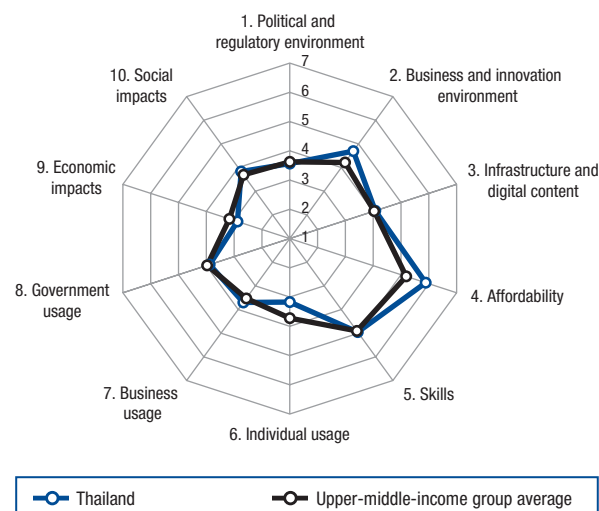
7th pillar: Business usage.....59.....3.7

8th pillar: Government usage.....84.....3.9

D. Impact subindex.....83.....3.4

9th pillar: Economic impacts.....104.....2.9

10th pillar: Social impacts.....68.....3.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	112	3.0
1.02 Laws relating to ICTs*	88	3.7
1.03 Judicial independence*	67	3.8
1.04 Efficiency of legal system in settling disputes*	60	3.9
1.05 Efficiency of legal system in challenging regs*	62	3.5
1.06 Intellectual property protection*	102	3.1
1.07 Software piracy rate, % software installed	72	72
1.08 No. procedures to enforce a contract	55	36
1.09 No. days to enforce a contract	45	440
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	75	4.9
2.02 Venture capital availability*	41	3.1
2.03 Total tax rate, % profits	40	29.8
2.04 No. days to start a business	110	28
2.05 No. procedures to start a business	22	4
2.06 Intensity of local competition*	41	5.3
2.07 Tertiary education gross enrollment rate, %	54	51.4
2.08 Quality of management schools*	53	4.5
2.09 Gov't procurement of advanced tech*	105	3.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	78	2,343.0
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	61	26.6
3.04 Secure Internet servers/million pop.	83	19.6
3.05 Accessibility of digital content*	82	4.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	30	0.12
4.02 Fixed broadband Internet tariffs, PPP \$/month	86	35.81
4.03 Internet & telephony competition, 0–2 (best)	79	1.82
5th pillar: Skills		
5.01 Quality of educational system*	78	3.6
5.02 Quality of math & science education*	80	4.0
5.03 Secondary education gross enrollment rate, %	79	87.0
5.04 Adult literacy rate, %	73	93.5

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	38	127.3
6.02 Individuals using Internet, %	97	26.5
6.03 Households w/ personal computer, %	86	26.9
6.04 Households w/ Internet access, %	93	18.4
6.05 Fixed broadband Internet subs./100 pop.	70	8.2
6.06 Mobile broadband subscriptions/100 pop.	132	0.1
6.07 Use of virtual social networks*	49	5.9
7th pillar: Business usage		
7.01 Firm-level technology absorption*	50	5.0
7.02 Capacity for innovation*	87	3.4
7.03 PCT patents, applications/million pop.	65	1.2
7.04 Business-to-business Internet use*	74	4.8
7.05 Business-to-consumer Internet use*	50	4.9
7.06 Extent of staff training*	50	4.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	99	3.6
8.02 Government Online Service Index, 0–1 (best)	64	0.51
8.03 Gov't success in ICT promotion*	94	4.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	67	4.4
9.02 ICT PCT patents, applications/million pop.	69	0.2
9.03 Impact of ICTs on new organizational models*	86	4.0
9.04 Knowledge-intensive jobs, % workforce	103	10.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	86	3.9
10.02 Internet access in schools*	65	4.4
10.03 ICT use & gov't efficiency*	79	4.1
10.04 E-Participation Index, 0–1 (best)	47	0.32

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Timor-Leste

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 141 ..2.7

Networked Readiness Index 2013 (out of 144)..... 134.....2.7

A. Environment subindex..... 138.....3.1

1st pillar: Political and regulatory environment..... 127.....2.9

2nd pillar: Business and innovation environment..... 134.....3.3

B. Readiness subindex 132.....2.8

3rd pillar: Infrastructure and digital content..... 111.....3.0

4th pillar: Affordability 133.....2.8

5th pillar: Skills 135.....2.6

C. Usage subindex 141.....2.5

6th pillar: Individual usage 128.....1.9

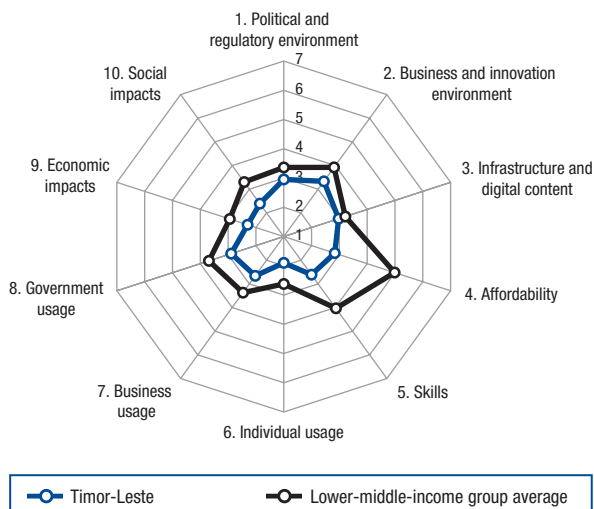
7th pillar: Business usage 142.....2.7

8th pillar: Government usage 138.....2.9

D. Impact subindex 139.....2.3

9th pillar: Economic impacts 143.....2.3

10th pillar: Social impacts 137.....2.4



The Networked Readiness Index in detail

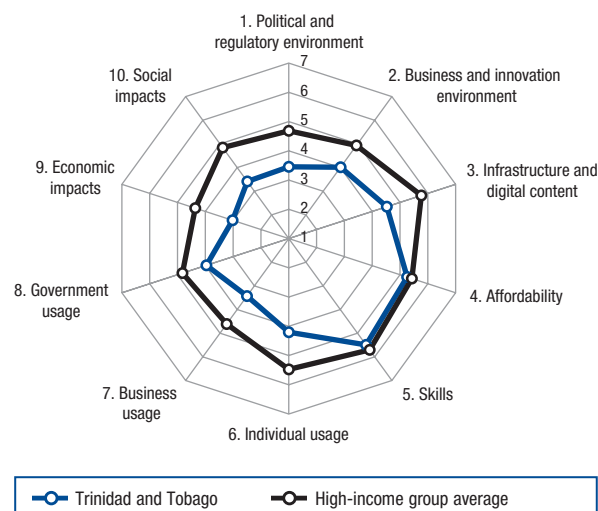
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	72	3.6
1.02 Laws relating to ICTs*	129	2.9
1.03 Judicial independence*	86	3.4
1.04 Efficiency of legal system in settling disputes*	88	3.5
1.05 Efficiency of legal system in challenging regs*	89	3.3
1.06 Intellectual property protection*	128	2.7
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	147	51
1.09 No. days to enforce a contract	138	1,285
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	146	3.1
2.02 Venture capital availability*	87	2.5
2.03 Total tax rate, % profits	2	11.0
2.04 No. days to start a business	142	94
2.05 No. procedures to start a business	94	8
2.06 Intensity of local competition*	142	3.5
2.07 Tertiary education gross enrollment rate, %	101	17.7
2.08 Quality of management schools*	147	2.2
2.09 Gov't procurement of advanced tech*	88	3.4
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	133	112.0
3.02 Mobile network coverage, % pop.	111	92.0
3.03 Int'l Internet bandwidth, kb/s per user	75	17.5
3.04 Secure Internet servers/million pop.	115	2.6
3.05 Accessibility of digital content*	140	3.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	115	0.42
4.02 Fixed broadband Internet tariffs, PPP \$/month	141	172.26
4.03 Internet & telephony competition, 0-2 (best)	n/a	n/a
5th pillar: Skills		
5.01 Quality of educational system*	124	2.7
5.02 Quality of math & science education*	141	2.3
5.03 Secondary education gross enrollment rate, %	116	56.6
5.04 Adult literacy rate, %	131	58.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	136	55.7
6.02 Individuals using Internet, %	148	0.9
6.03 Households w/ personal computer, %	n/a	n/a
6.04 Households w/ Internet access, %	n/a	n/a
6.05 Fixed broadband Internet subs./100 pop.	132	0.1
6.06 Mobile broadband subscriptions/100 pop.	128	0.4
6.07 Use of virtual social networks*	140	4.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	146	3.3
7.02 Capacity for innovation*	124	2.9
7.03 PCT patents, applications/million pop.	88	0.3
7.04 Business-to-business Internet use*	145	3.1
7.05 Business-to-consumer Internet use*	142	2.7
7.06 Extent of staff training*	132	3.2
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	123	3.2
8.02 Government Online Service Index, 0-1 (best)	127	0.22
8.03 Gov't success in ICT promotion*	137	3.2
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	143	2.9
9.02 ICT PCT patents, applications/million pop.	62	0.3
9.03 Impact of ICTs on new organizational models*	139	2.9
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	139	3.0
10.02 Internet access in schools*	137	2.3
10.03 ICT use & gov't efficiency*	123	3.2
10.04 E-Participation Index, 0-1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Trinidad and Tobago

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	71 ..	4.0
Networked Readiness Index 2013 (out of 144).....	72.....	3.9
A. Environment subindex	94	3.7
1st pillar: Political and regulatory environment.....	93.....	3.4
2nd pillar: Business and innovation environment.....	91.....	4.0
B. Readiness subindex	56	5.1
3rd pillar: Infrastructure and digital content.....	57.....	4.5
4th pillar: Affordability.....	74.....	5.3
5th pillar: Skills.....	42.....	5.5
C. Usage subindex	66	3.9
6th pillar: Individual usage.....	60.....	4.2
7th pillar: Business usage.....	87.....	3.4
8th pillar: Government usage.....	80.....	4.0
D. Impact subindex	92	3.2
9th pillar: Economic impacts.....	92.....	3.0
10th pillar: Social impacts.....	89.....	3.4



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	69	3.6
1.02 Laws relating to ICTs*	115	3.2
1.03 Judicial independence*	43	4.6
1.04 Efficiency of legal system in settling disputes*	79	3.6
1.05 Efficiency of legal system in challenging regs*	84	3.3
1.06 Intellectual property protection*	91	3.3
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	116	4.2
1.09 No. days to enforce a contract	143	1,340
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	55	5.2
2.02 Venture capital availability*	111	2.2
2.03 Total tax rate, % profits	38	29.1
2.04 No. days to start a business	125	38
2.05 No. procedures to start a business	79	7
2.06 Intensity of local competition*	88	4.7
2.07 Tertiary education gross enrollment rate, %	116	11.5
2.08 Quality of management schools*	34	4.9
2.09 Gov't procurement of advanced tech*	130	2.7
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	33	6,651.5
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	72	18.4
3.04 Secure Internet servers/million pop.	51	96.5
3.05 Accessibility of digital content*	62	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	96	0.34
4.02 Fixed broadband Internet tariffs, PPP \$/month	19	18.71
4.03 Internet & telephony competition, 0–2 (best)	126	1.00
5th pillar: Skills		
5.01 Quality of educational system*	45	4.2
5.02 Quality of math & science education*	36	4.6
5.03 Secondary education gross enrollment rate, %	73	89.9
5.04 Adult literacy rate, %	41	98.8

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	27	140.8
6.02 Individuals using Internet, %	50	59.5
6.03 Households w/ personal computer, %	51	61.0
6.04 Households w/ Internet access, %	69	40.0
6.05 Fixed broadband Internet subs./100 pop.	47	13.8
6.06 Mobile broadband subscriptions/100 pop.	92	8.4
6.07 Use of virtual social networks*	63	5.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	75	4.7
7.02 Capacity for innovation*	123	2.9
7.03 PCT patents, applications/million pop.	72	1.0
7.04 Business-to-business Internet use*	77	4.8
7.05 Business-to-consumer Internet use*	96	4.1
7.06 Extent of staff training*	60	4.1
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	87	3.7
8.02 Government Online Service Index, 0–1 (best)	72	0.48
8.03 Gov't success in ICT promotion*	79	4.2
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	118	3.7
9.02 ICT PCT patents, applications/million pop.	71	0.2
9.03 Impact of ICTs on new organizational models*	95	3.8
9.04 Knowledge-intensive jobs, % workforce	55	25.0
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	89	3.9
10.02 Internet access in schools*	57	4.6
10.03 ICT use & gov't efficiency*	98	3.7
10.04 E-Participation Index, 0–1 (best)	97	0.08

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Tunisia

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 87 .. 3.8

Networked Readiness Index 2013 (out of 144)..... n/a.....n/a

A. Environment subindex 102 3.6

1st pillar: Political and regulatory environment 94 3.4

2nd pillar: Business and innovation environment 109 3.8

B. Readiness subindex 87 4.5

3rd pillar: Infrastructure and digital content 83 3.6

4th pillar: Affordability 73 5.3

5th pillar: Skills 81 4.8

C. Usage subindex 84 3.5

6th pillar: Individual usage 81 3.3

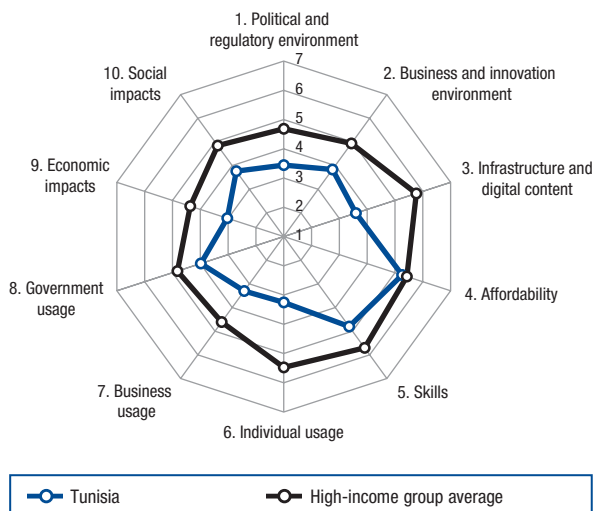
7th pillar: Business usage 103 3.3

8th pillar: Government usage 77 4.0

D. Impact subindex 76 3.4

9th pillar: Economic impacts 90 3.0

10th pillar: Social impacts 72 3.8



The Networked Readiness Index in detail

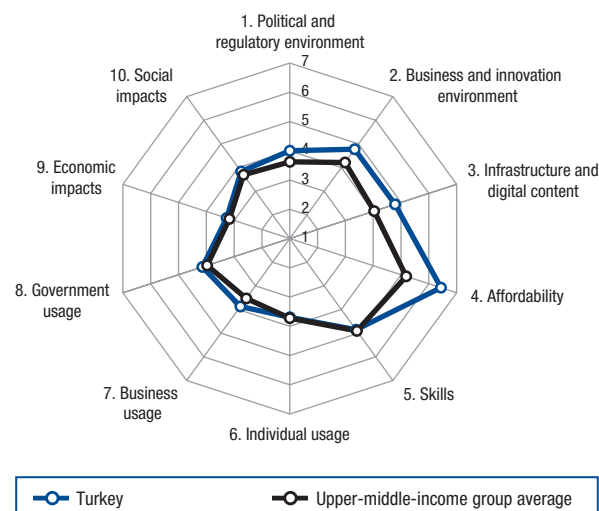
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	111	3.0
1.02 Laws relating to ICTs*	87	3.7
1.03 Judicial independence*	77	3.6
1.04 Efficiency of legal system in settling disputes*	54	3.9
1.05 Efficiency of legal system in challenging regs*	67	3.5
1.06 Intellectual property protection*	97	3.2
1.07 Software piracy rate, % software installed	76	74
1.08 No. procedures to enforce a contract	91	39
1.09 No. days to enforce a contract	78	565
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	77	4.8
2.02 Venture capital availability*	44	3.0
2.03 Total tax rate, % profits	133	62.4
2.04 No. days to start a business	58	11
2.05 No. procedures to start a business	119	10
2.06 Intensity of local competition*	80	4.9
2.07 Tertiary education gross enrollment rate, %	74	35.2
2.08 Quality of management schools*	66	4.3
2.09 Gov't procurement of advanced tech*	115	3.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	88	1,511.2
3.02 Mobile network coverage, % pop.	58	99.0
3.03 Int'l Internet bandwidth, kb/s per user	70	18.7
3.04 Secure Internet servers/million pop.	87	13.1
3.05 Accessibility of digital content*	110	4.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	94	0.33
4.02 Fixed broadband Internet tariffs, PPP \$/month	7	14.42
4.03 Internet & telephony competition, 0-2 (best)	135	0.82
5th pillar: Skills		
5.01 Quality of educational system*	71	3.7
5.02 Quality of math & science education*	31	4.7
5.03 Secondary education gross enrollment rate, %	68	91.1
5.04 Adult literacy rate, %	108	79.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	53	118.1
6.02 Individuals using Internet, %	79	41.4
6.03 Households w/ personal computer, %	93	22.8
6.04 Households w/ Internet access, %	85	20.6
6.05 Fixed broadband Internet subs./100 pop.	80	4.9
6.06 Mobile broadband subscriptions/100 pop.	88	8.9
6.07 Use of virtual social networks*	40	6.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	70	4.7
7.02 Capacity for innovation*	99	3.2
7.03 PCT patents, applications/million pop.	67	1.1
7.04 Business-to-business Internet use*	116	4.3
7.05 Business-to-consumer Internet use*	114	3.7
7.06 Extent of staff training*	111	3.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	74	3.9
8.02 Government Online Service Index, 0-1 (best)	74	0.48
8.03 Gov't success in ICT promotion*	83	4.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	96	4.0
9.02 ICT PCT patents, applications/million pop.	63	0.2
9.03 Impact of ICTs on new organizational models*	87	3.9
9.04 Knowledge-intensive jobs, % workforce	73	20.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	76	4.1
10.02 Internet access in schools*	95	3.7
10.03 ICT use & gov't efficiency*	80	4.0
10.04 E-Participation Index, 0-1 (best)	41	0.37

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Turkey

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	51	4.3
Networked Readiness Index 2013 (out of 144).....	45	4.2
A. Environment subindex	44	4.4
1st pillar: Political and regulatory environment.....	55	4.0
2nd pillar: Business and innovation environment.....	38	4.8
B. Readiness subindex	42	5.4
3rd pillar: Infrastructure and digital content.....	48	4.8
4th pillar: Affordability.....	17	6.4
5th pillar: Skills.....	80	4.8
C. Usage subindex	63	3.9
6th pillar: Individual usage.....	69	3.7
7th pillar: Business usage.....	46	3.9
8th pillar: Government usage.....	60	4.1
D. Impact subindex	65	3.5
9th pillar: Economic impacts.....	68	3.3
10th pillar: Social impacts.....	67	3.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	19	4.8
1.02 Laws relating to ICTs*	68	4.0
1.03 Judicial independence*	85	3.4
1.04 Efficiency of legal system in settling disputes*	59	3.9
1.05 Efficiency of legal system in challenging regs*	46	3.9
1.06 Intellectual property protection*	74	3.6
1.07 Software piracy rate, % software installed	57	62
1.08 No. procedures to enforce a contract	55	36
1.09 No. days to enforce a contract	38	420
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	44	5.4
2.02 Venture capital availability*	83	2.5
2.03 Total tax rate, % profits	82	40.2
2.04 No. days to start a business	22	6
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	15	5.8
2.07 Tertiary education gross enrollment rate, %	38	60.7
2.08 Quality of management schools*	101	3.8
2.09 Gov't procurement of advanced tech*	23	4.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	64	3,236.6
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	44	40.6
3.04 Secure Internet servers/million pop.	48	116.8
3.05 Accessibility of digital content*	63	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	58	0.21
4.02 Fixed broadband Internet tariffs, PPP \$/month	24	20.02
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	91	3.4
5.02 Quality of math & science education*	101	3.5
5.03 Secondary education gross enrollment rate, %	77	88.9
5.04 Adult literacy rate, %	67	94.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	102	91.5
6.02 Individuals using Internet, %	73	45.1
6.03 Households w/ personal computer, %	64	50.2
6.04 Households w/ Internet access, %	60	47.2
6.05 Fixed broadband Internet subs./100 pop.	57	10.6
6.06 Mobile broadband subscriptions/100 pop.	77	16.5
6.07 Use of virtual social networks*	61	5.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	37	5.3
7.02 Capacity for innovation*	45	3.8
7.03 PCT patents, applications/million pop.	44	6.2
7.04 Business-to-business Internet use*	55	5.1
7.05 Business-to-consumer Internet use*	48	4.9
7.06 Extent of staff training*	65	4.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	55	4.2
8.02 Government Online Service Index, 0–1 (best)	77	0.46
8.03 Gov't success in ICT promotion*	69	4.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	53	4.6
9.02 ICT PCT patents, applications/million pop.	49	0.6
9.03 Impact of ICTs on new organizational models*	61	4.3
9.04 Knowledge-intensive jobs, % workforce	77	20.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	40	4.9
10.02 Internet access in schools*	63	4.4
10.03 ICT use & gov't efficiency*	44	4.7
10.04 E-Participation Index, 0–1 (best)	107	0.05

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Uganda

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 115..3.3

Networked Readiness Index 2013 (out of 144)..... 110.....3.3

A. Environment subindex..... 104.....3.6

1st pillar: Political and regulatory environment..... 77.....3.6

2nd pillar: Business and innovation environment..... 121.....3.6

B. Readiness subindex..... 112.....3.8

3rd pillar: Infrastructure and digital content..... 113.....2.9

4th pillar: Affordability..... 58.....5.7

5th pillar: Skills..... 127.....2.9

C. Usage subindex..... 125.....2.8

6th pillar: Individual usage..... 140.....1.6

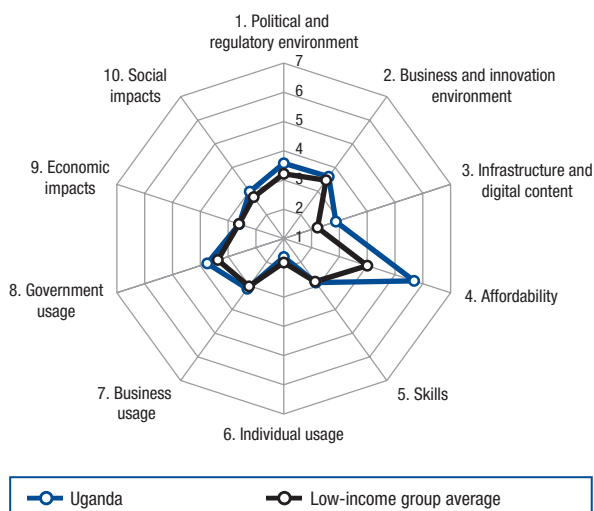
7th pillar: Business usage..... 122.....3.1

8th pillar: Government usage..... 95.....3.7

D. Impact subindex..... 122.....2.8

9th pillar: Economic impacts..... 126.....2.6

10th pillar: Social impacts..... 114.....3.0



The Networked Readiness Index in detail

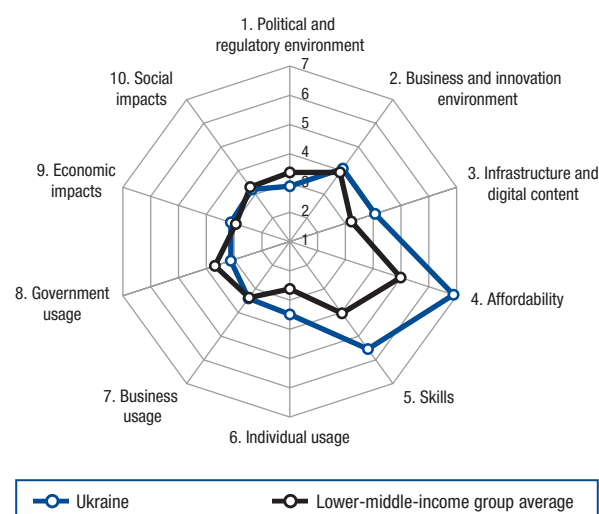
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	47	4.0
1.02 Laws relating to ICTs*	114	3.2
1.03 Judicial independence*	101	3.1
1.04 Efficiency of legal system in settling disputes*	65	3.8
1.05 Efficiency of legal system in challenging regs*	66	3.5
1.06 Intellectual property protection*	119	2.8
1.07 Software piracy rate, % software installed	n/a	n/a
1.08 No. procedures to enforce a contract	78	3.8
1.09 No. days to enforce a contract	55	4.9
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	108	4.3
2.02 Venture capital availability*	94	2.4
2.03 Total tax rate, % profits	72	36.6
2.04 No. days to start a business	114	3.2
2.05 No. procedures to start a business	144	1.5
2.06 Intensity of local competition*	67	5.0
2.07 Tertiary education gross enrollment rate, %	122	9.1
2.08 Quality of management schools*	98	3.8
2.09 Gov't procurement of advanced tech*	68	3.5
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	137	74.4
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	116	4.7
3.04 Secure Internet servers/million pop.	126	1.5
3.05 Accessibility of digital content*	133	3.6
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	67	0.23
4.02 Fixed broadband Internet tariffs, PPP \$/month	80	34.25
4.03 Internet & telephony competition, 0–2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	82	3.5
5.02 Quality of math & science education*	119	3.1
5.03 Secondary education gross enrollment rate, %	143	27.6
5.04 Adult literacy rate, %	114	73.2

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	139	45.0
6.02 Individuals using Internet, %	114	14.7
6.03 Households w/ personal computer, %	133	4.0
6.04 Households w/ Internet access, %	125	4.2
6.05 Fixed broadband Internet subs./100 pop.	126	0.1
6.06 Mobile broadband subscriptions/100 pop.	96	7.4
6.07 Use of virtual social networks*	141	4.2
7th pillar: Business usage		
7.01 Firm-level technology absorption*	116	4.1
7.02 Capacity for innovation*	109	3.1
7.03 PCT patents, applications/million pop.	111	0.0
7.04 Business-to-business Internet use*	118	4.3
7.05 Business-to-consumer Internet use*	130	3.4
7.06 Extent of staff training*	115	3.5
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	67	4.0
8.02 Government Online Service Index, 0–1 (best)	120	0.29
8.03 Gov't success in ICT promotion*	60	4.5
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	90	4.1
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	91	3.9
9.04 Knowledge-intensive jobs, % workforce	115	4.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	112	3.5
10.02 Internet access in schools*	121	2.9
10.03 ICT use & gov't efficiency*	84	4.0
10.04 E-Participation Index, 0–1 (best)	97	0.08

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Ukraine

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	81	3.9
Networked Readiness Index 2013 (out of 144).....	73	3.9
A. Environment subindex	114	3.5
1st pillar: Political and regulatory environment.....	130	2.9
2nd pillar: Business and innovation environment.....	84	4.1
B. Readiness subindex	34	5.5
3rd pillar: Infrastructure and digital content.....	74	4.1
4th pillar: Affordability.....	3	6.9
5th pillar: Skills.....	37	5.5
C. Usage subindex	101	3.3
6th pillar: Individual usage.....	75	3.5
7th pillar: Business usage.....	93	3.4
8th pillar: Government usage.....	129	3.1
D. Impact subindex	98	3.2
9th pillar: Economic impacts.....	79	3.1
10th pillar: Social impacts.....	102	3.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	138	2.4
1.02 Laws relating to ICTs*	107	3.3
1.03 Judicial independence*	139	2.2
1.04 Efficiency of legal system in settling disputes*	144	2.3
1.05 Efficiency of legal system in challenging regs*	146	2.2
1.06 Intellectual property protection*	133	2.5
1.07 Software piracy rate, % software installed	95	84
1.08 No. procedures to enforce a contract	18	30
1.09 No. days to enforce a contract	23	378
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	106	4.3
2.02 Venture capital availability*	120	2.1
2.03 Total tax rate, % profits	127	54.9
2.04 No. days to start a business	98	21
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	106	4.5
2.07 Tertiary education gross enrollment rate, %	12	79.7
2.08 Quality of management schools*	115	3.6
2.09 Gov't procurement of advanced tech*	118	3.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	54	4,265.2
3.02 Mobile network coverage, % pop.	33	99.9
3.03 Int'l Internet bandwidth, kb/s per user	87	14.1
3.04 Secure Internet servers/million pop.	76	23.5
3.05 Accessibility of digital content*	43	5.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	6	0.04
4.02 Fixed broadband Internet tariffs, PPP \$/month	6	14.17
4.03 Internet & telephony competition, 0–2 (best)	74	1.86
5th pillar: Skills		
5.01 Quality of educational system*	79	3.6
5.02 Quality of math & science education*	28	4.8
5.03 Secondary education gross enrollment rate, %	44	97.8
5.04 Adult literacy rate, %	6	99.7

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	34	130.3
6.02 Individuals using Internet, %	92	33.7
6.03 Households w/ personal computer, %	72	40.5
6.04 Households w/ Internet access, %	73	36.5
6.05 Fixed broadband Internet subs./100 pop.	71	8.0
6.06 Mobile broadband subscriptions/100 pop.	101	5.4
6.07 Use of virtual social networks*	93	5.3
7th pillar: Business usage		
7.01 Firm-level technology absorption*	100	4.3
7.02 Capacity for innovation*	100	3.2
7.03 PCT patents, applications/million pop.	52	3.2
7.04 Business-to-business Internet use*	87	4.7
7.05 Business-to-consumer Internet use*	59	4.7
7.06 Extent of staff training*	103	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	142	2.6
8.02 Government Online Service Index, 0–1 (best)	88	0.42
8.03 Gov't success in ICT promotion*	135	3.2
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	125	3.6
9.02 ICT PCT patents, applications/million pop.	47	0.8
9.03 Impact of ICTs on new organizational models*	127	3.3
9.04 Knowledge-intensive jobs, % workforce	36	33.9
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	121	3.4
10.02 Internet access in schools*	70	4.3
10.03 ICT use & gov't efficiency*	128	3.2
10.04 E-Participation Index, 0–1 (best)	77	0.16

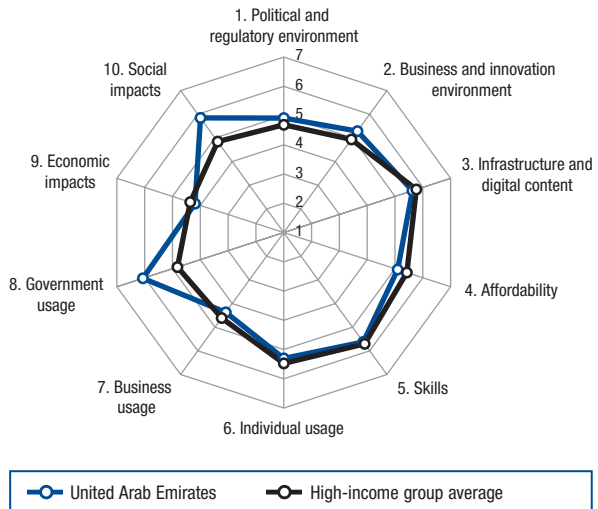
Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

United Arab Emirates

Networked Readiness Index 2014 **24**.. **5.2**
 Rank (out of 148) Value (1-7)

Networked Readiness Index 2013 (out of 144)..... 25.....5.1

- A. Environment subindex**..... **18**..... **5.1**
 - 1st pillar: Political and regulatory environment 24.....4.9
 - 2nd pillar: Business and innovation environment 13.....5.3
- B. Readiness subindex** **38**..... **5.4**
 - 3rd pillar: Infrastructure and digital content..... 30.....5.6
 - 4th pillar: Affordability 85.....5.1
 - 5th pillar: Skills 33.....5.6
- C. Usage subindex** **21**..... **5.2**
 - 6th pillar: Individual usage 29.....5.3
 - 7th pillar: Business usage 29.....4.4
 - 8th pillar: Government usage 2.....6.1
- D. Impact subindex** **18**..... **5.0**
 - 9th pillar: Economic impacts 27.....4.2
 - 10th pillar: Social impacts 5.....5.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	20	4.8
1.02 Laws relating to ICTs*	4	5.7
1.03 Judicial independence*	23	5.5
1.04 Efficiency of legal system in settling disputes*	20	4.9
1.05 Efficiency of legal system in challenging regs*	16	4.8
1.06 Intellectual property protection*	20	5.3
1.07 Software piracy rate, % software installed	22	37
1.08 No. procedures to enforce a contract	142	49
1.09 No. days to enforce a contract	68	524
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	8	6.4
2.02 Venture capital availability*	10	4.1
2.03 Total tax rate, % profits	7	14.9
2.04 No. days to start a business	40	8
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	17	5.7
2.07 Tertiary education gross enrollment rate, %	87	25.2
2.08 Quality of management schools*	28	5.1
2.09 Gov't procurement of advanced tech*	3	5.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	10	11,107.7
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	53	32.4
3.04 Secure Internet servers/million pop.	40	183.7
3.05 Accessibility of digital content*	20	6.1
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	19	0.08
4.02 Fixed broadband Internet tariffs, PPP \$/month	103	41.77
4.03 Internet & telephony competition, 0-2 (best)	126	1.00
5th pillar: Skills		
5.01 Quality of educational system*	15	5.1
5.02 Quality of math & science education*	19	5.1
5.03 Secondary education gross enrollment rate, %	66	92.3
5.04 Adult literacy rate, %	88	90.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	20	149.6
6.02 Individuals using Internet, %	14	85.0
6.03 Households w/ personal computer, %	18	85.0
6.04 Households w/ Internet access, %	32	72.0
6.05 Fixed broadband Internet subs./100 pop.	61	10.3
6.06 Mobile broadband subscriptions/100 pop.	37	44.8
6.07 Use of virtual social networks*	11	6.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	4	6.1
7.02 Capacity for innovation*	39	4.0
7.03 PCT patents, applications/million pop.	49	4.5
7.04 Business-to-business Internet use*	10	5.9
7.05 Business-to-consumer Internet use*	20	5.5
7.06 Extent of staff training*	13	5.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	1	5.9
8.02 Government Online Service Index, 0-1 (best)	9	0.86
8.03 Gov't success in ICT promotion*	2	6.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	4	5.6
9.02 ICT PCT patents, applications/million pop.	44	1.1
9.03 Impact of ICTs on new organizational models*	9	5.3
9.04 Knowledge-intensive jobs, % workforce	30	36.1
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	2	6.1
10.02 Internet access in schools*	21	5.8
10.03 ICT use & gov't efficiency*	2	6.0
10.04 E-Participation Index, 0-1 (best)	11	0.74

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

United Kingdom

Rank Value
(out of 148) (1–7)

Networked Readiness Index 2014..... 9..5.5

Networked Readiness Index 2013 (out of 144)..... 7.....5.6

A. Environment subindex..... 5.....5.5

1st pillar: Political and regulatory environment..... 5.....5.7

2nd pillar: Business and innovation environment..... 10.....5.3

B. Readiness subindex..... 21.....5.7

3rd pillar: Infrastructure and digital content..... 15.....6.4

4th pillar: Affordability..... 79.....5.2

5th pillar: Skills..... 28.....5.7

C. Usage subindex..... 12.....5.6

6th pillar: Individual usage..... 8.....6.3

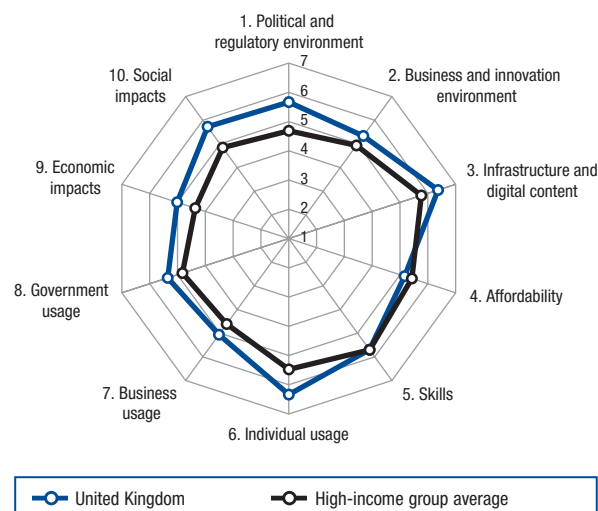
7th pillar: Business usage..... 17.....5.1

8th pillar: Government usage..... 17.....5.4

D. Impact subindex..... 9.....5.4

9th pillar: Economic impacts..... 14.....5.0

10th pillar: Social impacts..... 9.....5.7



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	5	5.5
1.02 Laws relating to ICTs*	8	5.5
1.03 Judicial independence*	6	6.2
1.04 Efficiency of legal system in settling disputes*	8	5.6
1.05 Efficiency of legal system in challenging regs*	8	5.2
1.06 Intellectual property protection*	8	5.8
1.07 Software piracy rate, % software installed	12	26
1.08 No. procedures to enforce a contract	12	28
1.09 No. days to enforce a contract	44	437
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	5	6.4
2.02 Venture capital availability*	20	3.5
2.03 Total tax rate, % profits	58	34.0
2.04 No. days to start a business	63	12
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	3	6.0
2.07 Tertiary education gross enrollment rate, %	34	61.2
2.08 Quality of management schools*	3	5.9
2.09 Gov't procurement of advanced tech*	56	3.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	37	5,697.2
3.02 Mobile network coverage, % pop.	51	99.6
3.03 Int'l Internet bandwidth, kb/s per user	9	188.9
3.04 Secure Internet servers/million pop.	12	1,478.3
3.05 Accessibility of digital content*	4	6.4
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	131	0.53
4.02 Fixed broadband Internet tariffs, PPP \$/month	21	19.68
4.03 Internet & telephony competition, 0–2 (best)	76	1.85
5th pillar: Skills		
5.01 Quality of educational system*	26	4.6
5.02 Quality of math & science education*	50	4.4
5.03 Secondary education gross enrollment rate, %	47	97.4
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	32	135.3
6.02 Individuals using Internet, %	11	87.0
6.03 Households w/ personal computer, %	12	87.0
6.04 Households w/ Internet access, %	9	88.6
6.05 Fixed broadband Internet subs./100 pop.	8	34.0
6.06 Mobile broadband subscriptions/100 pop.	15	72.1
6.07 Use of virtual social networks*	2	6.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	24	5.7
7.02 Capacity for innovation*	8	5.2
7.03 PCT patents, applications/million pop.	17	87.0
7.04 Business-to-business Internet use*	5	6.1
7.05 Business-to-consumer Internet use*	1	6.3
7.06 Extent of staff training*	22	4.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	37	4.5
8.02 Government Online Service Index, 0–1 (best)	4	0.97
8.03 Gov't success in ICT promotion*	39	4.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	6	5.6
9.02 ICT PCT patents, applications/million pop.	18	25.1
9.03 Impact of ICTs on new organizational models*	6	5.4
9.04 Knowledge-intensive jobs, % workforce	5	47.2
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	21	5.3
10.02 Internet access in schools*	10	6.2
10.03 ICT use & gov't efficiency*	27	4.9
10.04 E-Participation Index, 0–1 (best)	5	0.92

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

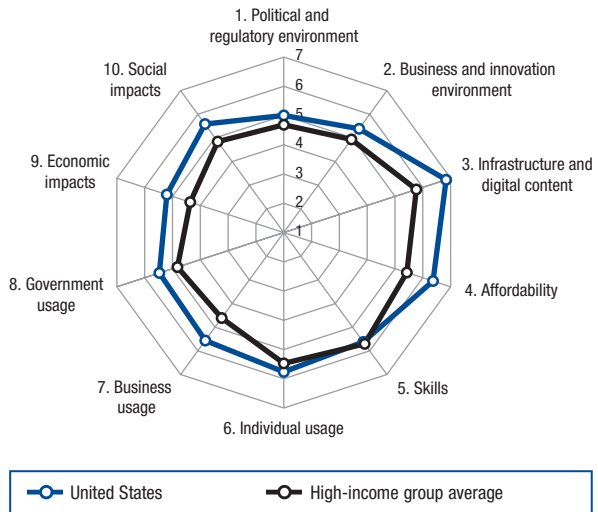
United States

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 7..5.6

Networked Readiness Index 2013 (out of 144)..... 9.....5.6

A. Environment subindex	15	5.2
1st pillar: Political and regulatory environment.....	22	5.0
2nd pillar: Business and innovation environment.....	7	5.4
B. Readiness subindex	5	6.3
3rd pillar: Infrastructure and digital content.....	4	6.8
4th pillar: Affordability.....	21	6.4
5th pillar: Skills.....	32	5.6
C. Usage subindex	11	5.6
6th pillar: Individual usage.....	18	5.8
7th pillar: Business usage.....	9	5.6
8th pillar: Government usage.....	11	5.5
D. Impact subindex	8	5.4
9th pillar: Economic impacts.....	9	5.2
10th pillar: Social impacts.....	12	5.6



The Networked Readiness Index in detail

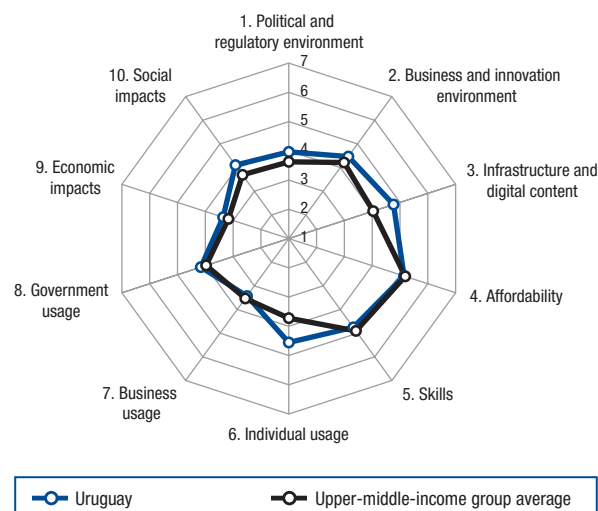
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	58	3.8
1.02 Laws relating to ICTs*	15	5.2
1.03 Judicial independence*	32	5.0
1.04 Efficiency of legal system in settling disputes*	26	4.7
1.05 Efficiency of legal system in challenging regs*	29	4.3
1.06 Intellectual property protection*	25	5.2
1.07 Software piracy rate, % software installed	1	19
1.08 No. procedures to enforce a contract	27	32
1.09 No. days to enforce a contract	19	370
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	6	6.4
2.02 Venture capital availability*	3	4.3
2.03 Total tax rate, % profits	106	46.3
2.04 No. days to start a business	15	5
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	14	5.8
2.07 Tertiary education gross enrollment rate, %	3	95.3
2.08 Quality of management schools*	12	5.5
2.09 Gov't procurement of advanced tech*	15	4.3
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	7	13,639.7
3.02 Mobile network coverage, % pop.	33	99.9
3.03 Int'l Internet bandwidth, kb/s per user	36	61.9
3.04 Secure Internet servers/million pop.	13	1,474.1
3.05 Accessibility of digital content*	17	6.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	80	0.27
4.02 Fixed broadband Internet tariffs, PPP \$/month	10	14.95
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	25	4.6
5.02 Quality of math & science education*	49	4.4
5.03 Secondary education gross enrollment rate, %	59	93.6
5.04 Adult literacy rate, %	14	99.0

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	97	95.4
6.02 Individuals using Internet, %	20	81.0
6.03 Households w/ personal computer, %	28	79.3
6.04 Households w/ Internet access, %	26	75.0
6.05 Fixed broadband Internet subs./100 pop.	17	28.3
6.06 Mobile broadband subscriptions/100 pop.	9	88.2
6.07 Use of virtual social networks*	9	6.4
7th pillar: Business usage		
7.01 Firm-level technology absorption*	9	6.0
7.02 Capacity for innovation*	5	5.6
7.03 PCT patents, applications/million pop.	11	143.9
7.04 Business-to-business Internet use*	25	5.6
7.05 Business-to-consumer Internet use*	3	6.2
7.06 Extent of staff training*	12	5.0
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	39	4.5
8.02 Government Online Service Index, 0-1 (best)	1	1.00
8.03 Gov't success in ICT promotion*	28	5.0
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	16	5.3
9.02 ICT PCT patents, applications/million pop.	8	51.6
9.03 Impact of ICTs on new organizational models*	7	5.3
9.04 Knowledge-intensive jobs, % workforce	28	36.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	29	5.2
10.02 Internet access in schools*	18	5.9
10.03 ICT use & gov't efficiency*	45	4.6
10.04 E-Participation Index, 0-1 (best)	5	0.92

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Uruguay

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	56	4.2
Networked Readiness Index 2013 (out of 144).....	52	4.2
A. Environment subindex	51	4.2
1st pillar: Political and regulatory environment.....	57	4.0
2nd pillar: Business and innovation environment.....	54	4.5
B. Readiness subindex	68	4.9
3rd pillar: Infrastructure and digital content.....	50	4.8
4th pillar: Affordability.....	80	5.1
5th pillar: Skills.....	83	4.7
C. Usage subindex	55	4.0
6th pillar: Individual usage.....	48	4.5
7th pillar: Business usage.....	86	3.4
8th pillar: Government usage.....	59	4.2
D. Impact subindex	53	3.7
9th pillar: Economic impacts.....	61	3.4
10th pillar: Social impacts.....	50	4.1



The Networked Readiness Index in detail

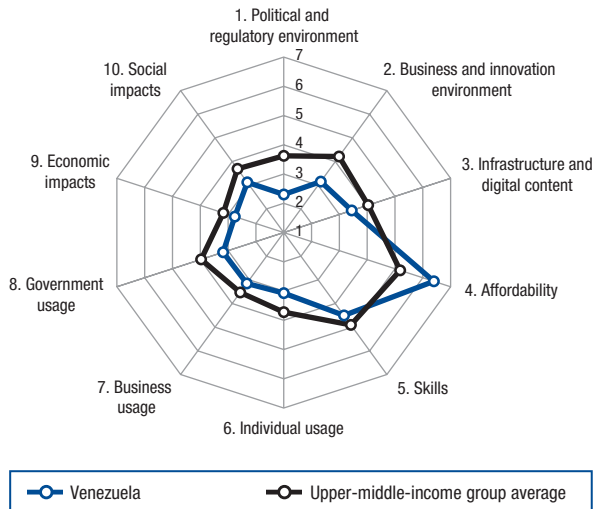
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	66	3.6
1.02 Laws relating to ICTs*	78	3.8
1.03 Judicial independence*	25	5.4
1.04 Efficiency of legal system in settling disputes*	55	3.9
1.05 Efficiency of legal system in challenging regs*	40	4.0
1.06 Intellectual property protection*	45	4.1
1.07 Software piracy rate, % software installed	67	68
1.08 No. procedures to enforce a contract	111	41
1.09 No. days to enforce a contract	113	725
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	92	4.5
2.02 Venture capital availability*	80	2.5
2.03 Total tax rate, % profits	92	41.9
2.04 No. days to start a business	32	7
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	114	4.5
2.07 Tertiary education gross enrollment rate, %	32	63.2
2.08 Quality of management schools*	79	4.2
2.09 Gov't procurement of advanced tech*	93	3.2
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	68	3,057.2
3.02 Mobile network coverage, % pop.	1	100.0
3.03 Int'l Internet bandwidth, kb/s per user	43	40.6
3.04 Secure Internet servers/million pop.	55	80.4
3.05 Accessibility of digital content*	45	5.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	101	0.35
4.02 Fixed broadband Internet tariffs, PPP \$/month	12	15.22
4.03 Internet & telephony competition, 0–2 (best)	137	0.75
5th pillar: Skills		
5.01 Quality of educational system*	120	3.0
5.02 Quality of math & science education*	124	2.9
5.03 Secondary education gross enrollment rate, %	71	90.3
5.04 Adult literacy rate, %	47	98.1

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	24	147.1
6.02 Individuals using Internet, %	56	55.1
6.03 Households w/ personal computer, %	48	63.7
6.04 Households w/ Internet access, %	56	48.4
6.05 Fixed broadband Internet subs./100 pop.	39	16.6
6.06 Mobile broadband subscriptions/100 pop.	53	32.5
6.07 Use of virtual social networks*	62	5.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	92	4.4
7.02 Capacity for innovation*	88	3.4
7.03 PCT patents, applications/million pop.	54	2.2
7.04 Business-to-business Internet use*	89	4.6
7.05 Business-to-consumer Internet use*	74	4.5
7.06 Extent of staff training*	92	3.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	84	3.8
8.02 Government Online Service Index, 0–1 (best)	52	0.55
8.03 Gov't success in ICT promotion*	67	4.4
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	60	4.6
9.02 ICT PCT patents, applications/million pop.	56	0.4
9.03 Impact of ICTs on new organizational models*	49	4.5
9.04 Knowledge-intensive jobs, % workforce	66	23.1
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	56	4.5
10.02 Internet access in schools*	19	5.9
10.03 ICT use & gov't efficiency*	91	3.9
10.04 E-Participation Index, 0–1 (best)	71	0.18

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Venezuela

	Rank (out of 148)	Value (1-7)
Networked Readiness Index 2014	106	3.4
Networked Readiness Index 2013 (out of 144).....	108.....	3.3
A. Environment subindex	145	2.7
1st pillar: Political and regulatory environment.....	148.....	2.3
2nd pillar: Business and innovation environment.....	140.....	3.2
B. Readiness subindex	72	4.8
3rd pillar: Infrastructure and digital content.....	91.....	3.4
4th pillar: Affordability.....	20.....	6.4
5th pillar: Skills.....	94.....	4.5
C. Usage subindex	108	3.1
6th pillar: Individual usage.....	88.....	3.1
7th pillar: Business usage.....	119.....	3.1
8th pillar: Government usage.....	127.....	3.2
D. Impact subindex	109	2.9
9th pillar: Economic impacts.....	115.....	2.8
10th pillar: Social impacts.....	108.....	3.1



The Networked Readiness Index in detail

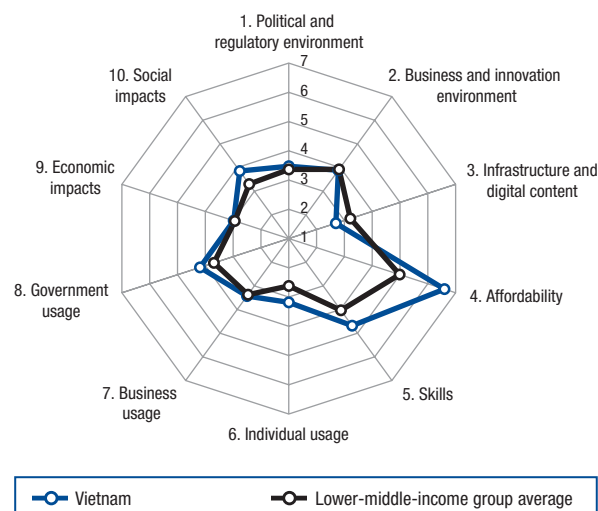
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	148	1.5
1.02 Laws relating to ICTs*	111	3.2
1.03 Judicial independence*	148	1.1
1.04 Efficiency of legal system in settling disputes*	148	1.8
1.05 Efficiency of legal system in challenging regs*	148	1.5
1.06 Intellectual property protection*	148	1.6
1.07 Software piracy rate, % software installed	101	88
1.08 No. procedures to enforce a contract	18	30
1.09 No. days to enforce a contract	94	610
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	115	4.1
2.02 Venture capital availability*	117	2.1
2.03 Total tax rate, % profits	132	61.7
2.04 No. days to start a business	147	144
2.05 No. procedures to start a business	148	17
2.06 Intensity of local competition*	147	3.0
2.07 Tertiary education gross enrollment rate, %	13	77.9
2.08 Quality of management schools*	76	4.2
2.09 Gov't procurement of advanced tech*	148	1.9
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	56	4,137.5
3.02 Mobile network coverage, % pop.	115	90.0
3.03 Int'l Internet bandwidth, kb/s per user	94	10.9
3.04 Secure Internet servers/million pop.	92	10.7
3.05 Accessibility of digital content*	100	4.5
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	77	0.26
4.02 Fixed broadband Internet tariffs, PPP \$/month	16	16.04
4.03 Internet & telephony competition, 0-2 (best)	1	2.00
5th pillar: Skills		
5.01 Quality of educational system*	128	2.7
5.02 Quality of math & science education*	123	2.9
5.03 Secondary education gross enrollment rate, %	84	85.4
5.04 Adult literacy rate, %	61	95.5

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	88	101.9
6.02 Individuals using Internet, %	76	44.0
6.03 Households w/ personal computer, %	94	20.2
6.04 Households w/ Internet access, %	89	20.2
6.05 Fixed broadband Internet subs./100 pop.	75	6.7
6.06 Mobile broadband subscriptions/100 pop.	105	4.8
6.07 Use of virtual social networks*	59	5.8
7th pillar: Business usage		
7.01 Firm-level technology absorption*	118	4.1
7.02 Capacity for innovation*	128	2.8
7.03 PCT patents, applications/million pop.	91	0.2
7.04 Business-to-business Internet use*	124	4.1
7.05 Business-to-consumer Internet use*	91	4.2
7.06 Extent of staff training*	106	3.6
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	144	2.5
8.02 Government Online Service Index, 0-1 (best)	72	0.48
8.03 Gov't success in ICT promotion*	139	3.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	128	3.5
9.02 ICT PCT patents, applications/million pop.	89	0.0
9.03 Impact of ICTs on new organizational models*	111	3.6
9.04 Knowledge-intensive jobs, % workforce	83	18.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	113	3.5
10.02 Internet access in schools*	106	3.4
10.03 ICT use & gov't efficiency*	137	3.0
10.04 E-Participation Index, 0-1 (best)	55	0.26

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Vietnam

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	84	3.8
Networked Readiness Index 2013 (out of 144).....	84.....	3.7
A. Environment subindex	96	3.7
1st pillar: Political and regulatory environment.....	91.....	3.5
2nd pillar: Business and innovation environment.....	100.....	3.9
B. Readiness subindex	77	4.7
3rd pillar: Infrastructure and digital content.....	121.....	2.7
4th pillar: Affordability.....	8.....	6.6
5th pillar: Skills.....	88.....	4.7
C. Usage subindex	78	3.6
6th pillar: Individual usage.....	84.....	3.2
7th pillar: Business usage.....	88.....	3.4
8th pillar: Government usage.....	58.....	4.2
D. Impact subindex	75	3.4
9th pillar: Economic impacts.....	96.....	3.0
10th pillar: Social impacts.....	62.....	3.8



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	55	3.8
1.02 Laws relating to ICTs*	86	3.7
1.03 Judicial independence*	89	3.4
1.04 Efficiency of legal system in settling disputes*	93	3.4
1.05 Efficiency of legal system in challenging regs*	79	3.3
1.06 Intellectual property protection*	116	2.9
1.07 Software piracy rate, % software installed	89	81
1.08 No. procedures to enforce a contract	55	36
1.09 No. days to enforce a contract	30	400
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	134	3.7
2.02 Venture capital availability*	78	2.6
2.03 Total tax rate, % profits	65	35.2
2.04 No. days to start a business	119	34
2.05 No. procedures to start a business	119	10
2.06 Intensity of local competition*	51	5.2
2.07 Tertiary education gross enrollment rate, %	88	24.6
2.08 Quality of management schools*	125	3.3
2.09 Gov't procurement of advanced tech*	80	4.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	96	1,129.1
3.02 Mobile network coverage, % pop.	132	70.0
3.03 Int'l Internet bandwidth, kb/s per user	90	13.4
3.04 Secure Internet servers/million pop.	99	6.7
3.05 Accessibility of digital content*	61	5.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	23	0.09
4.02 Fixed broadband Internet tariffs, PPP \$/month	34	22.79
4.03 Internet & telephony competition, 0–2 (best)	69	1.87
5th pillar: Skills		
5.01 Quality of educational system*	95	3.4
5.02 Quality of math & science education*	85	3.9
5.03 Secondary education gross enrollment rate, %	96	77.2
5.04 Adult literacy rate, %	74	93.4

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	23	147.7
6.02 Individuals using Internet, %	83	39.5
6.03 Households w/ personal computer, %	99	17.5
6.04 Households w/ Internet access, %	94	15.6
6.05 Fixed broadband Internet subs./100 pop.	79	4.9
6.06 Mobile broadband subscriptions/100 pop.	72	18.8
6.07 Use of virtual social networks*	105	5.1
7th pillar: Business usage		
7.01 Firm-level technology absorption*	135	3.8
7.02 Capacity for innovation*	86	3.4
7.03 PCT patents, applications/million pop.	92	0.2
7.04 Business-to-business Internet use*	32	5.5
7.05 Business-to-consumer Internet use*	38	5.1
7.06 Extent of staff training*	98	3.7
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	60	4.2
8.02 Government Online Service Index, 0–1 (best)	88	0.42
8.03 Gov't success in ICT promotion*	36	4.9
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	39	4.8
9.02 ICT PCT patents, applications/million pop.	86	0.0
9.03 Impact of ICTs on new organizational models*	59	4.4
9.04 Knowledge-intensive jobs, % workforce	107	7.4
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	53	4.5
10.02 Internet access in schools*	41	5.1
10.03 ICT use & gov't efficiency*	67	4.2
10.04 E-Participation Index, 0–1 (best)	92	0.11

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Yemen

Rank (out of 148) Value (1–7)

Networked Readiness Index 2014 140..2.7

Networked Readiness Index 2013 (out of 144)..... 139.....2.6

A. Environment subindex..... 139.....2.9

1st pillar: Political and regulatory environment..... 143.....2.6

2nd pillar: Business and innovation environment..... 138.....3.3

B. Readiness subindex..... 120.....3.3

3rd pillar: Infrastructure and digital content..... 129.....2.4

4th pillar: Affordability..... 83.....5.1

5th pillar: Skills..... 138.....2.4

C. Usage subindex..... 143.....2.4

6th pillar: Individual usage..... 131.....1.8

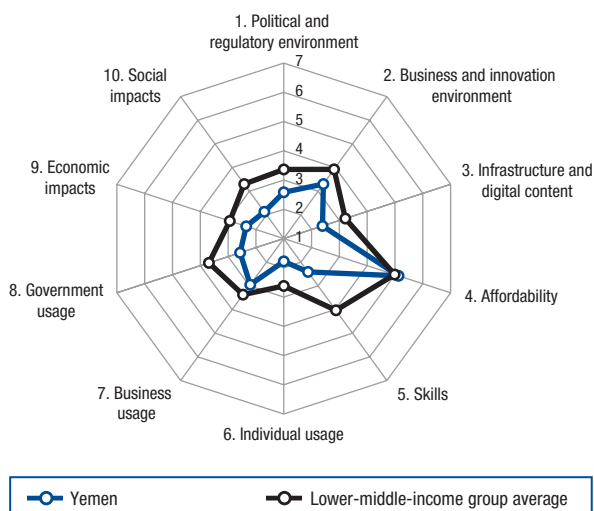
7th pillar: Business usage..... 131.....3.0

8th pillar: Government usage..... 145.....2.6

D. Impact subindex..... 143.....2.2

9th pillar: Economic impacts..... 140.....2.4

10th pillar: Social impacts..... 145.....2.1



The Networked Readiness Index in detail

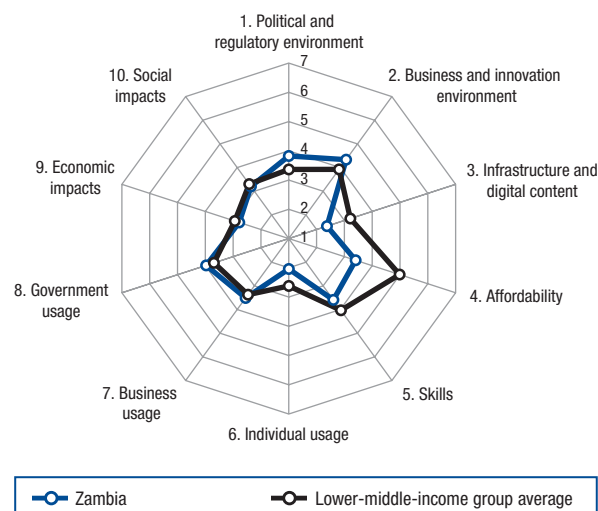
INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	134	2.5
1.02 Laws relating to ICTs*	140	2.4
1.03 Judicial independence*	138	2.2
1.04 Efficiency of legal system in settling disputes*	147	2.2
1.05 Efficiency of legal system in challenging regs*	127	2.7
1.06 Intellectual property protection*	138	2.4
1.07 Software piracy rate, % software installed	103	89
1.08 No. procedures to enforce a contract	55	36
1.09 No. days to enforce a contract	105	645
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	142	3.4
2.02 Venture capital availability*	134	1.9
2.03 Total tax rate, % profits	53	32.7
2.04 No. days to start a business	129	40
2.05 No. procedures to start a business	58	6
2.06 Intensity of local competition*	118	4.4
2.07 Tertiary education gross enrollment rate, %	119	10.3
2.08 Quality of management schools*	138	2.8
2.09 Gov't procurement of advanced tech*	147	2.1
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	121	266.3
3.02 Mobile network coverage, % pop.	121	84.0
3.03 Int'l Internet bandwidth, kb/s per user	130	2.8
3.04 Secure Internet servers/million pop.	142	0.5
3.05 Accessibility of digital content*	124	3.8
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	43	0.15
4.02 Fixed broadband Internet tariffs, PPP \$/month	39	24.08
4.03 Internet & telephony competition, 0–2 (best)	141	0.36
5th pillar: Skills		
5.01 Quality of educational system*	147	2.0
5.02 Quality of math & science education*	143	2.3
5.03 Secondary education gross enrollment rate, %	124	46.9
5.04 Adult literacy rate, %	125	65.3

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	133	58.3
6.02 Individuals using Internet, %	106	17.4
6.03 Households w/ personal computer, %	129	5.1
6.04 Households w/ Internet access, %	123	4.7
6.05 Fixed broadband Internet subs./100 pop.	111	0.7
6.06 Mobile broadband subscriptions/100 pop.	131	0.2
6.07 Use of virtual social networks*	128	4.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	119	4.1
7.02 Capacity for innovation*	142	2.6
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	97	4.5
7.05 Business-to-consumer Internet use*	138	3.0
7.06 Extent of staff training*	122	3.3
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	146	2.4
8.02 Government Online Service Index, 0–1 (best)	134	0.18
8.03 Gov't success in ICT promotion*	134	3.3
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	146	2.8
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	141	2.9
9.04 Knowledge-intensive jobs, % workforce	87	17.0
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	142	2.8
10.02 Internet access in schools*	146	1.7
10.03 ICT use & gov't efficiency*	136	3.0
10.04 E-Participation Index, 0–1 (best)	127	0.00

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Zambia

	Rank (out of 148)	Value (1–7)
Networked Readiness Index 2014	110	3.3
Networked Readiness Index 2013 (out of 144).....	115	3.2
A. Environment subindex	60	4.1
1st pillar: Political and regulatory environment.....	59	3.8
2nd pillar: Business and innovation environment.....	63	4.3
B. Readiness subindex	126	3.1
3rd pillar: Infrastructure and digital content.....	130	2.4
4th pillar: Affordability.....	124	3.4
5th pillar: Skills.....	117	3.6
C. Usage subindex	104	3.2
6th pillar: Individual usage.....	123	2.0
7th pillar: Business usage.....	77	3.5
8th pillar: Government usage.....	79	4.0
D. Impact subindex	106	3.0
9th pillar: Economic impacts.....	113	2.8
10th pillar: Social impacts.....	104	3.2



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	34	4.3
1.02 Laws relating to ICTs*	74	3.9
1.03 Judicial independence*	69	3.7
1.04 Efficiency of legal system in settling disputes*	37	4.4
1.05 Efficiency of legal system in challenging regs*	51	3.7
1.06 Intellectual property protection*	57	3.9
1.07 Software piracy rate, % software installed	91	82
1.08 No. procedures to enforce a contract	47	35
1.09 No. days to enforce a contract	95	611
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	95	4.5
2.02 Venture capital availability*	79	2.5
2.03 Total tax rate, % profits	8	15.1
2.04 No. days to start a business	32	7
2.05 No. procedures to start a business	34	5
2.06 Intensity of local competition*	48	5.2
2.07 Tertiary education gross enrollment rate, %	144	2.4
2.08 Quality of management schools*	71	4.3
2.09 Gov't procurement of advanced tech*	28	4.0
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	102	840.1
3.02 Mobile network coverage, % pop.	129	78.0
3.03 Int'l Internet bandwidth, kb/s per user	131	2.7
3.04 Secure Internet servers/million pop.	117	2.3
3.05 Accessibility of digital content*	111	4.3
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	117	0.43
4.02 Fixed broadband Internet tariffs, PPP \$/month	118	64.14
4.03 Internet & telephony competition, 0–2 (best)	93	1.64
5th pillar: Skills		
5.01 Quality of educational system*	38	4.3
5.02 Quality of math & science education*	76	4.0
5.03 Secondary education gross enrollment rate, %	126	45.6
5.04 Adult literacy rate, %	119	71.2

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	120	74.8
6.02 Individuals using Internet, %	117	13.5
6.03 Households w/ personal computer, %	137	3.1
6.04 Households w/ Internet access, %	135	2.8
6.05 Fixed broadband Internet subs./100 pop.	127	0.1
6.06 Mobile broadband subscriptions/100 pop.	126	0.6
6.07 Use of virtual social networks*	77	5.6
7th pillar: Business usage		
7.01 Firm-level technology absorption*	77	4.6
7.02 Capacity for innovation*	52	3.7
7.03 PCT patents, applications/million pop.	122	0.0
7.04 Business-to-business Internet use*	72	4.8
7.05 Business-to-consumer Internet use*	100	4.0
7.06 Extent of staff training*	89	3.8
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	50	4.3
8.02 Government Online Service Index, 0–1 (best)	113	0.31
8.03 Gov't success in ICT promotion*	40	4.7
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	70	4.4
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	77	4.1
9.04 Knowledge-intensive jobs, % workforce	110	7.3
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	85	3.9
10.02 Internet access in schools*	103	3.5
10.03 ICT use & gov't efficiency*	62	4.2
10.04 E-Participation Index, 0–1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97.

Zimbabwe

Rank (out of 148) Value (1-7)

Networked Readiness Index 2014 117..3.2

Networked Readiness Index 2013 (out of 144)..... 116.....3.2

A. Environment subindex..... 133.....3.2

1st pillar: Political and regulatory environment..... 122.....3.1

2nd pillar: Business and innovation environment..... 133.....3.3

B. Readiness subindex 97.....4.2

3rd pillar: Infrastructure and digital content..... 128.....2.4

4th pillar: Affordability 24.....6.3

5th pillar: Skills 108.....3.8

C. Usage subindex 118.....2.9

6th pillar: Individual usage 107.....2.4

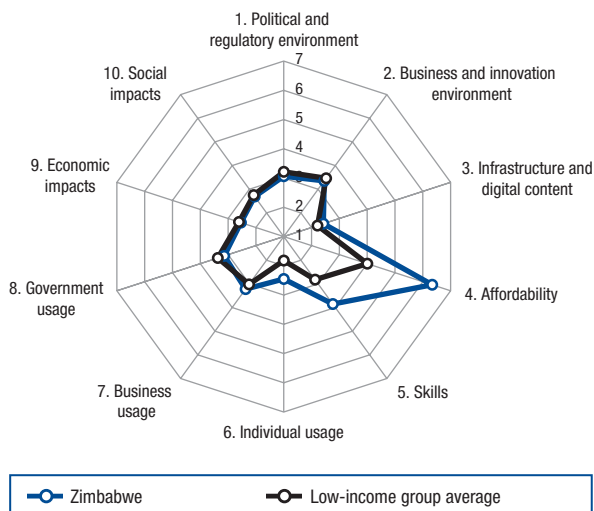
7th pillar: Business usage 109.....3.2

8th pillar: Government usage 128.....3.1

D. Impact subindex 131.....2.6

9th pillar: Economic impacts 129.....2.5

10th pillar: Social impacts 130.....2.7



The Networked Readiness Index in detail

INDICATOR	RANK/148	VALUE
1st pillar: Political and regulatory environment		
1.01 Effectiveness of law-making bodies*	100	3.2
1.02 Laws relating to ICTs*	121	3.1
1.03 Judicial independence*	117	2.7
1.04 Efficiency of legal system in settling disputes*	78	3.6
1.05 Efficiency of legal system in challenging regs*	123	2.8
1.06 Intellectual property protection*	106	3.0
1.07 Software piracy rate, % software installed	108	92
1.08 No. procedures to enforce a contract	78	38
1.09 No. days to enforce a contract	35	410
2nd pillar: Business and innovation environment		
2.01 Availability of latest technologies*	103	4.4
2.02 Venture capital availability*	140	1.8
2.03 Total tax rate, % profits	66	35.3
2.04 No. days to start a business	140	90
2.05 No. procedures to start a business	107	9
2.06 Intensity of local competition*	81	4.9
2.07 Tertiary education gross enrollment rate, %	134	5.9
2.08 Quality of management schools*	81	4.1
2.09 Gov't procurement of advanced tech*	137	2.6
3rd pillar: Infrastructure and digital content		
3.01 Electricity production, kWh/capita	108	668.1
3.02 Mobile network coverage, % pop.	125	81.0
3.03 Int'l Internet bandwidth, kb/s per user	132	2.6
3.04 Secure Internet servers/million pop.	112	3.0
3.05 Accessibility of digital content*	112	4.2
4th pillar: Affordability		
4.01 Prepaid mobile cellular tariffs, PPP \$/min.	47	0.16
4.02 Fixed broadband Internet tariffs, PPP \$/month	32	21.93
4.03 Internet & telephony competition, 0-2 (best)	81	1.79
5th pillar: Skills		
5.01 Quality of educational system*	42	4.3
5.02 Quality of math & science education*	63	4.2
5.03 Secondary education gross enrollment rate, %	133	38.0
5.04 Adult literacy rate, %	107	83.6

INDICATOR	RANK/148	VALUE
6th pillar: Individual usage		
6.01 Mobile phone subscriptions/100 pop.	100	91.9
6.02 Individuals using Internet, %	108	17.1
6.03 Households w/ personal computer, %	125	6.5
6.04 Households w/ Internet access, %	122	4.9
6.05 Fixed broadband Internet subs./100 pop.	114	0.5
6.06 Mobile broadband subscriptions/100 pop.	57	28.1
6.07 Use of virtual social networks*	113	5.0
7th pillar: Business usage		
7.01 Firm-level technology absorption*	99	4.3
7.02 Capacity for innovation*	122	2.9
7.03 PCT patents, applications/million pop.	96	0.1
7.04 Business-to-business Internet use*	108	4.4
7.05 Business-to-consumer Internet use*	127	3.4
7.06 Extent of staff training*	82	3.9
8th pillar: Government usage		
8.01 Importance of ICTs to gov't vision*	100	3.6
8.02 Government Online Service Index, 0-1 (best)	139	0.13
8.03 Gov't success in ICT promotion*	90	4.1
9th pillar: Economic impacts		
9.01 Impact of ICTs on new services & products*	100	3.9
9.02 ICT PCT patents, applications/million pop.	93	0.0
9.03 Impact of ICTs on new organizational models*	110	3.6
9.04 Knowledge-intensive jobs, % workforce	112	6.6
10th pillar: Social impacts		
10.01 Impact of ICTs on access to basic services*	117	3.5
10.02 Internet access in schools*	119	3.0
10.03 ICT use & gov't efficiency*	132	3.0
10.04 E-Participation Index, 0-1 (best)	112	0.03

Note: Indicators followed by an asterisk (*) are measured on a 1-to-7 (best) scale. For further details and explanation, please refer to the section "How to Read the Country/Economy Profiles" on page 97

Part 3

Data Tables

How to Read the Data Tables

The following pages provide detailed data for all 148 economies included in *The Global Information Technology Report 2014*. The data tables are organized into 10 sections, which correspond to the 10 pillars of the Networked Readiness Index (NRI).

Environment subindex

- 1st pillar: Political and regulatory environment
- 2nd pillar: Business and innovation environment

Readiness subindex

- 3rd pillar: Infrastructure and digital content
- 4th pillar: Affordability
- 5th pillar: Skills

Usage subindex

- 6th pillar: Individual usage
- 7th pillar: Business usage
- 8th pillar: Government usage

Impact subindex

- 9th pillar: Economic impacts
- 10th pillar: Social impacts

EXECUTIVE OPINION SURVEY INDICATORS

In the tables, indicators derived from the World Economic Forum's Executive Opinion Survey (the Survey) have scores represented by blue-colored bar graphs. Survey questions asked for responses on a scale of 1 to 7, where an answer of 1 and 7 always corresponds to the worst and best possible outcomes, respectively. In the tables, the Survey question and the two extreme answers are shown above the rankings. Scores are reported with a precision of one decimal point, although exact figures are used to determine rankings. The sample mean is represented by a dotted line running across the bar graphs. For more information on the Executive Opinion Survey and a detailed explanation of how scores are computed, please refer to Chapter 1.3 of *The Global Competitiveness Report 2013–2014*, available for free on the World Economic Forum website at www.weforum.org/gcr.

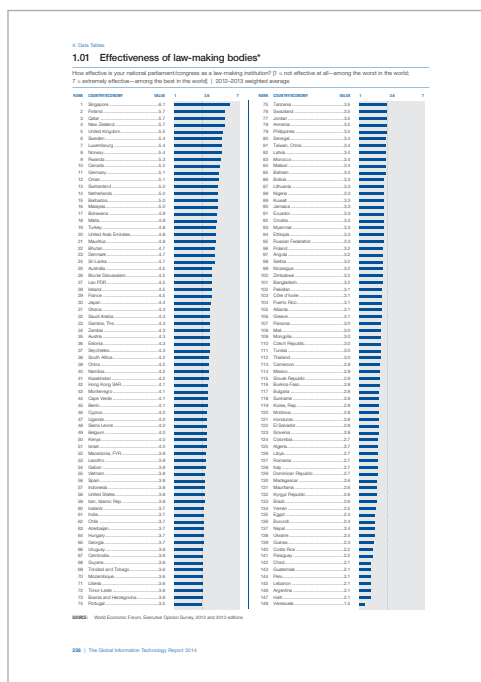
OTHER INDICATORS

Indicators not derived from the Executive Opinion Survey are presented in black bar graphs. For each indicator, a short description appears at the top of the page. The base period (i.e., the period to which the majority of the data corresponds) follows the description. When the period differs from the base period for a particular economy, this is indicated in a footnote. A detailed description for each indicator can be found in the Technical Notes and Sources section at the end of the *Report*. When data are not available or are too outdated, "n/a" is used in lieu of the rank and the value.

Because of the nature of data, ties between two or more countries are possible. In such cases, shared rankings are indicated accordingly. For example, it takes the same number of procedures—26—in Belgium as in Luxembourg and the Netherlands to enforce a contract. As a result, in Table 1.08, all three countries are ranked 5th and listed alphabetically.

ONLINE DATA PORTAL

Complementing the analysis presented in this *Report*, an online data portal can be accessed via www.weforum.org/gitr. The platform offers a number of analytical tools and visualizations, including sortable rankings, scatter plots, bar charts, and maps, as well as the possibility of downloading portions of the NRI dataset.



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1st pillar

Political and
regulatory environment

1.01 Effectiveness of law-making bodies*

How effective is your national parliament/congress as a law-making institution? [1 = not effective at all—among the worst in the world; 7 = extremely effective—among the best in the world] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	3.6	7	RANK	COUNTRY/ECONOMY	VALUE	1	3.6	7
1	Singapore	6.1				75	Tanzania	3.5			
2	Finland	5.7				76	Swaziland	3.5			
3	Qatar	5.7				77	Jordan	3.5			
4	New Zealand	5.7				78	Armenia	3.5			
5	United Kingdom	5.5				79	Philippines	3.5			
6	Sweden	5.4				80	Senegal	3.4			
7	Luxembourg	5.4				81	Taiwan, China	3.4			
8	Norway	5.4				82	Latvia	3.4			
9	Rwanda	5.3				83	Morocco	3.4			
10	Canada	5.2				84	Malawi	3.4			
11	Germany	5.1				85	Bahrain	3.4			
12	Oman	5.1				86	Bolivia	3.3			
13	Switzerland	5.0				87	Lithuania	3.3			
14	Netherlands	5.0				88	Nigeria	3.3			
15	Barbados	5.0				89	Kuwait	3.3			
16	Malaysia	5.0				90	Jamaica	3.3			
17	Botswana	4.9				91	Ecuador	3.3			
18	Malta	4.9				92	Croatia	3.3			
19	Turkey	4.8				93	Myanmar	3.3			
20	United Arab Emirates	4.8				94	Ethiopia	3.3			
21	Mauritius	4.8				95	Russian Federation	3.3			
22	Bhutan	4.7				96	Poland	3.2			
23	Denmark	4.7				97	Angola	3.2			
24	Sri Lanka	4.7				98	Serbia	3.2			
25	Australia	4.5				99	Nicaragua	3.2			
26	Brunei Darussalam	4.5				100	Zimbabwe	3.2			
27	Lao PDR	4.5				101	Bangladesh	3.2			
28	Ireland	4.5				102	Pakistan	3.1			
29	France	4.5				103	Côte d'Ivoire	3.1			
30	Japan	4.4				104	Puerto Rico	3.1			
31	Ghana	4.3				105	Albania	3.1			
32	Saudi Arabia	4.3				106	Greece	3.1			
33	Gambia, The	4.3				107	Panama	3.0			
34	Zambia	4.3				108	Mali	3.0			
35	Austria	4.3				109	Mongolia	3.0			
36	Estonia	4.3				110	Czech Republic	3.0			
37	Seychelles	4.3				111	Tunisia	3.0			
38	South Africa	4.2				112	Thailand	3.0			
39	China	4.2				113	Cameroon	2.9			
40	Namibia	4.2				114	Mexico	2.9			
41	Kazakhstan	4.2				115	Slovak Republic	2.9			
42	Hong Kong SAR	4.1				116	Burkina Faso	2.9			
43	Montenegro	4.1				117	Bulgaria	2.8			
44	Cape Verde	4.1				118	Suriname	2.8			
45	Benin	4.1				119	Korea, Rep.	2.8			
46	Cyprus	4.0				120	Moldova	2.8			
47	Uganda	4.0				121	Honduras	2.8			
48	Sierra Leone	4.0				122	El Salvador	2.8			
49	Belgium	4.0				123	Slovenia	2.8			
50	Kenya	4.0				124	Colombia	2.7			
51	Israel	4.0				125	Algeria	2.7			
52	Macedonia, FYR	3.9				126	Libya	2.7			
53	Lesotho	3.9				127	Romania	2.7			
54	Gabon	3.9				128	Italy	2.7			
55	Vietnam	3.8				129	Dominican Republic	2.7			
56	Spain	3.8				130	Madagascar	2.6			
57	Indonesia	3.8				131	Mauritania	2.6			
58	United States	3.8				132	Kyrgyz Republic	2.6			
59	Iran, Islamic Rep.	3.8				133	Brazil	2.6			
60	Iceland	3.7				134	Yemen	2.5			
61	India	3.7				135	Egypt	2.4			
62	Chile	3.7				136	Burundi	2.4			
63	Azerbaijan	3.7				137	Nepal	2.4			
64	Hungary	3.7				138	Ukraine	2.4			
65	Georgia	3.7				139	Guinea	2.3			
66	Uruguay	3.6				140	Costa Rica	2.2			
67	Cambodia	3.6				141	Paraguay	2.2			
68	Guyana	3.6				142	Chad	2.1			
69	Trinidad and Tobago	3.6				143	Guatemala	2.1			
70	Mozambique	3.6				144	Peru	2.1			
71	Liberia	3.6				145	Lebanon	2.1			
72	Timor-Leste	3.6				146	Argentina	2.1			
73	Bosnia and Herzegovina	3.6				147	Haiti	2.1			
74	Portugal	3.5				148	Venezuela	1.5			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.02 Laws relating to ICTs*

How developed are your country's laws relating to the use of ICTs (e.g., electronic commerce, digital signatures, consumer protection)?
[1 = not developed at all; 7 = extremely well developed] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	3.9	7	RANK	COUNTRY/ECONOMY	VALUE	1	3.9	7
1	Luxembourg	5.9				75	Guatemala	3.9			
2	Singapore	5.8				76	Sri Lanka	3.9			
3	Estonia	5.8				77	Ghana	3.8			
4	United Arab Emirates	5.7				78	Uruguay	3.8			
5	Finland	5.6				79	Georgia	3.8			
6	Qatar	5.6				80	Morocco	3.8			
7	Hong Kong SAR	5.5				81	Slovak Republic	3.8			
8	United Kingdom	5.5				82	Cape Verde	3.8			
9	Norway	5.5				83	Poland	3.8			
10	New Zealand	5.4				84	Peru	3.7			
11	Sweden	5.4				85	Albania	3.7			
12	Korea, Rep.	5.3				86	Vietnam	3.7			
13	Malaysia	5.3				87	Tunisia	3.7			
14	Taiwan, China	5.2				88	Thailand	3.7			
15	United States	5.2				89	Italy	3.7			
16	Netherlands	5.1				90	Namibia	3.7			
17	Australia	5.1				91	Guyana	3.6			
18	Denmark	5.1				92	Jamaica	3.6			
19	Canada	5.1				93	Moldova	3.6			
20	Malta	5.1				94	Mongolia	3.5			
21	Austria	5.1				95	Russian Federation	3.5			
22	Switzerland	5.1				96	Bhutan	3.5			
23	Ireland	5.1				97	Iran, Islamic Rep.	3.5			
24	Azerbaijan	5.1				98	Cambodia	3.5			
25	Portugal	5.0				99	Nicaragua	3.4			
26	Germany	5.0				100	Senegal	3.4			
27	Saudi Arabia	5.0				101	Botswana	3.4			
28	Puerto Rico	5.0				102	El Salvador	3.4			
29	France	4.9				103	Serbia	3.4			
30	Belgium	4.9				104	Egypt	3.4			
31	Iceland	4.9				105	Liberia	3.3			
32	Israel	4.9				106	Greece	3.3			
33	Japan	4.8				107	Ukraine	3.3			
34	South Africa	4.8				108	Côte d'Ivoire	3.3			
35	Oman	4.8				109	Nigeria	3.3			
36	Chile	4.8				110	Malawi	3.2			
37	Rwanda	4.8				111	Venezuela	3.2			
38	Spain	4.8				112	Mali	3.2			
39	Panama	4.7				113	Tanzania	3.2			
40	Bahrain	4.7				114	Uganda	3.2			
41	Lithuania	4.7				115	Trinidad and Tobago	3.2			
42	Armenia	4.6				116	Swaziland	3.2			
43	Slovenia	4.6				117	Paraguay	3.1			
44	Jordan	4.5				118	Bolivia	3.1			
45	Mauritius	4.5				119	Honduras	3.1			
46	Indonesia	4.5				120	Sierra Leone	3.1			
47	Czech Republic	4.4				121	Zimbabwe	3.1			
48	Macedonia, FYR	4.4				122	Pakistan	3.1			
49	Brunei Darussalam	4.3				123	Bangladesh	3.0			
50	Gambia, The	4.3				124	Burkina Faso	3.0			
51	Costa Rica	4.3				125	Mozambique	2.9			
52	China	4.3				126	Madagascar	2.9			
53	Kazakhstan	4.3				127	Argentina	2.9			
54	India	4.2				128	Cameroon	2.9			
55	Colombia	4.2				129	Timor-Leste	2.9			
56	Latvia	4.2				130	Ethiopia	2.8			
57	Hungary	4.2				131	Kuwait	2.7			
58	Montenegro	4.2				132	Mauritania	2.7			
59	Mexico	4.2				133	Lesotho	2.7			
60	Brazil	4.2				134	Nepal	2.7			
61	Cyprus	4.1				135	Benin	2.6			
62	Kenya	4.1				136	Gabon	2.6			
63	Romania	4.1				137	Kyrgyz Republic	2.5			
64	Barbados	4.1				138	Suriname	2.5			
65	Ecuador	4.0				139	Guinea	2.5			
66	Bulgaria	4.0				140	Yemen	2.4			
67	Bosnia and Herzegovina	4.0				141	Burundi	2.3			
68	Turkey	4.0				142	Haiti	2.3			
69	Seychelles	4.0				143	Angola	2.3			
70	Lao PDR	4.0				144	Libya	2.2			
71	Croatia	4.0				145	Chad	2.1			
72	Philippines	4.0				146	Algeria	2.1			
73	Dominican Republic	4.0				147	Myanmar	2.0			
74	Zambia	3.9				148	Lebanon	2.0			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.03 Judicial independence*

In your country, to what extent is the judiciary independent from influences of members of government, citizens, or firms? [1 = heavily influenced; 7 = entirely independent] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	3.9	7	RANK	COUNTRY/ECONOMY	VALUE	1	3.9	7
1	New Zealand	6.7				75	Montenegro	3.6			
2	Finland	6.6				76	Slovenia	3.6			
3	Ireland	6.4				77	Tunisia	3.6			
4	Hong Kong SAR	6.3				78	Korea, Rep.	3.5			
5	Norway	6.3				79	Guyana	3.5			
6	United Kingdom	6.2				80	Lesotho	3.5			
7	Netherlands	6.2				81	Swaziland	3.5			
8	Denmark	6.2				82	Egypt	3.5			
9	Sweden	6.2				83	Liberia	3.4			
10	Canada	6.2				84	Greece	3.4			
11	Switzerland	6.1				85	Turkey	3.4			
12	Qatar	6.1				86	Timor-Leste	3.4			
13	Germany	6.0				87	Morocco	3.4			
14	Japan	6.0				88	Kazakhstan	3.4			
15	Israel	5.8				89	Vietnam	3.4			
16	Australia	5.7				90	Mexico	3.3			
17	Singapore	5.7				91	Georgia	3.3			
18	Luxembourg	5.7				92	Nepal	3.3			
19	Iceland	5.6				93	Azerbaijan	3.3			
20	Estonia	5.5				94	Tanzania	3.2			
21	Barbados	5.5				95	Algeria	3.2			
22	South Africa	5.5				96	Nigeria	3.2			
23	United Arab Emirates	5.5				97	Libya	3.2			
24	Belgium	5.4				98	Macedonia, FYR	3.2			
25	Uruguay	5.4				99	Philippines	3.2			
26	Botswana	5.3				100	Ecuador	3.2			
27	Chile	5.3				101	Uganda	3.1			
28	Saudi Arabia	5.3				102	Bolivia	3.1			
29	Oman	5.3				103	Senegal	3.1			
30	Austria	5.1				104	Sierra Leone	3.1			
31	France	5.1				105	El Salvador	3.0			
32	United States	5.0				106	Colombia	3.0			
33	Rwanda	5.0				107	Guatemala	3.0			
34	Brunei Darussalam	5.0				108	Honduras	3.0			
35	Mauritius	5.0				109	Croatia	3.0			
36	Kuwait	5.0				110	Armenia	3.0			
37	Costa Rica	4.8				111	Mongolia	2.9			
38	Bhutan	4.8				112	Ethiopia	2.9			
39	Malta	4.8				113	Myanmar	2.8			
40	India	4.7				114	Romania	2.8			
41	Namibia	4.7				115	Cambodia	2.8			
42	Puerto Rico	4.7				116	Benin	2.7			
43	Trinidad and Tobago	4.6				117	Zimbabwe	2.7			
44	Malaysia	4.5				118	Panama	2.7			
45	Taiwan, China	4.5				119	Russian Federation	2.7			
46	Bahrain	4.5				120	Gabon	2.6			
47	Cyprus	4.5				121	Nicaragua	2.6			
48	Jordan	4.4				122	Mali	2.6			
49	Jamaica	4.4				123	Bulgaria	2.6			
50	Ghana	4.4				124	Serbia	2.6			
51	Portugal	4.2				125	Mozambique	2.6			
52	Seychelles	4.1				126	Peru	2.5			
53	Cape Verde	4.1				127	Angola	2.4			
54	Poland	4.1				128	Côte d'Ivoire	2.4			
55	Pakistan	4.1				129	Bangladesh	2.4			
56	Lao PDR	4.1				130	Mauritania	2.4			
57	China	4.0				131	Dominican Republic	2.4			
58	Suriname	4.0				132	Argentina	2.4			
59	Malawi	4.0				133	Slovak Republic	2.3			
60	Kenya	4.0				134	Albania	2.3			
61	Gambia, The	4.0				135	Lebanon	2.3			
62	Sri Lanka	3.9				136	Cameroon	2.3			
63	Latvia	3.9				137	Guinea	2.2			
64	Bosnia and Herzegovina	3.9				138	Yemen	2.2			
65	Brazil	3.9				139	Ukraine	2.2			
66	Hungary	3.9				140	Kyrgyz Republic	2.2			
67	Thailand	3.8				141	Madagascar	2.1			
68	Czech Republic	3.8				142	Burkina Faso	2.1			
69	Zambia	3.7				143	Haiti	2.0			
70	Italy	3.7				144	Chad	2.0			
71	Lithuania	3.7				145	Moldova	1.9			
72	Spain	3.7				146	Paraguay	1.7			
73	Iran, Islamic Rep.	3.7				147	Burundi	1.7			
74	Indonesia	3.7				148	Venezuela	1.1			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.04 Efficiency of legal framework in settling disputes*

In your country, how efficient is the legal framework for private businesses in settling disputes? [1 = extremely inefficient; 7 = extremely efficient] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	3.8	7	RANK	COUNTRY/ECONOMY	VALUE	1	3.8	7
1	Singapore	6.1				75	Tanzania	3.6			
2	Finland	6.1				76	Philippines	3.6			
3	Hong Kong SAR	5.8				77	Nigeria	3.6			
4	New Zealand	5.8				78	Zimbabwe	3.6			
5	Sweden	5.7				79	Trinidad and Tobago	3.6			
6	Switzerland	5.7				80	Lesotho	3.6			
7	Norway	5.6				81	Ethiopia	3.6			
8	United Kingdom	5.6				82	Bolivia	3.6			
9	Netherlands	5.6				83	Cambodia	3.5			
10	Qatar	5.4				84	Korea, Rep.	3.5			
11	Canada	5.4				85	Bosnia and Herzegovina	3.5			
12	South Africa	5.3				86	Gabon	3.5			
13	Germany	5.2				87	Macedonia, FYR	3.5			
14	Oman	5.2				88	Timor-Leste	3.5			
15	Luxembourg	5.2				89	Nicaragua	3.4			
16	Puerto Rico	5.2				90	Côte d'Ivoire	3.4			
17	Rwanda	5.1				91	Iran, Islamic Rep.	3.4			
18	Malaysia	5.1				92	Georgia	3.4			
19	Brunei Darussalam	5.0				93	Vietnam	3.4			
20	United Arab Emirates	4.9				94	Jamaica	3.4			
21	Denmark	4.9				95	Colombia	3.4			
22	Ireland	4.8				96	Lithuania	3.4			
23	Mauritius	4.8				97	Ecuador	3.4			
24	Austria	4.8				98	Mexico	3.4			
25	Botswana	4.8				99	Dominican Republic	3.4			
26	United States	4.7				100	Guatemala	3.3			
27	Iceland	4.7				101	Brazil	3.3			
28	Japan	4.7				102	Cameroon	3.3			
29	Chile	4.7				103	Burkina Faso	3.3			
30	Australia	4.6				104	Benin	3.3			
31	Sri Lanka	4.6				105	Mozambique	3.3			
32	Namibia	4.5				106	Egypt	3.2			
33	Gambia, The	4.5				107	Peru	3.2			
34	Barbados	4.5				108	Suriname	3.2			
35	Lao PDR	4.5				109	Honduras	3.2			
36	Saudi Arabia	4.5				110	Mongolia	3.2			
37	Zambia	4.4				111	Mali	3.1			
38	Jordan	4.3				112	Pakistan	3.1			
39	Estonia	4.3				113	Hungary	3.1			
40	Belgium	4.2				114	Bangladesh	3.1			
41	Bahrain	4.2				115	Czech Republic	3.1			
42	Cyprus	4.2				116	Algeria	3.1			
43	China	4.2				117	Latvia	3.0			
44	Israel	4.2				118	Russian Federation	3.0			
45	Taiwan, China	4.2				119	Poland	3.0			
46	Malta	4.2				120	Albania	3.0			
47	Seychelles	4.1				121	Madagascar	2.9			
48	France	4.1				122	Portugal	2.9			
49	Indonesia	4.1				123	Nepal	2.9			
50	Ghana	4.1				124	Libya	2.9			
51	Bhutan	4.0				125	Bulgaria	2.9			
52	Senegal	3.9				126	El Salvador	2.8			
53	Kazakhstan	3.9				127	Mauritania	2.8			
54	Tunisia	3.9				128	Romania	2.8			
55	Uruguay	3.9				129	Angola	2.7			
56	Malawi	3.9				130	Lebanon	2.7			
57	Kenya	3.9				131	Moldova	2.6			
58	Montenegro	3.9				132	Kyrgyz Republic	2.6			
59	Turkey	3.9				133	Argentina	2.6			
60	Thailand	3.9				134	Myanmar	2.6			
61	Panama	3.9				135	Slovenia	2.6			
62	India	3.8				136	Burundi	2.6			
63	Swaziland	3.8				137	Serbia	2.5			
64	Azerbaijan	3.8				138	Greece	2.5			
65	Uganda	3.8				139	Guinea	2.5			
66	Kuwait	3.8				140	Croatia	2.5			
67	Liberia	3.8				141	Paraguay	2.5			
68	Costa Rica	3.7				142	Chad	2.4			
69	Sierra Leone	3.7				143	Slovak Republic	2.4			
70	Spain	3.7				144	Ukraine	2.3			
71	Morocco	3.7				145	Italy	2.3			
72	Cape Verde	3.7				146	Haiti	2.2			
73	Guyana	3.7				147	Yemen	2.2			
74	Armenia	3.7				148	Venezuela	1.8			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.05 Efficiency of legal framework in challenging regulations*

In your country, how easy is it for private businesses to challenge government actions and/or regulations through the legal system?
[1 = extremely difficult; 7 = extremely easy] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	3.5	7	RANK	COUNTRY/ECONOMY	VALUE	1	3.5	7
1	Finland	5.9				75	Lesotho	3.4			
2	Hong Kong SAR	5.6				76	Armenia	3.4			
3	New Zealand	5.6				77	Jamaica	3.4			
4	Sweden	5.4				78	Mexico	3.3			
5	Netherlands	5.4				79	Vietnam	3.3			
6	Switzerland	5.3				80	Brunei Darussalam	3.3			
7	Qatar	5.2				81	Bangladesh	3.3			
8	United Kingdom	5.2				82	Tanzania	3.3			
9	Luxembourg	5.2				83	Mali	3.3			
10	Norway	5.1				84	Trinidad and Tobago	3.3			
11	Germany	4.9				85	Portugal	3.3			
12	Singapore	4.9				86	Gabon	3.3			
13	South Africa	4.9				87	Bhutan	3.3			
14	Puerto Rico	4.8				88	Bolivia	3.3			
15	Canada	4.8				89	Timor-Leste	3.3			
16	United Arab Emirates	4.8				90	Lithuania	3.2			
17	Malaysia	4.7				91	Benin	3.2			
18	Oman	4.7				92	Nigeria	3.2			
19	Ireland	4.6				93	Colombia	3.2			
20	Rwanda	4.5				94	Egypt	3.2			
21	Iceland	4.5				95	Côte d'Ivoire	3.2			
22	Mauritius	4.4				96	Honduras	3.1			
23	Botswana	4.4				97	Latvia	3.1			
24	Chile	4.4				98	Nicaragua	3.1			
25	Austria	4.4				99	Paraguay	3.1			
26	Cyprus	4.4				100	Ecuador	3.1			
27	Jordan	4.4				101	Korea, Rep.	3.0			
28	Saudi Arabia	4.4				102	Suriname	3.0			
29	United States	4.3				103	Cameroon	3.0			
30	Australia	4.3				104	Nepal	3.0			
31	France	4.3				105	Georgia	3.0			
32	Barbados	4.2				106	Burkina Faso	3.0			
33	Estonia	4.2				107	Dominican Republic	3.0			
34	Israel	4.1				108	Pakistan	3.0			
35	Japan	4.1				109	Peru	3.0			
36	Belgium	4.0				110	El Salvador	3.0			
37	Costa Rica	4.0				111	Poland	2.9			
38	Denmark	4.0				112	Macedonia, FYR	2.9			
39	Sri Lanka	4.0				113	Albania	2.9			
40	Uruguay	4.0				114	Lao PDR	2.9			
41	Seychelles	4.0				115	Libya	2.9			
42	Namibia	3.9				116	Ethiopia	2.9			
43	Bahrain	3.9				117	Mozambique	2.9			
44	Malawi	3.9				118	Guinea	2.9			
45	Gambia, The	3.9				119	Mauritania	2.8			
46	Turkey	3.9				120	Russian Federation	2.8			
47	China	3.8				121	Madagascar	2.8			
48	India	3.8				122	Bulgaria	2.8			
49	Kuwait	3.8				123	Zimbabwe	2.8			
50	Indonesia	3.7				124	Iran, Islamic Rep.	2.7			
51	Zambia	3.7				125	Sierra Leone	2.7			
52	Taiwan, China	3.7				126	Czech Republic	2.7			
53	Azerbaijan	3.7				127	Yemen	2.7			
54	Bosnia and Herzegovina	3.7				128	Romania	2.6			
55	Malta	3.7				129	Mongolia	2.6			
56	Kenya	3.7				130	Greece	2.6			
57	Liberia	3.7				131	Slovenia	2.6			
58	Panama	3.6				132	Croatia	2.5			
59	Senegal	3.6				133	Kyrgyz Republic	2.5			
60	Guyana	3.6				134	Italy	2.5			
61	Kazakhstan	3.6				135	Burundi	2.5			
62	Thailand	3.5				136	Serbia	2.5			
63	Montenegro	3.5				137	Moldova	2.5			
64	Cape Verde	3.5				138	Hungary	2.4			
65	Ghana	3.5				139	Algeria	2.3			
66	Uganda	3.5				140	Haiti	2.3			
67	Tunisia	3.5				141	Lebanon	2.3			
68	Brazil	3.5				142	Slovak Republic	2.2			
69	Spain	3.5				143	Myanmar	2.2			
70	Swaziland	3.5				144	Angola	2.2			
71	Philippines	3.5				145	Chad	2.2			
72	Cambodia	3.5				146	Ukraine	2.2			
73	Guatemala	3.5				147	Argentina	1.9			
74	Morocco	3.4				148	Venezuela	1.5			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.06 Intellectual property protection*

In your country, how strong is the protection of intellectual property, including anti-counterfeiting measures? [1 = extremely weak; 7 = extremely strong] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	3.8	7	RANK	COUNTRY/ECONOMY	VALUE	1	3.8	7
1	Finland	6.2				75	Armenia	3.6			
2	Singapore	6.1				76	Montenegro	3.6			
3	New Zealand	6.0				77	Mexico	3.6			
4	Qatar	6.0				78	Philippines	3.6			
5	Switzerland	6.0				79	Ecuador	3.6			
6	Luxembourg	5.9				80	Brazil	3.5			
7	Puerto Rico	5.9				81	Croatia	3.5			
8	United Kingdom	5.8				82	Nicaragua	3.5			
9	Netherlands	5.7				83	Jamaica	3.5			
10	Hong Kong SAR	5.7				84	Guyana	3.5			
11	Japan	5.7				85	Ethiopia	3.5			
12	France	5.7				86	Kenya	3.4			
13	Canada	5.6				87	Sierra Leone	3.4			
14	Germany	5.6				88	Burkina Faso	3.4			
15	Norway	5.5				89	Malawi	3.4			
16	Sweden	5.5				90	Morocco	3.3			
17	Austria	5.5				91	Trinidad and Tobago	3.3			
18	South Africa	5.5				92	Lesotho	3.3			
19	Ireland	5.4				93	Tanzania	3.2			
20	United Arab Emirates	5.3				94	Egypt	3.2			
21	Australia	5.3				95	Colombia	3.2			
22	Belgium	5.2				96	Senegal	3.2			
23	Taiwan, China	5.2				97	Tunisia	3.2			
24	Oman	5.2				98	Bolivia	3.2			
25	United States	5.2				99	Cambodia	3.2			
26	Denmark	5.0				100	Cameroon	3.2			
27	Saudi Arabia	5.0				101	Benin	3.1			
28	Malta	4.9				102	Thailand	3.1			
29	Iceland	4.8				103	Honduras	3.1			
30	Malaysia	4.8				104	Bulgaria	3.0			
31	Estonia	4.8				105	Cape Verde	3.0			
32	Bahrain	4.8				106	Zimbabwe	3.0			
33	Rwanda	4.7				107	Dominican Republic	3.0			
34	Israel	4.6				108	Madagascar	2.9			
35	Panama	4.6				109	Pakistan	2.9			
36	Jordan	4.6				110	Romania	2.9			
37	Barbados	4.5				111	Guatemala	2.9			
38	Portugal	4.5				112	El Salvador	2.9			
39	Brunei Darussalam	4.4				113	Russian Federation	2.9			
40	Cyprus	4.4				114	Albania	2.9			
41	Namibia	4.3				115	Serbia	2.9			
42	Slovenia	4.2				116	Vietnam	2.9			
43	Gambia, The	4.2				117	Nepal	2.9			
44	Bhutan	4.1				118	Suriname	2.9			
45	Uruguay	4.1				119	Uganda	2.8			
46	Seychelles	4.1				120	Peru	2.8			
47	Botswana	4.1				121	Nigeria	2.8			
48	Korea, Rep.	4.0				122	Iran, Islamic Rep.	2.8			
49	Mauritius	4.0				123	Côte d'Ivoire	2.7			
50	Spain	4.0				124	Georgia	2.7			
51	Latvia	4.0				125	Moldova	2.7			
52	Swaziland	4.0				126	Myanmar	2.7			
53	China	3.9				127	Mali	2.7			
54	Macedonia, FYR	3.9				128	Timor-Leste	2.7			
55	Indonesia	3.9				129	Mozambique	2.7			
56	Ghana	3.9				130	Bangladesh	2.6			
57	Zambia	3.9				131	Gabon	2.6			
58	Hungary	3.9				132	Mauritania	2.5			
59	Costa Rica	3.8				133	Ukraine	2.5			
60	Chile	3.8				134	Mongolia	2.5			
61	Czech Republic	3.8				135	Bosnia and Herzegovina	2.5			
62	Kuwait	3.8				136	Lebanon	2.4			
63	Sri Lanka	3.8				137	Angola	2.4			
64	Lao PDR	3.8				138	Yemen	2.4			
65	Slovak Republic	3.7				139	Argentina	2.3			
66	Lithuania	3.7				140	Kyrgyz Republic	2.3			
67	Italy	3.7				141	Paraguay	2.3			
68	Liberia	3.7				142	Burundi	2.3			
69	Azerbaijan	3.7				143	Guinea	2.2			
70	Greece	3.7				144	Chad	2.2			
71	India	3.7				145	Algeria	2.2			
72	Poland	3.7				146	Libya	2.2			
73	Kazakhstan	3.6				147	Haiti	2.0			
74	Turkey	3.6				148	Venezuela	1.6			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.07 Software piracy rate

Unlicensed software units as a percentage of total software units installed | 2011

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	United States	19	75	Honduras	73
2	Luxembourg	20	76	Tunisia	74
3	Japan	21	77	Albania	75
4	New Zealand	22	78	Dominican Republic	76
5	Australia	23	78	Kazakhstan	76
5	Austria	23	80	China	77
7	Belgium	24	81	Kenya	78
7	Denmark	24	81	Senegal	78
7	Sweden	24	83	Bolivia	79
10	Finland	25	83	Guatemala	79
10	Switzerland	25	83	Montenegro	79
12	Germany	26	83	Nicaragua	79
12	United Kingdom	26	87	Botswana	80
14	Canada	27	87	El Salvador	80
14	Netherlands	27	89	Côte d'Ivoire	81
14	Norway	27	89	Vietnam	81
17	Israel	31	91	Nigeria	82
18	Singapore	33	91	Zambia	82
19	Ireland	34	93	Cameroon	83
20	Czech Republic	35	93	Paraguay	83
20	South Africa	35	95	Algeria	84
22	France	37	95	Sri Lanka	84
22	Taiwan, China	37	95	Ukraine	84
22	United Arab Emirates	37	98	Indonesia	86
25	Korea, Rep.	40	98	Pakistan	86
25	Portugal	40	100	Azerbaijan	87
25	Slovak Republic	40	101	Armenia	88
28	Hungary	41	101	Venezuela	88
29	Puerto Rico	42	103	Yemen	89
30	Hong Kong SAR	43	104	Bangladesh	90
30	Malta	43	104	Libya	90
32	Spain	44	104	Moldova	90
33	Slovenia	46	107	Georgia	91
34	Cyprus	48	108	Zimbabwe	92
34	Estonia	48	n/a	Angola	n/a
34	Iceland	48	n/a	Barbados	n/a
34	Italy	48	n/a	Benin	n/a
38	Qatar	50	n/a	Bhutan	n/a
39	Saudi Arabia	51	n/a	Burkina Faso	n/a
40	Brazil	53	n/a	Burundi	n/a
40	Colombia	53	n/a	Cambodia	n/a
40	Croatia	53	n/a	Cape Verde	n/a
40	Poland	53	n/a	Chad	n/a
44	Bahrain	54	n/a	Ethiopia	n/a
44	Latvia	54	n/a	Gabon	n/a
44	Lithuania	54	n/a	Gambia, The	n/a
47	Malaysia	55	n/a	Ghana	n/a
48	Mauritius	57	n/a	Guinea	n/a
48	Mexico	57	n/a	Guyana	n/a
50	Costa Rica	58	n/a	Haiti	n/a
50	Jordan	58	n/a	Iran, Islamic Rep.	n/a
52	Kuwait	59	n/a	Jamaica	n/a
53	Chile	61	n/a	Kyrgyz Republic	n/a
53	Egypt	61	n/a	Lao PDR	n/a
53	Greece	61	n/a	Lesotho	n/a
53	Oman	61	n/a	Liberia	n/a
57	Turkey	62	n/a	Madagascar	n/a
58	India	63	n/a	Malawi	n/a
58	Romania	63	n/a	Mali	n/a
58	Russian Federation	63	n/a	Mauritania	n/a
61	Bulgaria	64	n/a	Mongolia	n/a
62	Bosnia and Herzegovina	66	n/a	Mozambique	n/a
62	Macedonia, FYR	66	n/a	Myanmar	n/a
62	Morocco	66	n/a	Namibia	n/a
65	Brunei Darussalam	67	n/a	Nepal	n/a
65	Peru	67	n/a	Rwanda	n/a
67	Ecuador	68	n/a	Seychelles	n/a
67	Uruguay	68	n/a	Sierra Leone	n/a
69	Argentina	69	n/a	Suriname	n/a
70	Philippines	70	n/a	Swaziland	n/a
71	Lebanon	71	n/a	Tanzania	n/a
72	Panama	72	n/a	Timor-Leste	n/a
72	Serbia	72	n/a	Trinidad and Tobago	n/a
72	Thailand	72	n/a	Uganda	n/a

SOURCE: Business Software Alliance, Shadow Market: 2011 BSA Global Software Piracy Study (ninth edition)

1.08 Number of procedures to enforce a contract

Number of procedures to resolve a dispute, counted from the moment the plaintiff files a lawsuit in court until payment | 2013

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Ireland	21	67	Nicaragua	37
1	Singapore	21	67	Philippines	37
3	Rwanda	23	67	Seychelles	37
4	Austria	25	78	Barbados	38
5	Belgium	26	78	Bulgaria	38
5	Luxembourg	26	78	Croatia	38
5	Netherlands	26	78	Ethiopia	38
8	Czech Republic	27	78	Gabon	38
8	Hong Kong SAR	27	78	Jordan	38
8	Iceland	27	78	Kyrgyz Republic	38
8	Latvia	27	78	Madagascar	38
12	Australia	28	78	Mexico	38
12	Botswana	28	78	Paraguay	38
12	United Kingdom	28	78	Tanzania	38
15	France	29	78	Uganda	38
15	Malaysia	29	78	Zimbabwe	38
15	South Africa	29	91	Albania	39
18	Germany	30	91	Ecuador	39
18	Mozambique	30	91	Greece	39
18	New Zealand	30	91	Nepal	39
18	Sweden	30	91	Puerto Rico	39
18	Ukraine	30	91	Sierra Leone	39
18	Venezuela	30	91	Tunisia	39
24	Guatemala	31	98	Azerbaijan	40
24	Japan	31	98	Bolivia	40
24	Moldova	31	98	Costa Rica	40
27	Côte d'Ivoire	32	98	Indonesia	40
27	Lithuania	32	98	Iran, Islamic Rep.	40
27	Mongolia	32	98	Liberia	40
27	Panama	32	98	Malta	40
27	Romania	32	98	Morocco	40
27	Slovak Republic	32	98	Nigeria	40
27	Slovenia	32	98	Saudi Arabia	40
27	Switzerland	32	98	Spain	40
27	United States	32	98	Sri Lanka	40
36	Finland	33	98	Swaziland	40
36	Gambia, The	33	111	Bangladesh	41
36	Georgia	33	111	Chad	41
36	Korea, Rep.	33	111	Lesotho	41
36	Namibia	33	111	Peru	41
36	Poland	33	111	Uruguay	41
42	Colombia	34	116	Benin	42
42	Dominican Republic	34	116	Cameroon	42
42	El Salvador	34	116	Egypt	42
42	Norway	34	116	Lao PDR	42
42	Portugal	34	116	Malawi	42
47	Denmark	35	116	Trinidad and Tobago	42
47	Estonia	35	122	Cyprus	43
47	Haiti	35	122	Libya	43
47	Hungary	35	122	Qatar	43
47	Israel	35	122	Senegal	43
47	Jamaica	35	126	Brazil	44
47	Mauritius	35	126	Burundi	44
47	Zambia	35	126	Cambodia	44
55	Argentina	36	126	Kenya	44
55	Canada	36	126	Suriname	44
55	Chile	36	131	Algeria	45
55	Ghana	36	131	Myanmar	45
55	Guyana	36	131	Taiwan, China	45
55	Mali	36	134	Angola	46
55	Russian Federation	36	134	India	46
55	Serbia	36	134	Mauritania	46
55	Thailand	36	134	Pakistan	46
55	Turkey	36	138	Bhutan	47
55	Vietnam	36	138	Brunei Darussalam	47
55	Yemen	36	138	Honduras	47
67	Bosnia and Herzegovina	37	141	Bahrain	48
67	Burkina Faso	37	142	Armenia	49
67	Cape Verde	37	142	Guinea	49
67	China	37	142	Montenegro	49
67	Italy	37	142	United Arab Emirates	49
67	Kazakhstan	37	146	Kuwait	50
67	Lebanon	37	147	Oman	51
67	Macedonia, FYR	37	147	Timor-Leste	51

SOURCE: World Bank/International Finance Corporation, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

1.09 Time required to enforce a contract

Number of days to resolve a dispute, counted from the moment the plaintiff decides to file the lawsuit in court until payment | 2013

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Singapore	150	74	Slovak Republic	545
2	New Zealand	216	76	Portugal	547
3	Bhutan	225	77	Bulgaria	564
4	Korea, Rep.	230	78	Tunisia	565
4	Rwanda	230	79	Kuwait	566
6	Azerbaijan	237	80	Armenia	570
7	Kyrgyz Republic	260	80	Canada	570
8	Russian Federation	270	80	Qatar	570
9	Guinea	276	83	Croatia	572
10	Norway	280	84	Guyana	581
11	Georgia	285	85	Côte d'Ivoire	585
12	Lithuania	300	86	Ecuador	588
13	Mongolia	314	87	Argentina	590
13	Sweden	314	88	Bolivia	591
15	Luxembourg	321	88	Paraguay	591
16	Moldova	337	90	Bosnia and Herzegovina	595
17	Hong Kong SAR	360	91	Oman	598
17	Japan	360	92	South Africa	600
19	Kazakhstan	370	93	Macedonia, FYR	604
19	Mauritania	370	94	Venezuela	610
19	United States	370	95	Czech Republic	611
22	Finland	375	95	Zambia	611
23	Ukraine	378	97	Lesotho	615
24	Switzerland	390	98	Mali	620
25	Germany	394	98	Puerto Rico	620
26	Australia	395	100	Botswana	625
26	France	395	101	Algeria	630
26	Hungary	395	102	Bahrain	635
29	Austria	397	102	Saudi Arabia	635
30	Mexico	400	102	Serbia	635
30	Vietnam	400	105	Yemen	645
32	China	406	106	Ireland	650
33	Gambia, The	407	107	Jamaica	655
34	Nicaragua	409	108	Poland	685
35	Denmark	410	109	Panama	686
35	Zimbabwe	410	110	Jordan	689
37	Iceland	417	111	Libya	690
38	Turkey	420	112	Lebanon	721
39	Cape Verde	425	113	Uruguay	725
39	Estonia	425	114	Brazil	731
39	Malaysia	425	115	Cyprus	735
42	Peru	426	116	Chad	743
43	Malawi	432	117	Senegal	770
44	United Kingdom	437	118	El Salvador	786
45	Thailand	440	119	Benin	795
46	Lao PDR	443	120	Cameroon	800
47	Burkina Faso	446	121	Burundi	832
48	Nigeria	447	122	Philippines	842
49	Dominican Republic	460	123	Costa Rica	852
49	Namibia	460	124	Madagascar	871
51	Kenya	465	125	Israel	890
52	Latvia	469	126	Nepal	910
53	Chile	480	127	Seychelles	915
54	Cambodia	483	128	Honduras	920
55	Uganda	490	129	Mozambique	950
56	Ghana	495	130	Swaziland	956
57	Indonesia	498	131	Pakistan	976
58	Belgium	505	132	Egypt	1,010
58	Iran, Islamic Rep.	505	133	Gabon	1,070
58	Malta	505	134	Myanmar	1,160
61	Morocco	510	135	Italy	1,185
61	Spain	510	136	Slovenia	1,270
61	Taiwan, China	510	137	Liberia	1,280
64	Romania	512	138	Timor-Leste	1,285
65	Netherlands	514	139	Colombia	1,288
66	Sierra Leone	515	140	Angola	1,296
66	Tanzania	515	141	Greece	1,300
68	United Arab Emirates	524	142	Sri Lanka	1,318
69	Albania	525	143	Barbados	1,340
70	Mauritius	529	143	Trinidad and Tobago	1,340
71	Ethiopia	530	145	Guatemala	1,402
71	Haiti	530	146	India	1,420
73	Brunei Darussalam	540	147	Bangladesh	1,442
74	Montenegro	545	148	Suriname	1,715

SOURCE: World Bank/International Finance Corporation, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

2nd pillar

Business and
innovation environment

2.01 Availability of latest technologies*

In your country, to what extent are the latest technologies available? [1 = not available at all; 7 = widely available] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.9	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.9	7
1	Finland	6.5				75	Thailand	4.9			
2	Sweden	6.5				76	Bosnia and Herzegovina	4.9			
3	Norway	6.5				77	Tunisia	4.8			
4	Switzerland	6.4				78	Cape Verde	4.8			
5	United Kingdom	6.4				79	Pakistan	4.8			
6	United States	6.4				80	Macedonia, FYR	4.7			
7	Iceland	6.4				81	Ghana	4.7			
8	United Arab Emirates	6.4				82	Cambodia	4.7			
9	Netherlands	6.4				83	Montenegro	4.7			
10	Luxembourg	6.3				84	Mali	4.6			
11	Hong Kong SAR	6.3				85	Peru	4.6			
12	Belgium	6.3				86	Lebanon	4.6			
13	Germany	6.3				87	Nigeria	4.6			
14	Japan	6.3				88	Kazakhstan	4.6			
15	Portugal	6.2				89	Ecuador	4.6			
16	Singapore	6.2				90	Mongolia	4.6			
17	Israel	6.2				91	Botswana	4.6			
18	France	6.1				92	Uruguay	4.5			
19	Canada	6.1				93	Honduras	4.5			
20	Qatar	6.1				94	Côte d'Ivoire	4.5			
21	New Zealand	6.1				95	Zambia	4.5			
22	Malta	6.1				96	Colombia	4.5			
23	Australia	6.1				97	Armenia	4.5			
24	Austria	6.1				98	Mauritania	4.5			
25	Puerto Rico	6.0				99	Bulgaria	4.4			
26	Bahrain	6.0				100	Georgia	4.4			
27	Korea, Rep.	5.9				101	Bangladesh	4.4			
28	Barbados	5.9				102	Poland	4.4			
29	Denmark	5.9				103	Zimbabwe	4.4			
30	Ireland	5.9				104	Mozambique	4.4			
31	Panama	5.9				105	China	4.4			
32	Saudi Arabia	5.8				106	Ukraine	4.3			
33	Spain	5.8				107	Romania	4.3			
34	Chile	5.8				108	Uganda	4.3			
35	Estonia	5.8				109	Madagascar	4.3			
36	Jordan	5.7				110	Suriname	4.3			
37	Malaysia	5.7				111	Cameroon	4.2			
38	Lithuania	5.7				112	Lao PDR	4.2			
39	Slovenia	5.6				113	El Salvador	4.1			
40	South Africa	5.6				114	Paraguay	4.1			
41	Cyprus	5.5				115	Venezuela	4.1			
42	Jamaica	5.5				116	Moldova	4.1			
43	Taiwan, China	5.5				117	Egypt	4.1			
44	Turkey	5.4				118	Serbia	4.1			
45	Latvia	5.3				119	Albania	4.1			
46	Mauritius	5.3				120	Nepal	4.0			
47	Philippines	5.3				121	Iran, Islamic Rep.	4.0			
48	Guatemala	5.3				122	Swaziland	4.0			
49	Costa Rica	5.3				123	Argentina	4.0			
50	Brunei Darussalam	5.2				124	Russian Federation	4.0			
51	Dominican Republic	5.2				125	Tanzania	3.9			
52	Namibia	5.2				126	Ethiopia	3.9			
53	Czech Republic	5.2				127	Malawi	3.9			
54	Senegal	5.2				128	Haiti	3.9			
55	Trinidad and Tobago	5.2				129	Gabon	3.9			
56	Oman	5.2				130	Bolivia	3.8			
57	Hungary	5.2				131	Benin	3.8			
58	India	5.2				132	Lesotho	3.7			
59	Croatia	5.1				133	Nicaragua	3.7			
60	Indonesia	5.1				134	Vietnam	3.7			
61	Mexico	5.1				135	Bhutan	3.7			
62	Rwanda	5.1				136	Liberia	3.6			
63	Brazil	5.1				137	Sierra Leone	3.6			
64	Kuwait	5.0				138	Kyrgyz Republic	3.6			
65	Azerbaijan	5.0				139	Angola	3.5			
66	Morocco	5.0				140	Guinea	3.5			
67	Greece	5.0				141	Libya	3.4			
68	Seychelles	5.0				142	Yemen	3.4			
69	Italy	5.0				143	Burundi	3.2			
70	Slovak Republic	5.0				144	Algeria	3.2			
71	Kenya	5.0				145	Burkina Faso	3.2			
72	Sri Lanka	4.9				146	Timor-Leste	3.1			
73	Guyana	4.9				147	Chad	2.9			
74	Gambia, The	4.9				148	Myanmar	2.5			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

2.02 Venture capital availability*

In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? [1 = extremely difficult; 7 = extremely easy] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	2.7	7	RANK	COUNTRY/ECONOMY	VALUE	1	2.7	7
1	Hong Kong SAR	4.6				75	Colombia	2.6			
2	Qatar	4.5				76	Mexico	2.6			
3	United States	4.3				77	Pakistan	2.6			
4	Norway	4.3				78	Vietnam	2.6			
5	Sweden	4.3				79	Zambia	2.5			
6	Singapore	4.2				80	Uruguay	2.5			
7	Malaysia	4.2				81	Lesotho	2.5			
8	Israel	4.2				82	Honduras	2.5			
9	Taiwan, China	4.1				83	Turkey	2.5			
10	United Arab Emirates	4.1				84	Lithuania	2.5			
11	Finland	4.0				85	Gambia, The	2.5			
12	Panama	4.0				86	Dominican Republic	2.5			
13	Luxembourg	4.0				87	Timor-Leste	2.5			
14	Oman	3.9				88	Namibia	2.5			
15	Bahrain	3.8				89	Madagascar	2.5			
16	China	3.8				90	Macedonia, FYR	2.5			
17	Indonesia	3.7				91	Sri Lanka	2.5			
18	New Zealand	3.6				92	Romania	2.4			
19	Australia	3.6				93	Armenia	2.4			
20	United Kingdom	3.5				94	Uganda	2.4			
21	Netherlands	3.5				95	Denmark	2.4			
22	Switzerland	3.4				96	Malawi	2.4			
23	Canada	3.4				97	Paraguay	2.4			
24	Brunei Darussalam	3.4				98	Barbados	2.4			
25	Saudi Arabia	3.4				99	Mali	2.3			
26	Belgium	3.3				100	Cape Verde	2.3			
27	India	3.3				101	Nigeria	2.3			
28	South Africa	3.3				102	Nepal	2.3			
29	Nicaragua	3.3				103	Costa Rica	2.3			
30	Estonia	3.3				104	Poland	2.3			
31	Chile	3.3				105	Spain	2.3			
32	Bolivia	3.2				106	Georgia	2.3			
33	Germany	3.2				107	Bhutan	2.2			
34	Ecuador	3.2				108	Senegal	2.2			
35	Rwanda	3.2				109	Portugal	2.2			
36	Montenegro	3.2				110	Croatia	2.2			
37	Malta	3.2				111	Trinidad and Tobago	2.2			
38	Guyana	3.2				112	Cameroon	2.2			
39	Japan	3.1				113	Benin	2.2			
40	Philippines	3.1				114	Ethiopia	2.1			
41	Thailand	3.1				115	Korea, Rep.	2.1			
42	Seychelles	3.1				116	Côte d'Ivoire	2.1			
43	Cambodia	3.0				117	Venezuela	2.1			
44	Tunisia	3.0				118	Moldova	2.1			
45	Jordan	3.0				119	Angola	2.1			
46	Mauritius	3.0				120	Ukraine	2.1			
47	Kenya	3.0				121	Mozambique	2.1			
48	Puerto Rico	2.9				122	Hungary	2.1			
49	France	2.9				123	Algeria	2.0			
50	Peru	2.9				124	Gabon	2.0			
51	Egypt	2.9				125	Bangladesh	2.0			
52	Azerbaijan	2.9				126	Suriname	2.0			
53	Swaziland	2.8				127	Slovenia	2.0			
54	Cyprus	2.8				128	Libya	2.0			
55	Austria	2.8				129	Serbia	1.9			
56	Morocco	2.8				130	Jamaica	1.9			
57	Botswana	2.8				131	Bosnia and Herzegovina	1.9			
58	Latvia	2.8				132	Mauritania	1.9			
59	El Salvador	2.8				133	Kyrgyz Republic	1.9			
60	Guatemala	2.8				134	Yemen	1.9			
61	Brazil	2.7				135	Haiti	1.9			
62	Lebanon	2.7				136	Albania	1.9			
63	Liberia	2.7				137	Burundi	1.9			
64	Slovak Republic	2.7				138	Italy	1.8			
65	Bulgaria	2.7				139	Iran, Islamic Rep.	1.8			
66	Lao PDR	2.7				140	Zimbabwe	1.8			
67	Ghana	2.7				141	Guinea	1.8			
68	Iceland	2.7				142	Argentina	1.7			
69	Ireland	2.7				143	Chad	1.7			
70	Russian Federation	2.6				144	Mongolia	1.7			
71	Kuwait	2.6				145	Sierra Leone	1.7			
72	Kazakhstan	2.6				146	Greece	1.7			
73	Tanzania	2.6				147	Burkina Faso	1.7			
74	Czech Republic	2.6				148	Myanmar	1.5			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

2.03 Total tax rate

Sum of profit tax, labor tax and social contributions, property taxes, turnover taxes, and other taxes, as a share (%) of commercial profits | 2013

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Macedonia, FYR	8.2	75	Mozambique	37.5
2	Timor-Leste	11.0	76	El Salvador	38.1
3	Qatar	11.3	77	Armenia	38.8
4	Kuwait	12.4	78	Honduras	39.2
5	Bahrain	13.5	79	Netherlands	39.3
6	Saudi Arabia	14.5	80	Finland	39.8
7	United Arab Emirates	14.9	81	Azerbaijan	40.0
8	Zambia	15.1	82	Turkey	40.2
9	Lesotho	16.0	83	Haiti	40.4
10	Brunei Darussalam	16.1	83	Moldova	40.4
11	Georgia	16.4	85	Panama	40.5
12	Croatia	19.8	86	Norway	40.7
13	Luxembourg	20.7	87	Barbados	40.8
14	Montenegro	20.9	87	Bhutan	40.8
15	Cambodia	21.4	89	Guatemala	40.9
16	Namibia	21.8	90	Malta	41.0
17	Oman	22.0	91	Poland	41.6
18	Cyprus	22.5	92	Uruguay	41.9
19	Ghana	22.9	93	Portugal	42.3
19	Hong Kong SAR	22.9	94	Egypt	42.6
21	Canada	24.3	95	Romania	42.9
22	Mongolia	24.6	96	Lithuania	43.1
23	Botswana	25.4	97	Dominican Republic	43.5
24	Bosnia and Herzegovina	25.5	97	Gabon	43.5
25	Ireland	25.7	99	Burkina Faso	43.9
25	Seychelles	25.7	100	Greece	44.0
27	Liberia	26.6	101	Iran, Islamic Rep.	44.1
28	Lao PDR	26.8	102	Kenya	44.2
29	Denmark	27.0	103	Jamaica	44.3
30	Singapore	27.1	104	Philippines	44.5
31	Bulgaria	27.7	105	Tanzania	44.9
31	Chile	27.7	106	United States	46.3
33	Korea, Rep.	27.9	107	Côte d'Ivoire	46.4
33	Suriname	27.9	108	Australia	47.0
35	Mauritius	28.2	109	Slovak Republic	47.2
36	Kazakhstan	28.6	110	Czech Republic	48.1
37	Jordan	28.9	111	Senegal	48.5
38	Switzerland	29.1	112	Cameroon	48.8
38	Trinidad and Tobago	29.1	113	Myanmar	48.9
40	Thailand	29.8	114	Estonia	49.4
41	Iceland	29.9	114	Germany	49.4
41	Israel	29.9	116	Mali	49.5
41	Rwanda	29.9	117	Morocco	49.6
44	South Africa	30.1	118	Hungary	49.7
45	Lebanon	30.2	118	Japan	49.7
46	Nepal	31.5	120	Puerto Rico	50.7
47	Libya	31.6	120	Russian Federation	50.7
48	Albania	31.7	122	Burundi	51.6
49	Indonesia	32.2	123	Sweden	52.0
50	Sierra Leone	32.4	124	Angola	52.1
51	Guyana	32.5	125	Austria	52.4
51	Slovenia	32.5	126	Mexico	53.7
53	Yemen	32.7	127	Ukraine	54.9
54	Ethiopia	33.4	128	Sri Lanka	55.1
54	Kyrgyz Republic	33.4	129	Costa Rica	55.3
56	Nigeria	33.8	130	Belgium	57.5
57	Ecuador	33.9	131	Spain	58.6
58	United Kingdom	34.0	132	Venezuela	61.7
59	New Zealand	34.6	133	Tunisia	62.4
60	Pakistan	34.7	134	India	62.8
61	Malawi	34.9	135	China	63.7
62	Bangladesh	35.0	136	France	64.7
62	Paraguay	35.0	137	Nicaragua	64.9
62	Taiwan, China	35.0	138	Italy	65.8
65	Vietnam	35.2	139	Benin	65.9
66	Zimbabwe	35.3	140	Mauritania	68.2
67	Madagascar	35.8	141	Brazil	68.3
68	Latvia	35.9	142	Algeria	71.9
69	Malaysia	36.3	143	Chad	73.8
70	Peru	36.4	144	Colombia	76.0
71	Swaziland	36.5	145	Bolivia	83.4
72	Uganda	36.6	146	Guinea	91.2
73	Serbia	36.8	147	Argentina	107.8
74	Cape Verde	37.2	148	Gambia, The	283.2

SOURCE: World Bank/International Finance Corporation, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

2.04 Time required to start a business

Number of days required to start a business | 2013

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	New Zealand	1	75	Germany	15
2	Georgia	2	76	Benin	15
2	Macedonia, FYR	2	76	Cameroon	15
2	Rwanda	2	76	Colombia	15
5	Australia	3	76	Ethiopia	15
5	Hong Kong SAR	3	76	Russian Federation	15
5	Portugal	3	81	Guinea	16
5	Singapore	3	81	Iran, Islamic Rep.	16
9	Armenia	4	81	Sweden	16
9	Belgium	4	84	El Salvador	17
9	Netherlands	4	85	Nepal	17
12	Albania	5	86	Barbados	18
12	Iceland	5	86	Bulgaria	18
12	Liberia	5	86	Switzerland	18
15	Burundi	5	89	Dominican Republic	19
15	Canada	5	89	Luxembourg	19
15	Hungary	5	89	Slovak Republic	19
15	United States	5	92	Mauritania	19
19	Chile	6	92	South Africa	19
19	Denmark	6	94	Czech Republic	20
19	Korea, Rep.	6	94	Guatemala	20
22	Italy	6	96	Guyana	20
22	Jamaica	6	97	Saudi Arabia	21
22	Malaysia	6	98	Pakistan	21
22	Mauritius	6	98	Ukraine	21
22	Mexico	6	100	Japan	22
22	Panama	6	101	Spain	23
22	Puerto Rico	6	102	Costa Rica	24
22	Senegal	6	103	Algeria	25
22	Slovenia	6	103	Argentina	25
22	Turkey	6	103	Austria	25
32	Estonia	7	103	Peru	25
32	France	7	107	Tanzania	26
32	Lithuania	7	108	Gambia, The	27
32	Uruguay	7	108	India	27
32	Zambia	7	110	Thailand	28
37	Azerbaijan	7	111	Nigeria	28
37	Moldova	7	112	Lesotho	29
37	Norway	7	113	Poland	30
40	Côte d'Ivoire	8	114	Bhutan	32
40	Croatia	8	114	Kenya	32
40	Cyprus	8	114	Kuwait	32
40	Egypt	8	114	Uganda	32
40	Kyrgyz Republic	8	118	China	33
40	Madagascar	8	119	Vietnam	34
40	Oman	8	120	Libya	35
40	Sri Lanka	8	120	Paraguay	35
40	United Arab Emirates	8	120	Philippines	35
49	Qatar	9	123	Nicaragua	36
49	Romania	9	124	Bosnia and Herzegovina	37
51	Bahrain	9	125	Trinidad and Tobago	38
51	Lebanon	9	126	Swaziland	38
53	Cape Verde	10	127	Seychelles	39
53	Ireland	10	128	Malta	40
53	Montenegro	10	129	Malawi	40
53	Taiwan, China	10	129	Yemen	40
57	Bangladesh	11	131	Indonesia	48
58	Mali	11	132	Bolivia	49
58	Mongolia	11	133	Gabon	50
58	Morocco	11	134	Ecuador	56
58	Tunisia	11	135	Botswana	60
62	Serbia	12	136	Chad	62
63	Jordan	12	137	Angola	66
63	Kazakhstan	12	137	Namibia	66
63	Sierra Leone	12	139	Myanmar	72
63	United Kingdom	12	140	Zimbabwe	90
67	Latvia	13	141	Lao PDR	92
68	Burkina Faso	13	142	Timor-Leste	94
68	Mozambique	13	143	Haiti	97
70	Finland	14	144	Brunei Darussalam	101
70	Ghana	14	145	Cambodia	104
70	Greece	14	146	Brazil	108
70	Honduras	14	147	Venezuela	144
70	Israel	14	148	Suriname	208

SOURCE: World Bank/International Finance Corporation, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

2.05 Number of procedures required to start a business

Number of procedures required to start a business | 2013

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Canada	1	58	United Arab Emirates	6
1	New Zealand	1	58	United Kingdom	6
3	Armenia	2	58	United States	6
3	Georgia	2	58	Yemen	6
3	Kyrgyz Republic	2	79	Bahrain	7
3	Macedonia, FYR	2	79	Bangladesh	7
3	Madagascar	2	79	Cape Verde	7
3	Rwanda	2	79	Chile	7
3	Slovenia	2	79	Dominican Republic	7
10	Australia	3	79	Egypt	7
10	Azerbaijan	3	79	Gabon	7
10	Belgium	3	79	Jordan	7
10	Burkina Faso	3	79	Lesotho	7
10	Burundi	3	79	Nepal	7
10	Finland	3	79	Nicaragua	7
10	Hong Kong SAR	3	79	Paraguay	7
10	Malaysia	3	79	Russian Federation	7
10	Portugal	3	79	Slovak Republic	7
10	Singapore	3	79	Trinidad and Tobago	7
10	Sweden	3	94	Angola	8
10	Taiwan, China	3	94	Austria	8
22	Benin	4	94	Barbados	8
22	Bulgaria	4	94	Bhutan	8
22	Denmark	4	94	El Salvador	8
22	Hungary	4	94	Gambia, The	8
22	Ireland	4	94	Ghana	8
22	Latvia	4	94	Guyana	8
22	Liberia	4	94	Iran, Islamic Rep.	8
22	Lithuania	4	94	Japan	8
22	Netherlands	4	94	Nigeria	8
22	Poland	4	94	Qatar	8
22	Senegal	4	94	Timor-Leste	8
22	Thailand	4	107	Botswana	9
34	Albania	5	107	Chad	9
34	Cameroon	5	107	Colombia	9
34	Côte d'Ivoire	5	107	Costa Rica	9
34	Estonia	5	107	Czech Republic	9
34	France	5	107	Ethiopia	9
34	Greece	5	107	Germany	9
34	Guinea	5	107	Mauritania	9
34	Iceland	5	107	Mozambique	9
34	Israel	5	107	Saudi Arabia	9
34	Jamaica	5	107	Tanzania	9
34	Korea, Rep.	5	107	Zimbabwe	9
34	Lebanon	5	119	Indonesia	10
34	Mali	5	119	Kenya	10
34	Mauritius	5	119	Libya	10
34	Mongolia	5	119	Malawi	10
34	Morocco	5	119	Namibia	10
34	Norway	5	119	Pakistan	10
34	Oman	5	119	Seychelles	10
34	Panama	5	119	Spain	10
34	Peru	5	119	Tunisia	10
34	Romania	5	119	Vietnam	10
34	South Africa	5	129	Bosnia and Herzegovina	11
34	Uruguay	5	129	Cambodia	11
34	Zambia	5	129	Malta	11
58	Croatia	6	129	Myanmar	11
58	Cyprus	6	133	Haiti	12
58	Guatemala	6	133	India	12
58	Italy	6	133	Kuwait	12
58	Kazakhstan	6	133	Swaziland	12
58	Lao PDR	6	137	Brazil	13
58	Luxembourg	6	137	China	13
58	Mexico	6	137	Ecuador	13
58	Moldova	6	137	Honduras	13
58	Montenegro	6	137	Suriname	13
58	Puerto Rico	6	142	Algeria	14
58	Serbia	6	142	Argentina	14
58	Sierra Leone	6	144	Bolivia	15
58	Sri Lanka	6	144	Brunei Darussalam	15
58	Switzerland	6	144	Philippines	15
58	Turkey	6	144	Uganda	15
58	Ukraine	6	148	Venezuela	17

SOURCE: World Bank/International Finance Corporation, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

2.06 Intensity of local competition*

In your country, how intense is competition in the local markets? [1 = not intense at all; 7 = extremely intense] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.9	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.9	7
1	Japan	6.2				75	Dominican Republic	4.9			
2	Taiwan, China	6.1				76	Nigeria	4.9			
3	United Kingdom	6.0				77	Portugal	4.9			
4	Malta	6.0				78	Cambodia	4.9			
5	Netherlands	6.0				79	Pakistan	4.9			
6	Belgium	6.0				80	Tunisia	4.9			
7	Hong Kong SAR	5.9				81	Zimbabwe	4.9			
8	Korea, Rep.	5.9				82	Madagascar	4.8			
9	Puerto Rico	5.9				83	Iceland	4.8			
10	Germany	5.9				84	Gambia, The	4.8			
11	Austria	5.8				85	Macedonia, FYR	4.8			
12	Czech Republic	5.8				86	Finland	4.8			
13	Australia	5.8				87	Greece	4.8			
14	United States	5.8				88	Trinidad and Tobago	4.7			
15	Turkey	5.8				89	Benin	4.7			
16	Qatar	5.8				90	Rwanda	4.7			
17	United Arab Emirates	5.7				91	Suriname	4.7			
18	Saudi Arabia	5.7				92	Cameroon	4.7			
19	Singapore	5.6				93	Botswana	4.7			
20	Sri Lanka	5.6				94	Lesotho	4.7			
21	Switzerland	5.6				95	Israel	4.7			
22	Estonia	5.6				96	Bhutan	4.7			
23	Sweden	5.6				97	Myanmar	4.6			
24	India	5.6				98	Mongolia	4.6			
25	Lebanon	5.5				99	Namibia	4.6			
26	France	5.5				100	Seychelles	4.6			
27	Denmark	5.5				101	Bulgaria	4.6			
28	Spain	5.5				102	Armenia	4.6			
29	Slovak Republic	5.5				103	Liberia	4.6			
30	Mauritius	5.5				104	Honduras	4.6			
31	New Zealand	5.4				105	El Salvador	4.6			
32	Malaysia	5.4				106	Ukraine	4.5			
33	Canada	5.4				107	Croatia	4.5			
34	Latvia	5.4				108	Mauritania	4.5			
35	Kenya	5.4				109	Nepal	4.5			
36	Lithuania	5.4				110	Kuwait	4.5			
37	Chile	5.4				111	Mali	4.5			
38	Poland	5.3				112	Ecuador	4.5			
39	Norway	5.3				113	Russian Federation	4.5			
40	Bahrain	5.3				114	Uruguay	4.5			
41	Thailand	5.3				115	Romania	4.4			
42	Ireland	5.3				116	Burkina Faso	4.4			
43	Hungary	5.3				117	Swaziland	4.4			
44	Jordan	5.3				118	Yemen	4.4			
45	South Africa	5.3				119	Moldova	4.4			
46	China	5.3				120	Kazakhstan	4.3			
47	Cyprus	5.2				121	Iran, Islamic Rep.	4.3			
48	Zambia	5.2				122	Cape Verde	4.3			
49	Slovenia	5.2				123	Georgia	4.3			
50	Barbados	5.2				124	Kyrgyz Republic	4.3			
51	Vietnam	5.2				125	Malawi	4.3			
52	Costa Rica	5.2				126	Mozambique	4.2			
53	Guatemala	5.2				127	Tanzania	4.2			
54	Oman	5.2				128	Azerbaijan	4.2			
55	Jamaica	5.2				129	Gabon	4.2			
56	Lao PDR	5.2				130	Sierra Leone	4.1			
57	Paraguay	5.2				131	Egypt	4.1			
58	Senegal	5.1				132	Guinea	4.1			
59	Luxembourg	5.1				133	Ethiopia	4.0			
60	Morocco	5.1				134	Argentina	4.0			
61	Peru	5.1				135	Montenegro	3.9			
62	Brunei Darussalam	5.1				136	Nicaragua	3.8			
63	Philippines	5.1				137	Bolivia	3.8			
64	Colombia	5.1				138	Serbia	3.8			
65	Mexico	5.0				139	Libya	3.7			
66	Indonesia	5.0				140	Haiti	3.7			
67	Uganda	5.0				141	Algeria	3.6			
68	Ghana	5.0				142	Timor-Leste	3.5			
69	Guyana	5.0				143	Bosnia and Herzegovina	3.4			
70	Brazil	5.0				144	Albania	3.4			
71	Panama	5.0				145	Chad	3.3			
72	Côte d'Ivoire	5.0				146	Burundi	3.3			
73	Italy	5.0				147	Venezuela	3.0			
74	Bangladesh	4.9				148	Angola	2.8			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

2.07 Tertiary education enrollment rate

Gross tertiary education enrollment rate (%) | 2011

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Korea, Rep.	100.8	75	Paraguay ¹¹	34.5
2	Finland	95.5	76	Dominican Republic ⁵	34.0
3	United States	95.3	77	Bahrain ¹²	33.5
4	Greece ⁹	91.4	78	Algeria ¹²	31.5
5	Puerto Rico	86.5	79	Egypt	28.8
6	Slovenia	85.1	80	Philippines ¹⁰	28.2
7	Taiwan, China	83.4	81	Oman	28.1
8	Australia	83.2	82	Georgia ¹²	27.9
9	Spain	82.6	83	Mexico	27.7
10	Iceland	80.9	84	Indonesia	27.2
11	New Zealand	80.8	85	Jamaica ¹¹	26.0
12	Ukraine ¹²	79.7	86	Brazil ⁶	25.6
13	Venezuela ¹⁰	77.9	87	United Arab Emirates ⁹	25.2
14	Lithuania	76.6	88	Vietnam ¹²	24.6
15	Netherlands	76.4	89	El Salvador	24.5
16	Russian Federation ¹⁰	75.5	90	Brunei Darussalam ¹²	24.3
17	Argentina ¹¹	74.8	91	China	24.3
18	Sweden	73.9	92	India	23.3
19	Denmark ¹¹	73.6	93	Kuwait ⁵	22.3
20	Poland	73.5	94	Cape Verde ¹²	20.6
21	Ireland	73.5	95	Honduras ¹¹	20.6
22	Norway	73.1	96	Azerbaijan	19.6
23	Singapore	72.0	97	Liberia ²	19.4
24	Estonia ¹¹	71.7	98	Luxembourg ¹¹	18.2
25	Austria	71.0	99	Guatemala ⁹	17.9
26	Chile	70.5	100	Nicaragua ⁴	17.9
27	Belgium	69.3	101	Timor-Leste ¹¹	17.7
28	Latvia	67.3	102	Lao PDR	17.1
29	Portugal ¹¹	65.9	103	Morocco	16.2
30	Czech Republic	64.6	104	Cambodia	15.8
31	Italy	63.9	105	South Africa ⁷	15.4
32	Uruguay ¹¹	63.2	106	Nepal	14.5
33	Israel ¹⁰	62.4	107	Sri Lanka	14.4
34	United Kingdom	61.2	108	Myanmar	13.8
35	Mongolia ¹²	61.1	109	Bangladesh	13.2
36	Libya ⁴	60.9	110	Guyana ¹²	12.9
37	Barbados	60.8	111	Benin	12.4
38	Turkey	60.7	112	Ghana ¹²	12.2
39	Hong Kong SAR ¹²	60.1	113	Qatar ¹²	12.1
40	Japan	59.9	114	Suriname ⁹	12.1
41	Bulgaria	59.6	115	Cameroon	11.9
42	Hungary	59.5	116	Trinidad and Tobago ⁶	11.5
43	Canada ²	58.9	117	Lesotho ¹²	10.8
44	Croatia	58.8	118	Nigeria ⁹	10.4
45	France	57.1	119	Yemen	10.3
46	Germany	56.5	120	Pakistan ¹²	9.5
47	Montenegro ¹¹	55.5	121	Namibia ⁹	9.3
48	Iran, Islamic Rep. ¹²	55.2	122	Uganda	9.1
49	Slovak Republic	55.1	123	Guinea ¹²	8.8
50	Albania ¹²	54.9	124	Bhutan	8.7
51	Switzerland	54.3	125	Côte d'Ivoire ¹¹	8.4
52	Serbia ¹²	52.4	126	Ethiopia ¹²	8.2
53	Romania	51.6	127	Senegal ¹¹	7.6
54	Thailand ¹²	51.4	128	Angola	7.5
55	Saudi Arabia ¹²	50.9	129	Mali ¹²	7.5
56	Costa Rica ¹²	46.7	130	Botswana ⁷	7.4
57	Cyprus	46.5	131	Gabon ¹	7.2
58	Lebanon ¹²	46.3	132	Rwanda ¹²	6.9
59	Armenia ¹²	46.0	133	Swaziland	6.0
60	Colombia ¹²	45.0	134	Zimbabwe ¹²	5.9
61	Kazakhstan ¹²	44.5	135	Mauritania ¹²	5.1
62	Peru ¹¹	42.6	136	Sierra Leone	5.0
63	Panama	41.8	137	Mozambique	4.9
64	Kyrgyz Republic	41.3	138	Burkina Faso ¹²	4.6
65	Macedonia, FYR	40.8	139	Gambia, The ⁹	4.5
66	Jordan	39.9	140	Madagascar ¹²	4.1
67	Mauritius ¹²	39.9	141	Kenya ¹⁰	4.0
68	Malta	39.4	142	Tanzania ¹²	3.9
69	Ecuador ⁹	38.9	143	Burundi ¹¹	3.2
70	Moldova ¹²	38.2	144	Zambia ²	2.4
71	Bosnia and Herzegovina ¹²	37.7	145	Chad	2.3
72	Bolivia ⁸	37.7	146	Seychelles ¹²	1.4
73	Malaysia ¹¹	37.1	147	Malawi	0.8
74	Tunisia ¹²	35.2	n/a	Haiti	n/a

SOURCES: United Nations Education, Science and Culture Organization (UNESCO), UNESCO Institute for Statistics Data Centre (accessed November 5, 2013); World Bank, *World Development Indicators 2013* (December edition); national sources

¹ 1999 ² 2000 ³ 2002 ⁴ 2003 ⁵ 2004 ⁶ 2005 ⁷ 2006 ⁸ 2007 ⁹ 2008 ¹⁰ 2009 ¹¹ 2010 ¹² 2012

2.08 Quality of management schools*

In your country, how would you assess the quality of business schools? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.2	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.2	7
1	Switzerland	6.1				75	Seychelles	4.2			
2	Belgium	6.0				76	Venezuela	4.2			
3	United Kingdom	5.9				77	Ecuador	4.2			
4	Spain	5.8				78	Croatia	4.2			
5	France	5.8				79	Uruguay	4.2			
6	Singapore	5.7				80	Suriname	4.1			
7	Canada	5.7				81	Zimbabwe	4.1			
8	Qatar	5.7				82	Lao PDR	4.1			
9	Netherlands	5.7				83	China	4.1			
10	Finland	5.6				84	Albania	4.1			
11	Portugal	5.5				85	Bahrain	4.1			
12	United States	5.5				86	Japan	4.0			
13	Lebanon	5.4				87	Madagascar	4.0			
14	Hong Kong SAR	5.4				88	Oman	4.0			
15	Sweden	5.4				89	Poland	4.0			
16	Chile	5.3				90	Czech Republic	4.0			
17	Costa Rica	5.3				91	Rwanda	3.9			
18	Cyprus	5.3				92	Kuwait	3.9			
19	Ireland	5.3				93	El Salvador	3.8			
20	Norway	5.2				94	Greece	3.8			
21	Malta	5.2				95	Iran, Islamic Rep.	3.8			
22	Iceland	5.2				96	Kazakhstan	3.8			
23	South Africa	5.2				97	Botswana	3.8			
24	New Zealand	5.2				98	Uganda	3.8			
25	Denmark	5.2				99	Macedonia, FYR	3.8			
26	Barbados	5.1				100	Nepal	3.8			
27	Germany	5.1				101	Turkey	3.8			
28	United Arab Emirates	5.1				102	Nigeria	3.7			
29	Australia	5.1				103	Nicaragua	3.7			
30	India	5.0				104	Romania	3.7			
31	Italy	5.0				105	Bangladesh	3.7			
32	Taiwan, China	4.9				106	Dominican Republic	3.7			
33	Argentina	4.9				107	Georgia	3.7			
34	Trinidad and Tobago	4.9				108	Cambodia	3.7			
35	Malaysia	4.9				109	Slovak Republic	3.7			
36	Montenegro	4.8				110	Burkina Faso	3.6			
37	Sri Lanka	4.8				111	Bhutan	3.6			
38	Guatemala	4.8				112	Bulgaria	3.6			
39	Philippines	4.7				113	Russian Federation	3.6			
40	Austria	4.7				114	Serbia	3.6			
41	Bosnia and Herzegovina	4.7				115	Ukraine	3.6			
42	Israel	4.7				116	Cape Verde	3.5			
43	Senegal	4.6				117	Liberia	3.5			
44	Puerto Rico	4.6				118	Ethiopia	3.5			
45	Morocco	4.6				119	Mali	3.4			
46	Gambia, The	4.6				120	Armenia	3.4			
47	Jordan	4.6				121	Namibia	3.4			
48	Cameroon	4.6				122	Lesotho	3.4			
49	Brazil	4.5				123	Honduras	3.4			
50	Guyana	4.5				124	Malawi	3.3			
51	Ghana	4.5				125	Vietnam	3.3			
52	Brunei Darussalam	4.5				126	Bolivia	3.3			
53	Thailand	4.5				127	Gabon	3.3			
54	Estonia	4.5				128	Swaziland	3.3			
55	Luxembourg	4.5				129	Tanzania	3.3			
56	Korea, Rep.	4.5				130	Haiti	3.2			
57	Kenya	4.4				131	Sierra Leone	3.2			
58	Indonesia	4.4				132	Paraguay	3.2			
59	Latvia	4.4				133	Moldova	3.2			
60	Lithuania	4.4				134	Azerbaijan	3.1			
61	Mauritius	4.4				135	Algeria	3.0			
62	Côte d'Ivoire	4.3				136	Mongolia	2.9			
63	Panama	4.3				137	Mozambique	2.8			
64	Saudi Arabia	4.3				138	Yemen	2.8			
65	Mexico	4.3				139	Kyrgyz Republic	2.7			
66	Tunisia	4.3				140	Chad	2.7			
67	Peru	4.3				141	Myanmar	2.7			
68	Hungary	4.3				142	Burundi	2.6			
69	Jamaica	4.3				143	Mauritania	2.5			
70	Colombia	4.3				144	Guinea	2.5			
71	Zambia	4.3				145	Egypt	2.3			
72	Pakistan	4.3				146	Libya	2.2			
73	Benin	4.3				147	Timor-Leste	2.2			
74	Slovenia	4.2				148	Angola	2.2			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

2.09 Government procurement of advanced technology products*

In your country, to what extent do government purchasing decisions foster innovation? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	3.5	7	RANK	COUNTRY/ECONOMY	VALUE	1	3.5	7
1	Qatar	5.6				75	Mauritius	3.5			
2	Singapore	5.1				76	Tanzania	3.5			
3	United Arab Emirates	5.1				77	Nigeria	3.4			
4	Malaysia	4.8				78	Nicaragua	3.4			
5	Rwanda	4.7				79	Kenya	3.4			
6	Saudi Arabia	4.6				80	Dominican Republic	3.4			
7	Panama	4.5				81	Macedonia, FYR	3.4			
8	Taiwan, China	4.5				82	Puerto Rico	3.4			
9	Israel	4.5				83	Malawi	3.4			
10	Brunei Darussalam	4.5				84	Sierra Leone	3.4			
11	Luxembourg	4.4				85	Philippines	3.4			
12	Oman	4.4				86	Madagascar	3.4			
13	China	4.4				87	Denmark	3.4			
14	Azerbaijan	4.4				88	Timor-Leste	3.4			
15	United States	4.3				89	Bosnia and Herzegovina	3.4			
16	Sri Lanka	4.3				90	Bulgaria	3.3			
17	Germany	4.3				91	Gabon	3.3			
18	Gambia, The	4.2				92	India	3.3			
19	Hong Kong SAR	4.2				93	Uruguay	3.2			
20	Norway	4.2				94	Burkina Faso	3.2			
21	Finland	4.2				95	Mozambique	3.2			
22	Sweden	4.2				96	Morocco	3.2			
23	Turkey	4.1				97	Namibia	3.2			
24	Bahrain	4.1				98	Peru	3.2			
25	Indonesia	4.1				99	Romania	3.2			
26	Netherlands	4.1				100	Benin	3.2			
27	Chile	4.0				101	Latvia	3.2			
28	Zambia	4.0				102	Spain	3.2			
29	Ecuador	4.0				103	Poland	3.1			
30	Vietnam	4.0				104	Mauritania	3.1			
31	Korea, Rep.	4.0				105	Thailand	3.1			
32	Montenegro	3.9				106	Mongolia	3.1			
33	Seychelles	3.9				107	Swaziland	3.1			
34	Estonia	3.9				108	Russian Federation	3.1			
35	Malta	3.9				109	Lithuania	3.0			
36	Switzerland	3.9				110	Pakistan	3.0			
37	Japan	3.9				111	Armenia	3.0			
38	Cameroon	3.9				112	Guinea	3.0			
39	Guyana	3.8				113	Guatemala	3.0			
40	Liberia	3.8				114	Hungary	3.0			
41	Cape Verde	3.8				115	Tunisia	3.0			
42	Senegal	3.8				116	Egypt	3.0			
43	Côte d'Ivoire	3.8				117	Suriname	3.0			
44	Lao PDR	3.7				118	Ukraine	3.0			
45	Belgium	3.7				119	South Africa	2.9			
46	Cambodia	3.7				120	Kuwait	2.9			
47	Austria	3.7				121	Slovenia	2.9			
48	Bhutan	3.7				122	Paraguay	2.9			
49	Colombia	3.7				123	Serbia	2.8			
50	Portugal	3.7				124	Czech Republic	2.8			
51	Jordan	3.7				125	Honduras	2.8			
52	Albania	3.7				126	Chad	2.8			
53	Iceland	3.7				127	Algeria	2.7			
54	Barbados	3.6				128	Jamaica	2.7			
55	Canada	3.6				129	Italy	2.7			
56	United Kingdom	3.6				130	Trinidad and Tobago	2.7			
57	Australia	3.6				131	Lesotho	2.7			
58	Kazakhstan	3.6				132	Nepal	2.7			
59	Mali	3.6				133	Angola	2.6			
60	France	3.6				134	Slovak Republic	2.6			
61	Ethiopia	3.6				135	Haiti	2.6			
62	Georgia	3.6				136	Croatia	2.6			
63	Mexico	3.6				137	Zimbabwe	2.6			
64	Ghana	3.6				138	Burundi	2.6			
65	New Zealand	3.6				139	Moldova	2.5			
66	Costa Rica	3.5				140	Argentina	2.5			
67	Botswana	3.5				141	Greece	2.4			
68	Uganda	3.5				142	Bangladesh	2.4			
69	Brazil	3.5				143	Libya	2.3			
70	Ireland	3.5				144	Kyrgyz Republic	2.3			
71	El Salvador	3.5				145	Myanmar	2.2			
72	Cyprus	3.5				146	Lebanon	2.2			
73	Iran, Islamic Rep.	3.5				147	Yemen	2.1			
74	Bolivia	3.5				148	Venezuela	1.9			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

3rd pillar

Infrastructure and
digital content

3.01 Electricity production

Electricity production (kWh) per capita | 2011

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Iceland ³	54,817.2	75	Croatia	2,500.1
2	Norway ³	29,244.2	76	Mexico ³	2,449.5
3	Canada ³	18,510.4	77	Jordan	2,369.7
4	Kuwait	18,388.0	78	Thailand	2,343.0
5	Sweden ³	17,383.3	79	Georgia	2,273.7
6	Qatar	16,081.4	80	Mauritius ¹	2,265.8
7	United States ³	13,639.7	81	Azerbaijan	2,212.3
8	Finland ³	12,997.4	82	Panama	2,100.6
9	Australia ³	11,120.8	83	Costa Rica	2,075.5
10	United Arab Emirates	11,107.7	84	Egypt	1,972.3
11	Taiwan, China	10,859.0	85	Jamaica	1,899.5
12	Bahrain	10,694.9	86	Mongolia	1,725.7
13	Korea, Rep. ³	10,567.3	87	Moldova	1,624.9
14	New Zealand ³	9,984.4	88	Tunisia	1,511.2
15	Bhutan ¹	9,688.6	89	Lithuania	1,401.2
16	Brunei Darussalam	9,163.3	90	Algeria	1,356.5
17	Saudi Arabia	9,008.0	91	Ecuador	1,329.2
18	Estonia ³	8,933.9	92	Peru	1,324.4
19	Singapore	8,873.8	93	Albania	1,318.7
20	Paraguay	8,766.9	94	Colombia	1,313.2
21	Switzerland ³	8,501.2	95	Dominican Republic	1,278.6
22	France ³	8,449.8	96	Vietnam	1,129.1
23	Czech Republic ³	8,260.3	97	Gabon	1,109.8
24	Japan ³	8,041.6	98	Guyana ¹	1,046.0
25	Israel ³	7,677.6	99	El Salvador	927.9
26	Austria ³	7,618.2	100	Honduras	916.3
27	Slovenia ³	7,544.1	101	India	861.7
28	Germany ³	7,460.6	102	Zambia	840.1
29	Russian Federation	7,365.7	103	Morocco	775.8
30	Oman	7,231.6	104	Indonesia	748.1
31	Belgium ³	6,935.1	105	Philippines	727.8
32	Bulgaria	6,807.4	106	Bolivia	699.5
33	Trinidad and Tobago	6,651.5	107	Mozambique	684.7
34	Spain ³	6,350.4	108	Zimbabwe	668.1
35	Netherlands ³	6,092.2	109	Nicaragua	647.7
36	Ireland ³	5,993.7	110	Namibia	644.8
37	United Kingdom ³	5,697.2	111	Cape Verde ¹	570.3
38	Puerto Rico ¹	5,536.8	112	Sri Lanka	558.1
39	Hong Kong SAR	5,519.3	113	Guatemala	553.9
40	Denmark ³	5,438.4	114	Pakistan	540.7
41	Malta	5,265.5	115	Ghana	451.2
42	Serbia	5,238.4	116	Swaziland ¹	383.4
43	Slovak Republic ³	5,231.7	117	Côte d'Ivoire	314.5
44	Kazakhstan	5,229.0	118	Bangladesh	288.2
45	Luxembourg ³	5,159.6	119	Cameroon	283.4
46	South Africa	5,131.3	120	Angola	280.0
47	Greece ³	5,103.2	121	Yemen	266.3
48	Italy ³	4,832.2	122	Lao PDR ²	242.8
49	Libya	4,524.5	123	Senegal	226.1
50	Malaysia	4,523.5	124	Botswana	187.2
51	Cyprus	4,414.6	125	Kenya	186.8
52	Portugal ³	4,325.8	126	Nigeria	164.6
53	Montenegro	4,279.4	127	Gambia, The ¹	147.4
54	Ukraine	4,265.2	128	Myanmar	140.0
55	Poland ³	4,192.8	129	Mauritania ¹	134.8
56	Venezuela	4,137.5	130	Nepal	122.0
57	Bosnia and Herzegovina	3,979.9	131	Malawi ¹	119.1
58	Chile ³	3,915.6	132	Tanzania	114.4
59	Lebanon	3,733.9	133	Timor-Leste	112.0
60	Barbados ²	3,698.3	134	Lesotho ¹	100.5
61	China	3,508.4	135	Guinea ¹	90.2
62	Hungary ³	3,460.3	136	Liberia ¹	87.7
63	Macedonia, FYR	3,268.2	137	Uganda ¹	74.4
64	Turkey ³	3,236.6	138	Cambodia	72.1
65	Argentina	3,180.9	139	Haiti	71.6
66	Iran, Islamic Rep.	3,178.1	140	Madagascar ¹	65.9
67	Suriname ¹	3,081.7	141	Ethiopia	57.7
68	Uruguay	3,057.2	142	Burkina Faso ¹	44.0
69	Latvia	2,960.9	143	Mali ¹	38.4
70	Romania	2,899.2	144	Rwanda ¹	22.8
71	Seychelles ¹	2,806.5	145	Sierra Leone ¹	21.3
72	Kyrgyz Republic	2,748.7	146	Benin	15.7
73	Brazil	2,700.2	147	Burundi ¹	14.2
74	Armenia	2,507.7	148	Chad ¹	8.4

SOURCES: The World Bank, *World Development Indicators Online* (October 2013 update); US Central Intelligence Agency (CIA), *The World Factbook* (accessed November 11, 2013)

¹ 2009 ² 2010 ³ 2012

3.02 Mobile network coverage rate

Percentage of total population covered by a mobile network signal | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Azerbaijan	100.0	58	Morocco	99.0
1	Bahrain	100.0	58	Philippines ⁵	99.0
1	Bhutan	100.0	58	Portugal	99.0
1	Chile ⁵	100.0	58	Tunisia	99.0
1	Colombia	100.0	79	Latvia ⁴	98.8
1	Croatia	100.0	80	Rwanda	98.4
1	Guatemala	100.0	81	Libya ⁶	98.0
1	Hong Kong SAR	100.0	81	Lithuania	98.0
1	Indonesia ⁸	100.0	81	Seychelles	98.0
1	Kuwait ⁷	100.0	81	Sri Lanka	98.0
1	Malta	100.0	85	Moldova ⁴	98.0
1	Montenegro ⁷	100.0	86	Oman	97.6
1	Namibia	100.0	87	Kyrgyz Republic	97.5
1	Netherlands	100.0	88	Denmark ⁵	97.0
1	Nicaragua ⁶	100.0	88	Guyana ⁸	97.0
1	Qatar	100.0	88	New Zealand	97.0
1	Singapore	100.0	88	Norway ¹	97.0
1	Slovak Republic	100.0	92	Peru	97.0
1	Suriname	100.0	93	Malaysia	96.8
1	Switzerland	100.0	93	Swaziland	96.8
1	Taiwan, China	100.0	95	Nigeria	96.1
1	Thailand ⁶	100.0	96	Ecuador	96.0
1	Trinidad and Tobago	100.0	97	Botswana	96.0
1	Turkey ⁷	100.0	97	Cape Verde	96.0
1	Uganda	100.0	97	Iran, Islamic Rep.	96.0
1	United Arab Emirates	100.0	97	Panama	96.0
1	Uruguay	100.0	101	Bolivia	95.0
28	Brazil	100.0	101	El Salvador ⁴	95.0
28	Bulgaria	100.0	101	Jamaica ⁴	95.0
28	Estonia	100.0	101	Kazakhstan ⁷	95.0
28	Sweden	100.0	101	Russian Federation ³	95.0
32	Cyprus	100.0	101	Tanzania	95.0
33	Belgium	99.9	107	Dominican Republic	94.6
33	Greece	99.9	108	Côte d'Ivoire	94.5
33	Japan	99.9	109	Argentina ⁴	94.1
33	Korea, Rep.	99.9	110	Paraguay ⁷	94.0
33	Luxembourg ⁷	99.9	111	Pakistan	92.0
33	Macedonia, FYR ⁷	99.9	111	Timor-Leste	92.0
33	Mexico	99.9	113	Mongolia	91.3
33	Romania	99.9	114	Senegal	91.1
33	Ukraine	99.9	115	Venezuela ⁴	90.0
33	United States	99.9	116	Honduras ⁴	89.9
43	Armenia	99.8	117	Kenya	89.1
43	Bosnia and Herzegovina	99.8	118	Ghana	87.0
43	Czech Republic	99.8	119	Gambia, The ⁴	85.0
43	Egypt	99.8	119	Malawi	85.0
43	Spain	99.8	121	Yemen ⁷	84.0
48	South Africa ⁴	99.8	122	Burundi ⁶	83.0
49	Serbia	99.7	122	India ⁶	83.0
49	Slovenia	99.7	124	Algeria ⁴	81.5
51	United Kingdom	99.6	125	Lesotho	81.0
52	Poland	99.5	125	Zimbabwe	81.0
53	Finland ⁵	99.5	127	Guinea ⁵	80.0
54	China ⁶	99.5	128	Gabon ⁴	79.0
55	Saudi Arabia	99.4	129	Zambia	78.0
56	Lebanon	99.1	130	Ethiopia	73.0
57	Georgia ⁹	99.1	131	Lao PDR	72.0
58	Albania ⁹	99.0	132	Sierra Leone ³	70.0
58	Australia	99.0	132	Vietnam ³	70.0
58	Austria	99.0	134	Costa Rica ⁶	69.5
58	Bangladesh	99.0	135	Puerto Rico ⁶	68.4
58	Barbados ⁹	99.0	136	Mauritania ⁵	62.0
58	Benin	99.0	137	Burkina Faso ³	61.1
58	Cambodia ⁶	99.0	138	Cameroon ³	58.0
58	Canada	99.0	139	Angola ³	40.0
58	France	99.0	140	Chad	36.1
58	Germany	99.0	141	Nepal ⁷	35.1
58	Hungary	99.0	142	Madagascar ³	23.0
58	Iceland	99.0	143	Mali ³	20.0
58	Ireland	99.0	144	Liberia ²	16.4
58	Israel	99.0	145	Myanmar ⁹	2.3
58	Italy	99.0	n/a	Brunei Darussalam	n/a
58	Jordan	99.0	n/a	Haiti	n/a
58	Mauritius	99.0	n/a	Mozambique	n/a

SOURCE: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

¹ 2001 ² 2003 ³ 2006 ⁴ 2007 ⁵ 2008 ⁶ 2009 ⁷ 2010 ⁸ 2011

3.03 International Internet bandwidth

International Internet bandwidth (kb/s) per Internet user | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Luxembourg	4,088.5	75	Timor-Leste	17.5
2	Hong Kong SAR	1,426.6	76	Albania	17.4
3	Malta	625.8	77	Indonesia	17.1
4	Singapore	387.6	78	Côte d'Ivoire	17.0
5	Iceland	319.0	79	Malaysia	16.4
6	Switzerland	312.0	80	Mauritius	16.1
7	Sweden	279.3	81	Mexico	15.7
8	Portugal	195.5	82	Seychelles	15.6
9	United Kingdom	188.9	83	Hungary	15.3
10	Norway	187.8	84	Dominican Republic	14.9
11	Belgium	180.4	85	Morocco	14.9
12	Denmark	174.8	86	Philippines	14.3
13	Netherlands	172.9	87	Ukraine	14.1
14	Finland	159.3	88	Libya ⁴	14.0
15	Puerto Rico ³	136.9	89	Cambodia	13.6
16	Romania	114.9	90	Vietnam	13.4
17	Austria	108.1	91	Peru	13.1
18	Canada	100.5	92	Paraguay	11.6
19	Czech Republic	100.1	93	Slovak Republic	11.5
20	Ireland	97.1	94	Venezuela	10.9
21	Slovenia	94.7	95	Myanmar	9.4
22	Mongolia	94.3	96	Lao PDR	9.4
23	Moldova	94.2	97	Oman	8.9
24	Serbia	89.6	98	Guyana	8.4
25	Bulgaria	85.4	99	Algeria	7.7
26	France	83.9	100	Pakistan	7.3
27	Spain	81.4	101	El Salvador	6.9
28	Italy	76.3	102	Guatemala	6.6
29	Lithuania	76.2	103	Rwanda	6.6
30	Germany	74.8	104	Botswana	6.5
31	Poland	70.6	105	Lesotho	6.3
32	Cyprus	69.7	106	Cape Verde	6.3
33	Australia	69.1	107	Sri Lanka	6.0
34	Barbados	67.4	108	Gabon	5.5
35	Greece	64.2	109	Kuwait ³	5.4
36	United States	61.9	110	Mali	5.3
37	Montenegro	60.6	111	India	5.3
38	Latvia	59.0	112	Jordan	5.2
39	Israel	56.2	113	Bolivia	5.2
40	Georgia	52.9	114	Senegal	5.1
41	Brazil	44.8	115	Ethiopia	4.8
42	Taiwan, China	44.3	116	Uganda	4.7
43	Uruguay	40.6	117	Egypt	4.2
44	Turkey	40.6	118	Honduras	4.2
45	Azerbaijan	40.6	119	Tanzania	4.0
46	Chile	40.5	120	Kyrgyz Republic	3.9
47	Armenia	40.4	121	Iran, Islamic Rep.	3.7
48	Brunei Darussalam	39.9	122	Namibia	3.6
49	Saudi Arabia	36.4	123	Burundi	3.5
50	Qatar	33.2	124	Bhutan	3.3
51	Russian Federation	32.8	125	China	3.3
52	Japan	32.8	126	Benin	3.2
53	United Arab Emirates	32.4	127	Mauritania	3.0
54	Kazakhstan	32.0	128	Bangladesh	3.0
55	Ecuador	31.8	129	Malawi	2.8
56	New Zealand	31.1	130	Yemen	2.8
57	Panama	30.8	131	Zambia	2.7
58	Macedonia, FYR	30.8	132	Zimbabwe	2.6
59	Costa Rica	29.9	133	Gambia, The	2.1
60	Croatia	28.7	134	Guinea	2.1
61	Thailand	26.6	135	Liberia	2.0
62	Estonia	26.5	136	Suriname ²	2.0
63	Korea, Rep.	25.8	137	Sierra Leone	2.0
64	Nicaragua	24.7	138	Swaziland	1.8
65	Bosnia and Herzegovina	23.9	139	Burkina Faso	1.8
66	Kenya	23.7	140	Mozambique	1.6
67	Argentina	22.0	141	Nepal	1.6
68	Colombia	20.4	142	Angola	0.6
69	Jamaica	20.2	143	Madagascar	0.5
70	Tunisia	18.7	144	Chad	0.5
71	Lebanon	18.4	145	Nigeria	0.3
72	Trinidad and Tobago	18.4	146	Cameroon	0.3
73	South Africa	18.1	147	Ghana	0.2
74	Bahrain	18.1	148	Haiti ¹	0.2

SOURCE: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)¹ 2004 ² 2009 ³ 2010 ⁴ 2011

3.04 Secure Internet servers

Secure Internet servers per million population | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Iceland.....	3,139.3	75	Cape Verde.....	24.3
2	Netherlands.....	2,803.7	76	Ukraine.....	23.5
3	Korea, Rep.....	2,751.6	77	Moldova.....	23.0
4	Switzerland.....	2,282.2	78	Dominican Republic.....	23.0
5	Denmark.....	2,214.3	79	Ecuador.....	22.1
6	Luxembourg.....	1,983.3	80	Peru.....	21.7
7	Norway.....	1,878.9	81	El Salvador.....	20.6
8	Australia.....	1,724.5	82	Namibia.....	19.9
9	Malta.....	1,627.8	83	Thailand.....	19.6
10	Finland.....	1,612.6	84	Mongolia.....	19.3
11	Sweden.....	1,511.9	85	Albania.....	19.0
12	United Kingdom.....	1,478.3	86	Guatemala.....	14.1
13	United States.....	1,474.1	87	Tunisia.....	13.1
14	New Zealand.....	1,466.0	88	Bhutan.....	12.1
15	Canada.....	1,233.4	89	Botswana.....	11.5
16	Austria.....	1,134.7	90	Gabon.....	11.0
17	Seychelles.....	1,127.8	91	Paraguay.....	10.9
18	Germany.....	1,090.9	92	Venezuela.....	10.7
19	Ireland.....	1,003.1	93	Nicaragua.....	10.3
20	Cyprus.....	786.5	94	Bolivia.....	9.7
21	Japan.....	750.0	95	Honduras.....	9.5
22	Belgium.....	673.6	96	Philippines.....	8.6
23	Estonia.....	660.0	97	Sri Lanka.....	7.7
24	Hong Kong SAR.....	636.7	98	Kazakhstan.....	7.4
25	Singapore.....	635.3	99	Vietnam.....	6.7
26	Slovenia.....	556.8	100	Swaziland.....	6.5
27	Czech Republic.....	518.6	101	Azerbaijan.....	6.5
28	France.....	409.0	102	Guyana.....	6.3
29	Israel.....	396.4	103	Kenya.....	4.2
30	Barbados.....	374.3	104	Kyrgyz Republic.....	4.1
31	Poland.....	299.6	105	Indonesia.....	3.9
32	Spain.....	294.4	106	Gambia, The.....	3.9
33	Latvia.....	274.5	107	Egypt.....	3.7
34	Lithuania.....	273.0	108	India.....	3.6
35	Hungary.....	247.2	109	Morocco.....	3.6
36	Croatia.....	245.1	110	Angola.....	3.5
37	Portugal.....	240.9	111	China.....	3.1
38	Slovak Republic.....	226.2	112	Zimbabwe.....	3.0
39	Italy.....	208.1	113	Cambodia.....	3.0
40	United Arab Emirates.....	183.7	114	Ghana.....	3.0
41	Kuwait.....	179.0	115	Timor-Leste ²	2.6
42	Greece.....	168.3	116	Nepal.....	2.5
43	Bulgaria.....	164.1	117	Zambia.....	2.3
44	Qatar.....	140.9	118	Senegal.....	2.1
45	Bahrain.....	135.8	119	Rwanda.....	2.0
46	Mauritius.....	134.7	120	Mauritania.....	1.8
47	Panama.....	133.9	121	Libya.....	1.8
48	Turkey.....	116.8	122	Nigeria.....	1.7
49	Puerto Rico.....	112.9	123	Haiti.....	1.7
50	Brunei Darussalam.....	111.6	124	Mozambique.....	1.5
51	Trinidad and Tobago.....	96.5	125	Côte d'Ivoire.....	1.5
52	Costa Rica.....	94.9	126	Uganda.....	1.5
53	South Africa.....	83.7	127	Iran, Islamic Rep.....	1.3
54	Chile.....	82.2	128	Algeria.....	1.3
55	Uruguay.....	80.4	129	Pakistan.....	1.3
56	Romania.....	66.6	130	Cameroon.....	1.2
57	Malaysia.....	65.7	131	Liberia.....	1.2
58	Oman.....	56.1	132	Mali.....	1.0
59	Brazil.....	54.3	133	Lao PDR.....	0.9
60	Jamaica.....	51.3	134	Malawi.....	0.9
61	Lebanon.....	48.6	135	Tanzania.....	0.8
62	Argentina.....	41.8	136	Bangladesh.....	0.7
63	Macedonia, FYR.....	39.4	137	Benin.....	0.7
64	Russian Federation.....	38.9	138	Sierra Leone.....	0.7
65	Serbia.....	37.7	139	Burkina Faso.....	0.6
66	Suriname.....	37.4	140	Madagascar.....	0.5
67	Montenegro.....	30.6	141	Lesotho ¹	0.5
68	Saudi Arabia.....	30.5	142	Yemen.....	0.5
69	Jordan.....	29.3	143	Guinea.....	0.4
70	Colombia.....	28.4	144	Burundi.....	0.3
71	Mexico.....	28.1	145	Ethiopia.....	0.2
72	Armenia.....	26.9	146	Myanmar.....	0.1
73	Georgia.....	25.9	n/a	Chad.....	n/a
74	Bosnia and Herzegovina.....	25.8	n/a	Taiwan, China.....	n/a

SOURCES: The World Bank, *World Development Indicators Online* (December 2013 edition); national sources

¹ 2010 ² 2011

3.05 Accessibility of digital content*

In your country, how available is digital content via multiple platforms (e.g., fixed-line Internet, wireless Internet, mobile network, satellite)?
[1 = not available at all; 7 = widely available] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.9	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.9	7
1	Iceland	6.6				75	Oman	5.1			
2	Finland	6.5				76	Mauritius	5.0			
3	Norway	6.4				77	Lao PDR	5.0			
4	United Kingdom	6.4				78	Kyrgyz Republic	4.9			
5	Netherlands	6.4				79	Kenya	4.9			
6	Estonia	6.4				80	Indonesia	4.9			
7	Switzerland	6.4				81	Gambia, The	4.9			
8	Luxembourg	6.4				82	Thailand	4.8			
9	Singapore	6.3				83	Seychelles	4.8			
10	Hong Kong SAR	6.3				84	India	4.8			
11	Malta	6.3				85	El Salvador	4.8			
12	Sweden	6.2				86	Cambodia	4.8			
13	Japan	6.2				87	South Africa	4.8			
14	Korea, Rep.	6.2				88	Argentina	4.7			
15	Austria	6.2				89	Egypt	4.7			
16	Taiwan, China	6.2				90	Bhutan	4.7			
17	United States	6.2				91	Colombia	4.7			
18	Qatar	6.2				92	Brazil	4.7			
19	Czech Republic	6.1				93	Pakistan	4.7			
20	United Arab Emirates	6.1				94	Mexico	4.7			
21	Canada	6.1				95	Sri Lanka	4.6			
22	Australia	6.1				96	Senegal	4.6			
23	Lithuania	6.1				97	Ecuador	4.6			
24	Hungary	6.1				98	Italy	4.6			
25	Germany	6.1				99	Morocco	4.5			
26	Belgium	6.0				100	Venezuela	4.5			
27	Portugal	6.0				101	Serbia	4.5			
28	Barbados	6.0				102	Nigeria	4.5			
29	Denmark	6.0				103	Botswana	4.5			
30	Puerto Rico	5.9				104	Cape Verde	4.5			
31	Latvia	5.9				105	Rwanda	4.5			
32	New Zealand	5.9				106	Namibia	4.5			
33	Slovenia	5.9				107	Honduras	4.5			
34	Spain	5.8				108	Peru	4.4			
35	Slovak Republic	5.8				109	Paraguay	4.4			
36	Bosnia and Herzegovina	5.8				110	Tunisia	4.3			
37	Israel	5.7				111	Zambia	4.3			
38	Bahrain	5.7				112	Zimbabwe	4.2			
39	Saudi Arabia	5.6				113	Nicaragua	4.2			
40	Cyprus	5.6				114	Ghana	4.2			
41	France	5.6				115	Lebanon	4.2			
42	Croatia	5.6				116	Albania	4.1			
43	Ukraine	5.5				117	Bangladesh	4.0			
44	Malaysia	5.5				118	Nepal	4.0			
45	Uruguay	5.5				119	Malawi	4.0			
46	Chile	5.5				120	Suriname	3.9			
47	Costa Rica	5.5				121	Myanmar	3.9			
48	Brunei Darussalam	5.5				122	Swaziland	3.9			
49	Ireland	5.4				123	Iran, Islamic Rep.	3.9			
50	Azerbaijan	5.4				124	Yemen	3.8			
51	Kuwait	5.4				125	Mozambique	3.8			
52	Moldova	5.4				126	Mauritania	3.8			
53	Macedonia, FYR	5.4				127	Madagascar	3.8			
54	Jordan	5.3				128	Lesotho	3.7			
55	Romania	5.3				129	Cameroon	3.7			
56	Jamaica	5.3				130	Bolivia	3.7			
57	Montenegro	5.3				131	Côte d'Ivoire	3.7			
58	Panama	5.3				132	Mali	3.7			
59	Kazakhstan	5.3				133	Uganda	3.6			
60	Dominican Republic	5.3				134	Tanzania	3.6			
61	Vietnam	5.3				135	Angola	3.5			
62	Trinidad and Tobago	5.3				136	Liberia	3.5			
63	Turkey	5.3				137	Sierra Leone	3.5			
64	Armenia	5.3				138	Haiti	3.5			
65	Bulgaria	5.2				139	Libya	3.4			
66	Russian Federation	5.2				140	Timor-Leste	3.3			
67	China	5.2				141	Benin	3.2			
68	Guyana	5.1				142	Ethiopia	3.1			
69	Greece	5.1				143	Gabon	3.0			
70	Poland	5.1				144	Algeria	3.0			
71	Georgia	5.1				145	Guinea	2.7			
72	Mongolia	5.1				146	Burundi	2.6			
73	Philippines	5.1				147	Burkina Faso	2.6			
74	Guatemala	5.1				148	Chad	2.5			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

4th pillar Affordability

4.01 Prepaid mobile cellular tariffs

Average per-minute cost of different types of mobile cellular calls (PPP \$) | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Liberia ³	0.00	75	El Salvador ³	0.26
2	Sierra Leone ³	0.00	76	Mozambique	0.26
3	Hong Kong SAR	0.02	77	Venezuela	0.26
4	Sri Lanka	0.04	78	Hungary	0.27
5	Bangladesh	0.04	79	Colombia	0.27
6	Ukraine	0.04	80	United States	0.27
7	India	0.04	81	Angola	0.28
8	Egypt	0.05	82	Moldova	0.29
9	Jordan	0.05	83	Philippines	0.29
10	Pakistan	0.06	84	Slovenia	0.29
11	Denmark	0.06	85	Portugal	0.29
12	Nepal	0.07	86	Peru	0.30
13	China	0.07	87	Côte d'Ivoire	0.30
14	Finland	0.07	88	Bosnia and Herzegovina	0.31
15	Georgia	0.08	89	Israel ³	0.31
16	Sweden	0.08	90	Taiwan, China ³	0.32
17	Kazakhstan	0.08	91	Senegal	0.32
18	Ghana	0.08	92	Tanzania	0.32
19	United Arab Emirates ³	0.08	93	Canada	0.33
20	Austria	0.08	94	Tunisia	0.33
21	Kenya	0.09	95	Rwanda ³	0.33
22	Costa Rica	0.09	96	Trinidad and Tobago	0.34
23	Vietnam	0.09	97	Lebanon	0.34
24	Mongolia	0.10	98	Chile	0.34
25	Norway	0.10	99	Estonia	0.34
26	Australia	0.10	100	Burkina Faso	0.34
27	Germany	0.11	101	Uruguay	0.35
28	Ethiopia	0.11	102	Gambia, The ³	0.35
29	Cyprus	0.12	103	Cameroon ³	0.35
30	Thailand	0.12	104	Ecuador ³	0.36
31	Guyana	0.12	105	Mauritania	0.36
32	Bahrain ³	0.13	106	Netherlands	0.36
33	Iceland	0.13	107	Honduras ³	0.36
34	Russian Federation	0.14	108	Mali	0.36
35	Kuwait ³	0.14	109	Swaziland	0.37
36	Guinea ²	0.14	110	Morocco	0.38
37	Qatar ³	0.14	111	Brunei Darussalam	0.38
38	Bhutan	0.14	112	Malawi	0.39
39	Korea, Rep.	0.14	113	Japan	0.40
40	Spain	0.14	114	Guatemala	0.41
41	Kyrgyz Republic ³	0.15	115	Timor-Leste ³	0.42
42	Italy	0.15	116	Dominican Republic	0.42
43	Yemen	0.15	117	Zambia ³	0.43
44	Oman ³	0.16	118	Czech Republic	0.43
45	Indonesia	0.16	119	Switzerland	0.43
46	Singapore	0.16	120	Albania	0.44
47	Zimbabwe ³	0.16	121	Gabon	0.46
48	Malaysia	0.17	122	Cape Verde	0.46
49	Algeria	0.18	123	Lesotho	0.46
50	Mauritius	0.18	124	France	0.47
51	Nigeria	0.18	125	Botswana	0.47
52	Saudi Arabia	0.18	126	Bolivia	0.51
53	Suriname	0.18	127	Montenegro	0.51
54	Haiti	0.18	128	South Africa	0.51
55	Cambodia	0.19	129	Mexico	0.52
56	Poland	0.19	130	Madagascar	0.53
57	Lithuania	0.20	131	United Kingdom	0.53
58	Turkey	0.21	132	Malta	0.54
59	Lao PDR ³	0.21	133	Romania	0.54
60	Macedonia, FYR	0.21	134	Ireland	0.55
61	Iran, Islamic Rep. ¹	0.21	135	Belgium	0.59
62	Paraguay	0.22	136	Barbados	0.59
63	Armenia	0.22	137	Greece	0.61
64	Latvia	0.22	138	New Zealand	0.62
65	Azerbaijan	0.22	139	Seychelles	0.62
66	Panama	0.22	140	Brazil	0.65
67	Uganda	0.23	141	Argentina	0.77
68	Serbia	0.23	142	Bulgaria	0.82
69	Jamaica	0.23	143	Chad ³	0.88
70	Namibia	0.24	144	Nicaragua	0.91
71	Croatia	0.24	n/a	Burundi	n/a
72	Benin	0.24	n/a	Libya	n/a
73	Slovak Republic	0.25	n/a	Myanmar	n/a
74	Luxembourg	0.25	n/a	Puerto Rico	n/a

SOURCES: Author's calculations based on International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition); International Monetary Fund, *World Economic Outlook* (October 2013 edition); World Bank, *World Development Indicators* (December 2013 edition)

1 2009 2 2010 3 2011

4.02 Fixed broadband Internet tariffs

Monthly subscription charge for fixed (wired) broadband Internet service (PPP \$) | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Sri Lanka	8.22	75	Canada	32.57
2	Israel ³	8.39	76	Paraguay	32.63
3	Bangladesh	10.37	77	Norway	33.89
4	India	13.45	78	Portugal	33.97
5	Mongolia	14.01	79	Argentina	33.99
6	Ukraine	14.17	80	Uganda	34.25
7	Tunisia	14.42	81	Spain	34.63
8	Kazakhstan	14.60	82	Malaysia	34.65
9	Nepal	14.72	83	Honduras	34.71
10	United States	14.95	84	China	35.44
11	Egypt	15.09	85	Singapore	35.55
12	Uruguay	15.22	86	Thailand	35.81
13	Romania	15.74	87	Austria	35.98
14	Brazil	15.77	88	Korea, Rep.	36.31
15	Bosnia and Herzegovina	15.85	89	Montenegro	36.65
16	Venezuela	16.04	90	Chile	37.16
17	Russian Federation	16.29	91	South Africa	37.25
18	Azerbaijan	17.99	92	Germany	37.93
19	Trinidad and Tobago	18.71	93	Slovak Republic	38.16
20	Lithuania	19.13	94	Suriname	38.59
21	United Kingdom	19.68	95	Philippines	39.32
22	Latvia	19.73	96	Dominican Republic	39.51
23	Japan	20.01	97	Serbia	40.27
24	Turkey	20.02	98	Cape Verde	40.41
25	Georgia	20.15	99	Ecuador ³	41.06
26	Moldova	20.47	100	Gabon	41.15
27	Morocco	20.64	101	Australia	41.30
28	Algeria	20.94	102	Slovenia	41.73
29	Mauritius	21.32	103	United Arab Emirates ³	41.77
30	Kuwait ³	21.37	104	Ghana	45.42
31	Costa Rica	21.59	105	Jamaica	47.09
32	Zimbabwe	21.93	106	Nicaragua	48.29
33	Bulgaria	22.36	107	Hungary	48.58
34	Vietnam	22.79	108	Mauritania	48.94
35	Guyana	22.82	109	Tanzania	49.03
36	Jordan	22.95	110	Saudi Arabia	49.34
37	Panama	23.92	111	Bolivia	49.63
38	Cyprus	23.92	112	Qatar ³	49.90
39	Yemen	24.08	113	New Zealand	51.86
40	Switzerland	24.48	114	Ethiopia	55.23
41	France	24.50	115	Angola	57.22
42	Malta	24.81	116	Cambodia	61.54
43	Greece	25.15	117	Côte d'Ivoire	63.17
44	Bhutan	25.66	118	Zambia ³	64.14
45	Colombia	25.85	119	Kenya	65.18
46	Italy	25.91	120	Nigeria	65.58
47	Taiwan, China	26.05	121	Senegal	65.73
48	Albania	26.05	122	Brunei Darussalam	66.38
49	Lebanon	26.07	123	Libya ¹	66.89
50	Iceland	26.18	124	Iran, Islamic Rep. ¹	69.52
51	Croatia	26.19	125	Sierra Leone ¹	70.50
52	Chad ²	26.28	126	Haiti	72.32
53	Sweden	27.57	127	Namibia	78.18
54	Armenia	28.13	128	Mali	79.59
55	Bahrain ³	28.21	129	Barbados	80.33
56	Indonesia	28.48	130	Malawi	84.90
57	Mexico	28.53	131	Burkina Faso	101.12
58	Finland	28.94	132	Benin	101.41
59	Oman ³	29.01	133	Mozambique	106.78
60	El Salvador ³	29.02	134	Myanmar	108.18
61	Estonia	29.07	135	Cameroon	112.53
62	Pakistan	29.20	136	Swaziland	113.67
63	Czech Republic	29.20	137	Botswana	114.48
64	Belgium	29.39	138	Kyrgyz Republic ³	114.69
65	Peru	29.78	139	Lesotho	122.24
66	Hong Kong SAR	30.08	140	Madagascar	126.42
67	Seychelles	30.53	141	Timor-Leste ³	172.26
68	Ireland	30.56	142	Lao PDR ³	209.78
69	Netherlands	30.65	143	Rwanda	398.83
70	Guatemala	30.78	144	Gambia, The ³	986.58
71	Poland	31.60	145	Guinea ²	2,049.86
72	Luxembourg	31.70	n/a	Burundi	n/a
73	Denmark	32.19	n/a	Liberia	n/a
74	Macedonia, FYR	32.42	n/a	Puerto Rico	n/a

SOURCES: Author's calculations based on International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition); International Monetary Fund, *World Economic Outlook* (October 2013 edition); World Bank, *World Development Indicators* (December 2013 edition)

¹ 2009 ² 2010 ³ 2011

4.03 Internet and telephony sectors competition index

Level of competition index for Internet services, international long distance services, and mobile telephone services on a 0-to-2 (best) scale | 2010 or most recent

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Argentina ¹	2.00	74	Ukraine ¹⁹	1.86
1	Australia ⁵	2.00	76	United Kingdom ¹⁶	1.85
1	Austria ⁶	2.00	77	Cape Verde ¹⁷	1.83
1	Belgium ¹⁹	2.00	78	Slovak Republic ¹⁹	1.82
1	Brazil ⁶	2.00	79	Thailand ¹⁷	1.82
1	Burkina Faso ¹⁹	2.00	80	Greece ⁸	1.80
1	Canada ⁶	2.00	81	Zimbabwe ⁸	1.79
1	Chile ¹⁶	2.00	82	Latvia ¹⁰	1.77
1	Colombia ¹⁹	2.00	82	Poland ¹⁶	1.77
1	Croatia ¹⁹	2.00	84	Indonesia ¹⁶	1.76
1	Dominican Republic ¹⁹	2.00	84	Israel ¹⁹	1.76
1	Ecuador ¹⁶	2.00	84	Senegal ¹⁹	1.76
1	Estonia ¹⁶	2.00	87	Korea, Rep. ¹⁶	1.75
1	Finland ¹⁹	2.00	87	Liberia ¹⁶	1.75
1	France ⁶	2.00	89	Ghana ¹⁹	1.67
1	Georgia ⁷	2.00	89	Italy ¹⁶	1.67
1	Germany ⁴	2.00	91	Guinea ¹⁶	1.65
1	Guatemala ⁴	2.00	92	Albania ¹⁶	1.64
1	Haiti ¹⁷	2.00	93	Zambia ¹⁷	1.64
1	Honduras ³	2.00	94	Costa Rica ¹⁵	1.63
1	Hong Kong SAR ³	2.00	95	Mongolia ¹⁸	1.56
1	Iceland ⁶	2.00	96	Burundi ⁵	1.54
1	India ⁶	2.00	97	New Zealand ¹	1.53
1	Ireland ⁶	2.00	98	Chad ¹⁶	1.50
1	Japan ¹⁹	2.00	98	Russian Federation ¹⁶	1.50
1	Kenya ¹¹	2.00	100	Namibia ¹⁹	1.43
1	Kyrgyz Republic ¹⁶	2.00	101	Nepal ¹⁹	1.41
1	Lesotho ¹⁴	2.00	102	Azerbaijan ¹⁶	1.40
1	Luxembourg ⁵	2.00	103	Egypt ¹⁶	1.36
1	Madagascar ¹⁶	2.00	104	Algeria ¹⁶	1.33
1	Malaysia ⁶	2.00	104	Angola ¹⁶	1.33
1	Malta ¹⁰	2.00	104	Bhutan ¹⁶	1.33
1	Mauritania ¹¹	2.00	104	Bulgaria ¹⁹	1.33
1	Mauritius ¹⁰	2.00	104	Saudi Arabia ¹⁹	1.33
1	Mexico ⁴	2.00	109	Cyprus ¹⁹	1.31
1	Moldova ¹⁹	2.00	110	China ¹⁷	1.29
1	Montenegro ¹¹	2.00	110	Iran, Islamic Rep. ¹⁶	1.29
1	Morocco ¹⁹	2.00	112	Botswana ¹⁹	1.27
1	Netherlands ⁵	2.00	113	Armenia ¹⁶	1.25
1	Nigeria ⁴	2.00	113	Bangladesh ¹⁹	1.25
1	Norway ¹⁶	2.00	115	Gabon ¹⁹	1.23
1	Pakistan ¹⁰	2.00	116	Cameroon ¹⁶	1.22
1	Panama ¹⁹	2.00	116	Côte d'Ivoire ¹⁹	1.22
1	Paraguay ⁴	2.00	118	Barbados ¹⁶	1.20
1	Peru ¹⁹	2.00	118	Mali ¹⁶	1.20
1	Philippines ¹⁶	2.00	120	Suriname ¹⁹	1.18
1	Portugal ¹⁹	2.00	121	Mozambique ¹⁶	1.17
1	Romania ¹⁰	2.00	122	Gambia, The ¹⁶	1.13
1	Serbia ¹⁹	2.00	122	Malawi ¹⁶	1.13
1	Singapore ⁷	2.00	124	Seychelles ¹⁹	1.08
1	Slovenia ¹¹	2.00	125	South Africa ¹⁶	1.07
1	Spain ¹⁹	2.00	126	Trinidad and Tobago ¹⁹	1.00
1	Sweden ¹⁶	2.00	126	United Arab Emirates ¹⁷	1.00
1	Switzerland ⁶	2.00	128	Qatar ¹⁹	0.93
1	Taiwan, China ¹⁹	2.00	129	Sierra Leone ¹⁶	0.92
1	Turkey ⁹	2.00	130	Lao PDR ¹⁶	0.91
1	Uganda ¹³	2.00	130	Macedonia, FYR ¹⁶	0.91
1	United States ¹⁹	2.00	130	Tanzania ¹⁶	0.91
1	Venezuela ⁷	2.00	133	Sri Lanka ¹⁶	0.88
60	Jordan ¹²	1.94	134	Brunei Darussalam ¹⁶	0.88
61	Jamaica ¹⁹	1.93	135	Tunisia ¹⁹	0.82
62	Rwanda ¹⁶	1.93	136	Bolivia ¹⁶	0.80
63	Bahrain ¹¹	1.92	137	Uruguay ¹⁶	0.75
63	Lithuania ¹⁶	1.92	138	Lebanon ¹⁹	0.55
65	Cambodia ¹⁷	1.88	139	Benin ¹⁷	0.50
65	Denmark ¹⁶	1.88	139	Guyana ¹⁶	0.50
65	Nicaragua ³	1.88	141	Yemen ¹⁶	0.36
68	Hungary ²	1.88	142	Kuwait ¹⁶	0.25
69	Czech Republic ¹⁹	1.87	143	Swaziland ¹⁹	0.08
69	El Salvador ¹⁹	1.87	144	Ethiopia ¹⁹	0.00
69	Kazakhstan ⁹	1.87	144	Libya ¹⁶	0.00
69	Oman ¹⁵	1.87	144	Myanmar ¹⁹	0.00
69	Vietnam ¹⁹	1.87	n/a	Puerto Rico	n/a
74	Bosnia and Herzegovina ⁹	1.86	n/a	Timor-Leste	n/a

SOURCE: Authors' calculations based on International Telecommunication Union (ITU), *ITU World Telecommunication Regulatory Database* (accessed December 2013).

¹ 1990 ² 1992 ³ 1995 ⁴ 1996 ⁵ 1997 ⁶ 1998 ⁷ 2000 ⁸ 2001 ⁹ 2002 ¹⁰ 2003 ¹¹ 2004 ¹² 2005 ¹³ 2006 ¹⁴ 2008 ¹⁵ 2009 ¹⁶ 2010 ¹⁷ 2011 ¹⁸ 2011* ¹⁹ 20

5th pillar Skills

5.01 Quality of the educational system*

How well does the educational system in your country meet the needs of a competitive economy? [1 = not well at all; 7 = extremely well] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	3.7	7	RANK	COUNTRY/ECONOMY	VALUE	1	3.7	7
1	Switzerland	6.0				75	Panama	3.6			
2	Finland	5.9				76	Cambodia	3.6			
3	Singapore	5.8				77	Spain	3.6			
4	Qatar	5.8				78	Thailand	3.6			
5	Ireland	5.5				79	Ukraine	3.6			
6	Barbados	5.3				80	Senegal	3.5			
7	Belgium	5.3				81	Swaziland	3.5			
8	Malta	5.3				82	Uganda	3.5			
9	Cyprus	5.3				83	Côte d'Ivoire	3.5			
10	Canada	5.2				84	Pakistan	3.5			
11	New Zealand	5.2				85	Russian Federation	3.5			
12	Netherlands	5.2				86	Colombia	3.5			
13	Lebanon	5.2				87	Poland	3.4			
14	Germany	5.1				88	Kazakhstan	3.4			
15	United Arab Emirates	5.1				89	Bolivia	3.4			
16	Iceland	5.1				90	Bulgaria	3.4			
17	Sweden	5.0				91	Turkey	3.4			
18	Norway	5.0				92	Malawi	3.4			
19	Malaysia	5.0				93	Hungary	3.4			
20	Costa Rica	4.9				94	Nepal	3.4			
21	Denmark	4.9				95	Vietnam	3.4			
22	Hong Kong SAR	4.8				96	Liberia	3.4			
23	Australia	4.8				97	Croatia	3.4			
24	Austria	4.8				98	Bangladesh	3.3			
25	United States	4.6				99	Romania	3.3			
26	United Kingdom	4.6				100	Tanzania	3.2			
27	Jordan	4.6				101	Benin	3.2			
28	Sri Lanka	4.6				102	Suriname	3.2			
29	Gambia, The	4.5				103	Iran, Islamic Rep.	3.2			
30	Taiwan, China	4.5				104	Argentina	3.2			
31	Seychelles	4.4				105	Georgia	3.2			
32	Brunei Darussalam	4.4				106	Kuwait	3.1			
33	India	4.4				107	Nicaragua	3.1			
34	Luxembourg	4.4				108	Ethiopia	3.1			
35	Montenegro	4.4				109	El Salvador	3.1			
36	Indonesia	4.3				110	Morocco	3.1			
37	Mauritius	4.3				111	Serbia	3.1			
38	Zambia	4.3				112	Greece	3.1			
39	Saudi Arabia	4.3				113	Nigeria	3.1			
40	Philippines	4.3				114	Azerbaijan	3.1			
41	Bhutan	4.3				115	Moldova	3.0			
42	Zimbabwe	4.3				116	Sierra Leone	3.0			
43	France	4.2				117	Madagascar	3.0			
44	Kenya	4.2				118	Namibia	3.0			
45	Trinidad and Tobago	4.2				119	Mexico	3.0			
46	Ghana	4.2				120	Uruguay	3.0			
47	Estonia	4.1				121	Brazil	3.0			
48	Bahrain	4.1				122	Mali	2.9			
49	Guyana	4.1				123	Kyrgyz Republic	2.7			
50	Japan	4.1				124	Timor-Leste	2.7			
51	Rwanda	4.1				125	Myanmar	2.7			
52	Albania	4.0				126	Gabon	2.7			
53	Oman	4.0				127	Burkina Faso	2.7			
54	China	4.0				128	Venezuela	2.7			
55	Slovenia	4.0				129	Mozambique	2.7			
56	Israel	4.0				130	Slovak Republic	2.7			
57	Lao PDR	4.0				131	Chad	2.7			
58	Portugal	4.0				132	Bosnia and Herzegovina	2.7			
59	Lithuania	4.0				133	Algeria	2.7			
60	Cameroon	3.9				134	Peru	2.7			
61	Cape Verde	3.9				135	Guatemala	2.6			
62	Ecuador	3.8				136	Mauritania	2.6			
63	Puerto Rico	3.8				137	Mongolia	2.6			
64	Korea, Rep.	3.8				138	Paraguay	2.6			
65	Botswana	3.7				139	Guinea	2.6			
66	Jamaica	3.7				140	Dominican Republic	2.5			
67	Czech Republic	3.7				141	Honduras	2.4			
68	Latvia	3.7				142	Haiti	2.3			
69	Armenia	3.7				143	Burundi	2.3			
70	Macedonia, FYR	3.7				144	Angola	2.2			
71	Tunisia	3.7				145	Egypt	2.2			
72	Italy	3.6				146	South Africa	2.1			
73	Lesotho	3.6				147	Yemen	2.0			
74	Chile	3.6				148	Libya	1.9			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

5.02 Quality of math and science education*

In your country, how would you assess the quality of math and science education in schools? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.0	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.0	7
1	Singapore	6.3				75	Kazakhstan	4.1			
2	Finland	6.3				76	Zambia	4.0			
3	Belgium	6.0				77	Bahrain	4.0			
4	Lebanon	5.8				78	Israel	4.0			
5	Switzerland	5.8				79	Senegal	4.0			
6	Qatar	5.6				80	Thailand	4.0			
7	Cyprus	5.6				81	Suriname	4.0			
8	Malta	5.5				82	Madagascar	4.0			
9	Barbados	5.5				83	Czech Republic	4.0			
10	Hong Kong SAR	5.5				84	Ecuador	4.0			
11	Taiwan, China	5.4				85	Vietnam	3.9			
12	New Zealand	5.4				86	Slovak Republic	3.9			
13	Bosnia and Herzegovina	5.4				87	Oman	3.9			
14	Netherlands	5.3				88	Spain	3.9			
15	France	5.2				89	Nepal	3.8			
16	Lithuania	5.2				90	Lao PDR	3.8			
17	Canada	5.2				91	Swaziland	3.8			
18	Slovenia	5.1				92	Botswana	3.8			
19	United Arab Emirates	5.1				93	Puerto Rico	3.8			
20	Korea, Rep.	5.1				94	Gambia, The	3.8			
21	Germany	5.1				95	Kenya	3.8			
22	Croatia	5.0				96	Philippines	3.7			
23	Montenegro	4.9				97	Burkina Faso	3.7			
24	Iceland	4.9				98	Bolivia	3.6			
25	Ireland	4.9				99	Kuwait	3.6			
26	Estonia	4.9				100	Cape Verde	3.5			
27	Malaysia	4.9				101	Turkey	3.5			
28	Ukraine	4.8				102	Cambodia	3.5			
29	Brunei Darussalam	4.8				103	Burundi	3.4			
30	Jordan	4.8				104	Pakistan	3.4			
31	Tunisia	4.7				105	Lesotho	3.4			
32	India	4.7				106	Georgia	3.4			
33	Latvia	4.7				107	Chile	3.4			
34	Japan	4.7				108	Colombia	3.4			
35	Indonesia	4.7				109	Ethiopia	3.4			
36	Trinidad and Tobago	4.6				110	Azerbaijan	3.3			
37	Australia	4.6				111	Guinea	3.3			
38	Hungary	4.6				112	Bangladesh	3.3			
39	Austria	4.6				113	Malawi	3.2			
40	Iran, Islamic Rep.	4.6				114	Panama	3.2			
41	Sweden	4.6				115	Jamaica	3.2			
42	Denmark	4.5				116	Argentina	3.2			
43	Mauritius	4.5				117	Nigeria	3.1			
44	Luxembourg	4.5				118	Nicaragua	3.1			
45	Costa Rica	4.5				119	Uganda	3.1			
46	Sri Lanka	4.5				120	Haiti	3.0			
47	Norway	4.4				121	Gabon	3.0			
48	China	4.4				122	Kyrgyz Republic	3.0			
49	United States	4.4				123	Venezuela	2.9			
50	United Kingdom	4.4				124	Uruguay	2.9			
51	Macedonia, FYR	4.4				125	Liberia	2.9			
52	Morocco	4.3				126	Mali	2.9			
53	Guyana	4.3				127	Chad	2.9			
54	Albania	4.3				128	Namibia	2.9			
55	Serbia	4.3				129	El Salvador	2.8			
56	Russian Federation	4.3				130	Libya	2.7			
57	Romania	4.3				131	Mexico	2.7			
58	Greece	4.3				132	Algeria	2.7			
59	Bulgaria	4.3				133	Mauritania	2.7			
60	Côte d'Ivoire	4.3				134	Myanmar	2.7			
61	Italy	4.3				135	Sierra Leone	2.6			
62	Ghana	4.2				136	Brazil	2.6			
63	Zimbabwe	4.2				137	Mozambique	2.6			
64	Saudi Arabia	4.2				138	Tanzania	2.5			
65	Seychelles	4.2				139	Guatemala	2.4			
66	Benin	4.2				140	Peru	2.4			
67	Armenia	4.2				141	Timor-Leste	2.3			
68	Mongolia	4.1				142	Paraguay	2.3			
69	Poland	4.1				143	Yemen	2.3			
70	Rwanda	4.1				144	Honduras	2.2			
71	Bhutan	4.1				145	Egypt	2.2			
72	Cameroon	4.1				146	Dominican Republic	2.2			
73	Portugal	4.1				147	Angola	2.1			
74	Moldova	4.1				148	South Africa	1.9			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

5.03 Secondary enrollment rate

Secondary education gross enrollment rate (%) | 2011

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Australia.....	133.0	75	Bosnia and Herzegovina.....	89.3
2	Spain.....	128.5	76	Jordan.....	89.1
3	Netherlands.....	128.4	77	Turkey.....	88.9
4	New Zealand.....	119.8	78	Kyrgyz Republic.....	88.2
5	Denmark ⁷	119.5	79	Thailand ⁸	87.0
6	Ireland.....	117.8	80	Ecuador ⁸	86.8
7	Saudi Arabia ⁸	114.3	81	Georgia ⁶	86.8
8	Norway.....	113.0	82	China.....	86.6
9	Qatar.....	111.6	83	Iran, Islamic Rep. ⁸	86.3
10	Greece ⁷	110.8	84	Venezuela ⁸	85.4
11	France.....	109.9	85	Suriname.....	85.4
12	Portugal ⁷	109.7	86	Russian Federation ⁶	84.9
13	Estonia ⁷	109.1	87	Philippines ⁶	84.6
14	Iceland.....	108.6	88	Mexico.....	84.1
15	Brunei Darussalam ⁸	107.8	89	Panama ⁸	84.0
16	Finland.....	107.5	90	Albania ⁸	82.4
17	Singapore.....	107.0	91	Macedonia, FYR ⁷	81.9
18	Lithuania.....	106.9	92	Botswana ⁸	81.7
19	Belgium.....	106.5	93	Indonesia.....	81.2
20	Brazil ²	105.8	94	Puerto Rico.....	78.3
21	Hong Kong SAR ⁸	105.6	95	Bolivia.....	77.3
22	Guyana.....	105.4	96	Vietnam ⁷	77.2
23	Barbados.....	104.7	97	Egypt ⁷	75.9
24	Libya ³	104.3	98	Dominican Republic.....	75.1
25	Mongolia ⁸	103.5	99	Moldova ⁸	74.6
26	Canada ⁷	102.3	100	Lebanon ⁸	74.0
27	Israel ⁷	101.9	101	Bhutan ⁸	73.9
28	South Africa ⁸	101.9	102	Honduras ⁸	73.1
29	Japan.....	101.8	103	Nicaragua ⁷	68.9
30	Germany.....	101.7	104	Morocco ⁸	68.9
31	Seychelles.....	101.3	105	India.....	68.5
32	Costa Rica.....	101.1	106	Paraguay ⁷	67.8
33	Luxembourg.....	101.0	107	El Salvador.....	67.2
34	Kuwait ⁵	101.0	108	Malaysia ⁷	66.9
35	Hungary.....	100.8	109	Nepal ⁸	65.8
36	Italy.....	100.7	110	Guatemala.....	65.1
37	Taiwan, China.....	100.0	111	Namibia ⁴	64.8
38	Azerbaijan.....	99.5	112	Kenya ⁶	60.1
39	Sri Lanka.....	99.1	113	Swaziland.....	59.9
40	Latvia.....	98.7	114	Ghana ⁸	58.2
41	Austria.....	98.0	115	Gambia, The ⁷	57.5
42	Croatia.....	98.0	116	Timor-Leste.....	56.6
43	Slovenia.....	97.9	117	Gabon ¹	53.9
44	Ukraine ⁸	97.8	118	Lesotho ⁸	51.7
45	Kazakhstan ⁸	97.7	119	Bangladesh.....	50.8
46	Algeria.....	97.6	120	Mali ⁸	50.6
47	United Kingdom.....	97.4	121	Cameroon ⁸	50.4
48	Poland.....	97.4	122	Myanmar ⁷	50.2
49	Sweden.....	96.9	123	Benin.....	47.7
50	Korea, Rep.....	96.7	124	Yemen ⁸	46.9
51	Switzerland.....	96.2	125	Lao PDR ⁸	46.5
52	Czech Republic.....	96.0	126	Zambia ⁵	45.6
53	Romania.....	96.0	127	Liberia.....	45.2
54	Armenia ⁸	95.9	128	Cambodia ⁵	45.0
55	Mauritius ⁸	95.9	129	Nigeria ⁷	43.8
56	Bahrain ⁸	95.5	130	Senegal.....	41.0
57	Malta.....	95.0	131	Guinea ⁸	38.8
58	Oman ⁸	94.2	132	Madagascar ⁸	38.0
59	United States.....	93.6	133	Zimbabwe ³	38.0
60	Slovak Republic.....	93.5	134	Ethiopia ⁸	37.2
61	Bulgaria.....	93.2	135	Pakistan ⁸	36.6
62	Cyprus.....	92.8	136	Sierra Leone.....	35.0
63	Colombia ⁸	92.8	137	Tanzania ⁸	35.0
64	Cape Verde ⁸	92.7	138	Malawi ⁸	34.2
65	Jamaica ⁷	92.7	139	Rwanda ⁸	31.8
66	United Arab Emirates ³	92.3	140	Angola.....	31.5
67	Serbia ⁸	91.7	141	Côte d'Ivoire ¹	28.9
68	Tunisia.....	91.1	142	Burundi ⁸	28.5
69	Montenegro ⁸	90.9	143	Uganda ⁸	27.6
70	Peru.....	90.7	144	Mauritania ⁸	26.8
71	Uruguay ⁷	90.3	145	Burkina Faso ⁸	25.9
72	Argentina ⁷	90.2	146	Mozambique ⁸	25.9
73	Trinidad and Tobago ⁸	89.9	147	Chad ⁸	22.8
74	Chile.....	89.9	n/a	Haiti.....	n/a

SOURCES: United Nations Education, Science and Culture Organization (UNESCO), UNESCO Institute for Statistics Data Centre (accessed November 5, 2013); World Bank, *World Development Indicators* (December 2013 edition); national sources

¹ 2002 ² 2005 ³ 2006 ⁴ 2007 ⁵ 2008 ⁶ 2009 ⁷ 2010 ⁸ 2012

5.04 Adult literacy rate

Adult literacy rate (%) | 2011

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Estonia.....	99.8	75	Malaysia ⁶	93.1
2	Latvia.....	99.8	76	South Africa.....	93.0
3	Azerbaijan ⁵	99.8	77	Indonesia.....	92.8
4	Georgia.....	99.7	78	Myanmar.....	92.7
5	Poland.....	99.7	79	Malta ¹	92.4
6	Ukraine.....	99.7	80	Bahrain ⁶	91.9
7	Lithuania.....	99.7	81	Seychelles.....	91.8
8	Slovenia.....	99.7	82	Ecuador.....	91.6
9	Kazakhstan ⁶	99.7	83	Sri Lanka ⁶	91.2
10	Russian Federation ⁶	99.6	84	Bolivia ⁵	91.2
11	Armenia.....	99.6	85	Brazil ⁶	90.4
12	Kyrgyz Republic ⁵	99.2	86	Puerto Rico.....	90.3
13	Hungary.....	99.0	87	Dominican Republic.....	90.1
14	Australia.....	99.0	88	United Arab Emirates ¹	90.0
14	Austria.....	99.0	89	Lesotho ⁶	89.6
14	Belgium.....	99.0	90	Lebanon ⁵	89.6
14	Canada.....	99.0	91	Peru ³	89.6
14	Czech Republic.....	99.0	92	Libya.....	89.5
14	Denmark.....	99.0	93	Gabon.....	89.0
14	Finland.....	99.0	94	Mauritius.....	88.8
14	France.....	99.0	95	Namibia ⁶	88.8
14	Germany.....	99.0	96	Swaziland.....	87.8
14	Hong Kong SAR.....	99.0	97	Kenya ⁶	87.4
14	Iceland.....	99.0	98	Saudi Arabia.....	87.2
14	Ireland.....	99.0	99	Jamaica.....	87.0
14	Israel.....	99.0	100	Oman ⁶	86.9
14	Japan.....	99.0	101	Honduras.....	85.1
14	Korea, Rep.....	99.0	102	Botswana.....	85.1
14	Luxembourg.....	99.0	103	Iran, Islamic Rep. ⁴	85.0
14	Netherlands.....	99.0	104	Guyana ⁵	85.0
14	New Zealand.....	99.0	105	Cape Verde.....	84.9
14	Norway.....	99.0	106	El Salvador ⁶	84.5
14	Slovak Republic.....	99.0	107	Zimbabwe.....	83.6
14	Sweden.....	99.0	108	Tunisia ⁶	79.1
14	Switzerland.....	99.0	109	Nicaragua ¹	78.0
14	United Kingdom.....	99.0	110	Guatemala.....	75.9
14	United States.....	99.0	111	Malawi ⁶	74.8
38	Italy.....	99.0	112	Cambodia ⁵	73.9
39	Moldova.....	99.0	113	Egypt ⁷	73.9
40	Croatia.....	98.9	114	Uganda ⁶	73.2
41	Trinidad and Tobago.....	98.8	115	Tanzania ⁶	73.2
42	Cyprus.....	98.7	116	Lao PDR ¹	72.7
43	Chile ⁵	98.6	117	Algeria ²	72.6
44	Montenegro.....	98.5	118	Cameroon ⁶	71.3
45	Taiwan, China ⁷	98.4	119	Zambia ⁶	71.2
46	Bulgaria.....	98.4	120	Rwanda ⁶	71.1
47	Uruguay ⁶	98.1	121	Angola.....	70.4
48	Serbia.....	98.0	122	Ghana ⁶	67.3
49	Bosnia and Herzegovina.....	98.0	123	Burundi ⁶	67.2
50	Argentina.....	97.9	124	Morocco.....	67.1
51	Spain ⁶	97.7	125	Yemen.....	65.3
52	Romania.....	97.7	126	Madagascar ⁵	64.5
53	Macedonia, FYR.....	97.4	127	India ²	62.8
54	Mongolia.....	97.4	128	Nigeria ⁶	61.3
55	Greece.....	97.3	129	Liberia ⁶	60.8
56	Albania.....	96.8	130	Mauritania.....	58.6
57	Qatar ⁶	96.3	131	Timor-Leste ⁶	58.3
58	Costa Rica.....	96.3	132	Bangladesh.....	57.7
59	Jordan.....	95.9	133	Nepal.....	57.4
60	Singapore ⁶	95.9	134	Côte d'Ivoire.....	56.9
61	Venezuela ⁵	95.5	135	Mozambique ⁶	56.1
62	Brunei Darussalam.....	95.4	136	Pakistan ⁵	54.9
63	Portugal.....	95.4	137	Bhutan ¹	52.8
64	Philippines ⁴	95.4	138	Gambia, The.....	51.1
65	Suriname ⁶	94.7	139	Senegal ⁵	49.7
66	China ⁶	94.3	140	Haiti ²	48.7
67	Turkey.....	94.1	141	Sierra Leone.....	43.3
68	Panama ⁶	94.1	142	Benin ⁶	42.4
69	Kuwait ⁴	93.9	143	Guinea ⁶	41.0
70	Paraguay ⁶	93.9	144	Ethiopia ³	39.0
71	Colombia.....	93.6	145	Chad.....	35.4
72	Mexico.....	93.5	146	Mali.....	33.4
73	Thailand ¹	93.5	147	Burkina Faso ³	28.7
74	Vietnam.....	93.4	n/a	Barbados.....	n/a

SOURCES: United Nations Education, Science and Culture Organization (UNESCO), UNESCO Institute for Statistics Data Centre (accessed November 5, 2013); national sources

¹ 2005 ² 2006 ³ 2007 ⁴ 2008 ⁵ 2009 ⁶ 2010 ⁷ 2012

6th pillar

Individual usage

6.01 Mobile telephone subscriptions

Mobile telephone subscriptions (post-paid and pre-paid) per 100 population | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Hong Kong SAR	229.2	75	Spain	108.4
2	Saudi Arabia	187.4	76	Iceland	108.1
3	Kazakhstan	185.8	77	Georgia	107.8
4	Russian Federation	182.9	78	Ireland	107.2
5	Montenegro	181.3	79	Philippines	106.5
6	Gabon	179.5	80	Suriname	106.5
7	Panama	178.0	81	Ecuador	106.2
8	Finland	172.3	82	Macedonia, FYR	106.2
9	Lithuania	165.1	83	Mauritania	106.0
10	Bahrain	161.2	84	Australia	105.6
11	Austria	160.5	85	Romania	105.0
12	Estonia	160.4	86	Colombia	102.9
13	Italy	159.8	87	Moldova	102.0
14	Oman	159.3	88	Venezuela	101.9
15	Kuwait	156.9	89	Paraguay	101.6
16	Libya	155.8	90	Ghana	101.0
17	Botswana	153.8	91	Cyprus	98.4
18	Singapore	152.1	92	Mali	98.4
19	Argentina	151.9	93	Peru	98.0
20	United Arab Emirates	149.6	94	Algeria	97.9
21	Bulgaria	148.1	95	France	97.4
22	Seychelles	147.8	96	Jamaica	96.3
23	Vietnam	147.7	97	United States	95.4
24	Uruguay	147.1	98	Namibia	95.0
25	Luxembourg	145.4	99	Honduras	92.9
26	Malaysia	141.3	100	Zimbabwe	91.9
27	Trinidad and Tobago	140.8	101	Sri Lanka	91.6
28	Poland	140.3	102	Turkey	91.5
29	Chile	138.2	103	Côte d'Ivoire	91.2
30	Guatemala	137.8	104	Bolivia	90.4
31	El Salvador	137.3	105	Bosnia and Herzegovina	87.6
32	United Kingdom	135.3	106	Dominican Republic	86.9
33	South Africa	130.6	107	Nicaragua	86.1
34	Ukraine	130.3	108	Cape Verde	86.0
35	Switzerland	130.2	109	Gambia, The	85.2
36	Cambodia	128.5	110	Benin	83.7
37	Jordan	128.2	111	Senegal	83.6
38	Thailand	127.3	112	Mexico	83.4
39	Malta	127.0	113	Puerto Rico	82.6
40	Qatar	126.9	114	Lebanon	80.8
41	Czech Republic	126.9	115	China	80.8
42	Taiwan, China	126.5	116	Canada	80.1
43	Brazil	125.0	117	Iran, Islamic Rep.	76.1
44	Sweden	124.6	118	Bhutan	75.6
45	Kyrgyz Republic	124.2	119	Lesotho	75.3
46	Barbados	122.5	120	Zambia	74.8
47	Mongolia	120.7	121	Kenya	71.2
48	Israel	120.7	122	India	69.9
49	Greece	120.0	123	Guyana	68.8
50	Morocco	120.0	124	Pakistan	67.1
51	Egypt	119.9	125	Nigeria	66.8
52	Mauritius	119.9	126	Swaziland	65.4
53	Tunisia	118.1	127	Lao PDR	64.7
54	Netherlands	118.0	128	Bangladesh	62.8
55	Serbia	117.9	129	Burkina Faso	60.6
56	Denmark	117.6	130	Cameroon	60.4
57	Norway	116.7	131	Haiti	59.9
58	Portugal	116.1	132	Nepal	59.6
59	Hungary	116.1	133	Yemen	58.3
60	Croatia	115.4	134	Liberia	57.1
61	Indonesia	114.2	135	Tanzania	57.0
62	Brunei Darussalam	114.0	136	Timor-Leste	55.7
63	Latvia	112.1	137	Rwanda	49.7
64	Costa Rica	111.9	138	Angola	47.1
65	Armenia	111.9	139	Uganda	45.0
65	Slovak Republic	111.9	140	Guinea	41.8
67	Germany	111.6	141	Madagascar	39.4
68	Belgium	111.3	142	Sierra Leone	37.0
69	Japan	110.9	143	Mozambique	36.2
70	Albania	110.7	144	Chad	35.4
71	New Zealand	110.4	145	Malawi	29.2
72	Korea, Rep.	109.4	146	Burundi	22.8
73	Azerbaijan	108.8	147	Ethiopia	22.4
74	Slovenia	108.6	148	Myanmar	10.3

SOURCE: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

6.02 Internet users

Percentage of individuals using the Internet | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Iceland.....	96.2	75	Egypt.....	44.1
2	Norway.....	95.0	76	Venezuela.....	44.0
3	Sweden.....	94.0	77	Moldova.....	43.4
4	Denmark.....	93.0	78	China.....	42.3
4	Netherlands.....	93.0	79	Tunisia.....	41.4
6	Luxembourg.....	92.0	80	Mauritius.....	41.4
7	Finland.....	91.0	81	Jordan.....	41.0
8	New Zealand.....	89.5	81	South Africa.....	41.0
9	Qatar.....	88.1	83	Vietnam.....	39.5
10	Bahrain.....	88.0	84	Armenia.....	39.2
11	United Kingdom.....	87.0	85	Mexico.....	38.4
12	Canada.....	86.8	86	Peru.....	38.2
13	Switzerland.....	85.2	87	Philippines.....	36.2
14	United Arab Emirates.....	85.0	88	Ecuador.....	35.1
15	Korea, Rep.....	84.1	89	Cape Verde.....	34.7
16	Germany.....	84.0	90	Suriname.....	34.7
17	France.....	83.0	91	Bolivia.....	34.2
18	Australia.....	82.4	92	Ukraine.....	33.7
19	Belgium.....	82.0	93	Guyana.....	33.0
20	United States.....	81.0	94	Nigeria.....	32.9
21	Austria.....	81.0	95	Kenya.....	32.1
22	Slovak Republic.....	80.0	96	Paraguay.....	27.1
23	Kuwait.....	79.2	97	Thailand.....	26.5
24	Japan.....	79.1	98	Iran, Islamic Rep.....	26.0
25	Estonia.....	79.0	99	El Salvador.....	25.5
25	Ireland.....	79.0	100	Bhutan.....	25.4
27	Taiwan, China.....	76.0	101	Kyrgyz Republic.....	21.7
28	Czech Republic.....	75.0	102	Swaziland.....	20.8
29	Singapore.....	74.2	103	Senegal.....	19.2
30	Latvia.....	74.0	104	Sri Lanka.....	18.3
31	Israel.....	73.4	105	Honduras.....	18.1
32	Barbados.....	73.3	106	Yemen.....	17.4
33	Hong Kong SAR.....	72.8	107	Ghana.....	17.1
34	Hungary.....	72.0	108	Zimbabwe.....	17.1
34	Spain.....	72.0	109	Angola.....	16.9
36	Malta.....	70.0	110	Mongolia.....	16.4
36	Slovenia.....	70.0	111	Guatemala.....	16.0
38	Lithuania.....	68.0	112	Indonesia.....	15.4
39	Malaysia.....	65.8	113	Algeria.....	15.2
40	Bosnia and Herzegovina.....	65.4	114	Uganda.....	14.7
41	Poland.....	65.0	115	Libya ¹	14.0
42	Portugal.....	64.0	116	Nicaragua.....	13.5
43	Macedonia, FYR.....	63.1	117	Zambia.....	13.5
44	Croatia.....	63.0	118	Namibia.....	12.9
45	Chile.....	61.4	119	India.....	12.6
46	Lebanon.....	61.3	120	Gambia, The.....	12.4
47	Cyprus.....	61.0	121	Botswana.....	11.5
48	Brunei Darussalam.....	60.3	122	Nepal.....	11.1
49	Oman.....	60.0	123	Lao PDR.....	10.7
50	Trinidad and Tobago.....	59.5	124	Pakistan.....	10.0
51	Italy.....	58.0	125	Haiti.....	9.8
52	Montenegro.....	56.8	126	Gabon.....	8.6
53	Greece.....	56.0	127	Rwanda.....	8.0
54	Argentina.....	55.8	128	Bangladesh.....	6.3
55	Bulgaria.....	55.1	129	Cameroon.....	5.7
56	Uruguay.....	55.1	130	Mauritania.....	5.4
57	Morocco.....	55.0	131	Cambodia.....	4.9
58	Albania.....	54.7	132	Mozambique.....	4.8
59	Azerbaijan.....	54.2	133	Lesotho.....	4.6
60	Saudi Arabia.....	54.0	134	Malawi.....	4.4
61	Kazakhstan.....	53.3	135	Tanzania.....	4.0
62	Russian Federation.....	53.3	136	Benin.....	3.8
63	Puerto Rico.....	51.4	137	Liberia.....	3.8
64	Romania.....	50.0	138	Burkina Faso.....	3.7
65	Brazil.....	49.8	139	Côte d'Ivoire.....	2.4
66	Colombia.....	49.0	140	Mali.....	2.2
67	Serbia.....	48.1	141	Chad.....	2.1
68	Costa Rica.....	47.5	142	Madagascar.....	2.1
69	Seychelles.....	47.1	143	Guinea.....	1.5
70	Jamaica.....	46.5	144	Ethiopia.....	1.5
71	Georgia.....	45.5	145	Sierra Leone.....	1.3
72	Panama.....	45.2	146	Burundi.....	1.2
73	Turkey.....	45.1	147	Myanmar.....	1.1
74	Dominican Republic.....	45.0	148	Timor-Leste.....	0.9

SOURCE: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

¹ 2011

6.03 Households with a personal computer

Percentage of households equipped with a personal computer | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Netherlands	97.2	75	Panama	38.3
2	Iceland	96.0	76	Egypt	37.9
3	Bahrain	92.7	77	Iran, Islamic Rep.	37.0
4	Denmark	92.2	78	Suriname	34.3
5	Luxembourg	92.0	79	Armenia	34.0
5	Norway	92.0	80	Georgia	32.7
5	Sweden	92.0	81	Jamaica	32.6
8	Qatar	91.5	82	Ecuador	32.2
9	New Zealand	91.2	83	Mexico	32.2
10	Finland	88.0	84	Mongolia	30.3
11	Singapore	87.7	85	Peru	29.9
12	Germany	87.0	86	Thailand	26.9
12	United Kingdom	87.0	87	Cape Verde	26.5
14	Brunei Darussalam	86.9	88	Bolivia	25.9
15	Canada	86.6	89	Paraguay	24.3
16	Switzerland	85.8	90	Algeria	24.2
17	Australia	85.2	91	South Africa	23.6
18	United Arab Emirates	85.0	92	Guyana	22.9
19	Ireland	83.0	93	Tunisia	22.8
20	Korea, Rep.	82.3	94	Venezuela	20.2
21	Israel	82.1	95	Albania	20.0
22	Austria	81.0	96	Dominican Republic	19.8
22	France	81.0	97	Guatemala	19.2
24	Hong Kong SAR	80.3	98	Libya	17.6
25	Belgium	80.0	99	Vietnam	17.5
26	Japan	80.0	100	Philippines	16.9
27	Lebanon	79.7	101	Bhutan	16.4
28	United States	79.3	102	El Salvador	15.3
29	Slovak Republic	79.0	103	Indonesia	15.1
30	Malta	78.0	104	Honduras	15.1
31	Estonia	76.0	105	Sri Lanka	15.0
31	Slovenia	76.0	106	Namibia	14.3
33	Taiwan, China	75.2	107	Ghana	13.8
34	Czech Republic	75.0	108	Pakistan	12.5
35	Kuwait	75.0	109	Botswana	12.3
36	Spain	74.0	110	Swaziland	11.9
37	Poland	73.0	111	Nigeria	11.4
38	Hungary	71.0	112	India	10.9
39	Cyprus	70.0	113	Kenya	10.8
39	Latvia	70.0	114	Gabon	10.1
41	Barbados	69.2	115	Nicaragua	9.9
42	Croatia	68.0	116	Senegal	9.0
43	Saudi Arabia	67.7	117	Lao PDR	8.7
44	Italy	67.0	118	Angola	8.5
45	Malaysia	66.9	119	Cameroon	8.3
46	Portugal	66.0	120	Nepal	7.8
47	Lithuania	64.0	121	Mali	7.7
48	Uruguay	63.7	122	Gambia, The	7.4
49	Kazakhstan	63.0	123	Haiti	7.3
50	Oman	62.7	124	Kyrgyz Republic	6.9
51	Trinidad and Tobago	61.0	125	Zimbabwe	6.5
52	Russian Federation	60.6	126	Lesotho	5.9
53	Serbia	60.3	127	Mozambique	5.9
54	Puerto Rico	60.0	128	Cambodia	5.4
55	Macedonia, FYR	58.4	129	Yemen	5.1
56	Greece	57.4	130	Bangladesh	4.8
57	Romania	57.0	131	Benin	4.2
58	Argentina	56.0	132	Malawi	4.0
59	Jordan	54.6	133	Uganda	4.0
60	Chile	53.7	134	Mauritania	3.7
61	Bulgaria	52.0	135	Burkina Faso	3.4
62	Seychelles	51.9	136	Tanzania	3.2
63	Montenegro	51.3	137	Zambia	3.1
64	Turkey	50.2	138	Madagascar	2.9
65	Brazil	49.9	139	Chad	2.5
66	Costa Rica	49.0	140	Rwanda	2.4
67	Azerbaijan	45.0	141	Côte d'Ivoire	2.3
68	Moldova	44.5	142	Myanmar	2.3
69	Morocco	43.1	143	Ethiopia	2.1
70	China	40.9	144	Guinea	2.1
71	Mauritius	40.6	145	Liberia	2.0
72	Ukraine	40.5	146	Sierra Leone ¹	0.8
73	Bosnia and Herzegovina	39.8	147	Burundi ²	0.1
74	Colombia	38.4	n/a	Timor-Leste	n/a

SOURCE: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

¹ 2005 ² 2009

6.04 Households with Internet access

Percentage of households with Internet access at home | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Korea, Rep.	97.4	75	Colombia	32.1
2	Iceland	95.0	76	Georgia	32.0
3	Netherlands	94.0	77	Panama	31.6
4	Luxembourg	93.0	78	Iran, Islamic Rep.	26.5
4	Norway	93.0	79	Mexico	26.0
6	Denmark	92.0	80	South Africa	25.5
6	Sweden	92.0	81	Armenia	25.4
8	Switzerland	90.0	82	Jamaica	23.0
9	United Kingdom	88.6	83	Paraguay	22.8
10	Qatar	88.1	84	Ecuador	22.5
11	Singapore	87.7	85	Guyana	20.6
12	New Zealand	87.4	85	Tunisia	20.6
13	Finland	87.0	87	Albania	20.5
14	Japan	86.0	88	Suriname	20.2
15	Germany	85.0	89	Peru	20.2
16	Canada	83.0	89	Venezuela	20.2
17	Australia	81.4	91	Algeria	19.4
18	Ireland	81.0	92	Philippines	18.9
19	France	80.0	93	Thailand	18.4
20	Austria	79.0	94	Vietnam	15.6
20	Bahrain	79.0	95	El Salvador	15.0
22	Hong Kong SAR	78.6	96	Mongolia	14.0
23	Belgium	78.0	97	Cape Verde	13.7
24	Malta	77.0	98	Libya	13.7
25	Slovak Republic	76.6	99	Dominican Republic	13.7
26	Estonia	75.0	100	Honduras	13.2
26	United States	75.0	101	Namibia	13.0
28	Slovenia	74.0	102	Bhutan	11.6
29	Israel	73.4	103	Kenya	11.5
30	Brunei Darussalam	72.4	104	Swaziland	11.4
31	Taiwan, China	72.2	105	Ghana	11.0
32	United Arab Emirates	72.0	106	Sri Lanka	10.3
33	Czech Republic	71.0	107	Bolivia	10.0
34	Poland	70.0	108	India	9.5
35	Hungary	69.0	109	Guatemala	9.3
35	Latvia	69.0	110	Botswana	9.1
37	Spain	68.0	110	Nigeria	9.1
38	Saudi Arabia	66.6	112	Pakistan	8.3
39	Croatia	66.0	113	Gabon	7.9
40	Kuwait	65.2	114	Nicaragua	7.4
41	Malaysia	64.7	115	Angola	7.2
42	Lebanon	64.0	116	Gambia, The	6.7
43	Italy	63.0	117	Indonesia	6.5
44	Barbados	62.9	118	Kyrgyz Republic	6.3
45	Cyprus	62.0	119	Senegal	5.8
45	Lithuania	62.0	120	Malawi	5.5
47	Portugal	61.0	121	Lao PDR	5.1
48	Puerto Rico	60.7	122	Zimbabwe	4.9
49	Macedonia, FYR	56.8	123	Yemen	4.7
50	Montenegro	55.0	124	Mozambique	4.7
51	Greece	54.0	125	Uganda	4.2
51	Romania	54.0	126	Nepal	4.1
53	Kazakhstan	52.6	127	Cambodia	3.9
54	Russian Federation	51.2	128	Lesotho	3.7
55	Bulgaria	51.0	129	Cameroon	3.5
56	Uruguay	48.4	130	Mauritania	3.4
57	Serbia	48.0	131	Haiti	3.4
58	Argentina	47.5	132	Tanzania	3.3
59	Costa Rica	47.3	133	Bangladesh	3.2
60	Turkey	47.2	134	Burkina Faso	2.8
61	Azerbaijan	46.8	135	Zambia	2.8
62	Brazil	45.4	136	Madagascar	2.7
63	Chile	45.3	137	Mali	2.5
64	Jordan	43.6	138	Rwanda	2.4
65	Mauritius	42.0	139	Benin	2.4
65	Moldova	42.0	140	Chad	2.3
67	Seychelles	41.9	141	Ethiopia	1.9
68	Oman	41.9	142	Myanmar	1.8
69	Trinidad and Tobago	40.0	143	Liberia	1.5
70	Bosnia and Herzegovina	39.7	144	Côte d'Ivoire	1.3
71	Morocco	38.9	145	Guinea	1.3
72	China	37.4	146	Burundi ¹	0.1
73	Ukraine	36.5	n/a	Sierra Leone	n/a
74	Egypt	32.3	n/a	Timor-Leste	n/a

SOURCE: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

¹ 2009

6.05 Fixed broadband Internet subscriptions

Fixed broadband Internet subscriptions per 100 population | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Switzerland	39.9	75	Venezuela	6.7
2	Netherlands	39.8	76	Suriname	5.5
3	Denmark	38.8	77	Ecuador	5.3
4	France	37.5	78	Albania	5.1
5	Korea, Rep.	37.2	79	Vietnam	4.9
6	Norway	36.3	80	Tunisia	4.9
7	Iceland	34.3	81	Brunei Darussalam	4.8
8	United Kingdom	34.0	82	Peru	4.7
9	Germany	33.7	83	Dominican Republic	4.3
10	Belgium	33.3	84	Jamaica	4.3
11	Canada	32.5	85	Iran, Islamic Rep.	4.0
12	Luxembourg	32.4	86	Cape Verde	4.0
13	Sweden	32.3	87	El Salvador	3.8
14	Malta	32.0	88	Mongolia	3.8
15	Hong Kong SAR	31.2	89	Guyana	3.7
16	Finland	30.3	90	Algeria	2.9
17	United States	28.3	91	Egypt	2.8
18	New Zealand	27.8	92	Jordan	2.8
19	Japan	27.7	93	Bhutan	2.3
20	Estonia	25.5	94	Philippines	2.2
21	Singapore	25.4	95	Oman	2.1
22	Israel	25.3	96	South Africa	2.1
23	Austria	25.0	97	Morocco	2.1
24	Spain	24.4	98	Guatemala	1.8
25	Australia	24.3	99	Sri Lanka	1.7
26	Slovenia	24.3	100	Nicaragua	1.6
27	Greece	24.1	101	Kuwait	1.4
28	Taiwan, China	23.9	102	India	1.2
29	Latvia	23.4	103	Indonesia	1.2
30	Barbados	23.1	104	Paraguay	1.2
31	Hungary	22.9	105	Namibia	1.2
32	Ireland	22.7	106	Libya	1.1
33	Portugal	22.5	107	Bolivia	1.1
34	Italy	22.1	108	Botswana	0.9
35	Lithuania	21.1	109	Kyrgyz Republic	0.9
36	Croatia	20.7	110	Honduras	0.8
37	Cyprus	19.2	111	Yemen	0.7
38	Bulgaria	17.9	112	Senegal	0.7
39	Uruguay	16.6	113	Cameroon	0.6
40	Czech Republic	16.4	114	Zimbabwe	0.5
41	Romania	16.2	115	Pakistan	0.5
42	Poland	15.5	116	Nepal	0.5
43	Puerto Rico	15.5	117	Bangladesh	0.4
44	Slovak Republic	14.7	118	Gabon	0.3
45	Russian Federation	14.5	119	Swaziland	0.3
46	Azerbaijan	14.1	120	Ghana	0.3
47	Trinidad and Tobago	13.8	121	Cambodia	0.2
48	Macedonia, FYR	13.7	122	Mauritania	0.2
49	Bahrain	13.2	123	Chad	0.2
50	Serbia	12.9	124	Angola	0.2
51	China	12.7	125	Lao PDR	0.1
52	Chile	12.4	126	Uganda	0.1
53	Moldova	11.9	127	Zambia	0.1
54	Mauritius	11.2	128	Kenya	0.1
55	Seychelles	11.0	129	Burkina Faso	0.1
56	Argentina	10.9	130	Mozambique	0.1
57	Turkey	10.6	131	Lesotho	0.1
58	Bosnia and Herzegovina	10.6	132	Timor-Leste	0.1
59	Mexico	10.5	133	Côte d'Ivoire ³	0.1
60	Qatar	10.5	134	Benin	0.1
61	United Arab Emirates	10.3	135	Madagascar	0.0
62	Kazakhstan	9.8	136	Gambia, The	0.0
63	Lebanon	9.7	137	Rwanda	0.0
64	Costa Rica	9.3	138	Mali	0.0
65	Brazil	9.2	139	Myanmar	0.0
66	Georgia	8.7	140	Nigeria	0.0
67	Montenegro	8.4	141	Tanzania	0.0
68	Malaysia	8.4	142	Malawi	0.0
69	Colombia	8.2	143	Ethiopia	0.0
70	Thailand	8.2	144	Guinea	0.0
71	Ukraine	8.0	145	Burundi	0.0
72	Panama	7.8	146	Liberia	0.0
73	Saudi Arabia	6.9	147	Haiti ²	0.0
74	Armenia	6.7	147	Sierra Leone ¹	0.0

SOURCE: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)¹ 2007 ² 2008 ³ 2009

6.06 Mobile broadband Internet subscriptions

Mobile broadband Internet subscriptions per 100 population | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Singapore	126.1	75	Mongolia	18.4
2	Japan	115.1	76	China	16.9
3	Finland	106.6	77	Turkey	16.5
4	Korea, Rep.	105.1	78	Dominican Republic	15.6
5	Sweden	104.9	79	Suriname	15.0
6	Denmark	97.2	80	Panama	14.3
7	Australia	96.2	81	Puerto Rico	13.7
8	Bahrain	91.2	82	Malaysia	13.4
9	United States	88.2	83	Bosnia and Herzegovina	12.2
10	Norway	84.8	84	Swaziland	11.9
11	Hong Kong SAR	83.2	85	Jordan	11.3
12	Luxembourg	80.6	86	Morocco	10.1
13	Estonia	76.9	87	Mexico	9.8
14	Botswana	74.9	88	Tunisia	8.9
15	United Kingdom	72.1	89	Seychelles	8.6
16	Iceland	70.9	90	Honduras	8.6
17	New Zealand	65.9	91	Georgia	8.5
18	Ireland	65.9	92	Trinidad and Tobago	8.4
19	Poland	63.5	93	Sri Lanka	7.8
20	Qatar	61.8	94	Brunei Darussalam	7.6
21	Netherlands	61.3	95	Lesotho	7.5
22	Latvia	58.2	96	Uganda	7.4
23	Austria	56.3	97	Cambodia	6.7
24	Croatia	53.9	98	Bolivia	6.6
25	Spain	53.6	99	Paraguay	6.0
26	Israel	53.0	100	El Salvador	5.5
27	Russian Federation	52.8	101	Ukraine	5.4
28	Italy	52.2	102	Moldova	5.1
29	Czech Republic	52.1	103	Colombia	5.0
30	Serbia	52.1	104	India	5.0
31	France	51.8	105	Venezuela	4.8
32	Oman	50.9	106	Guatemala	4.5
33	Taiwan, China	49.9	107	Ethiopia	4.4
34	Bulgaria	48.5	108	Philippines	3.8
35	Greece	45.7	109	Tanzania	3.7
36	Saudi Arabia	45.4	110	Mauritania	3.6
37	United Arab Emirates	44.8	111	Senegal	3.6
38	Kazakhstan	42.5	112	Malawi	3.5
39	Canada	42.1	113	Rwanda	3.2
40	Germany	40.8	114	Peru	2.9
41	Slovak Republic	39.7	115	Bhutan	2.5
42	Switzerland	39.6	116	Kenya	2.2
43	Slovenia	37.0	117	Lao PDR	2.1
44	Barbados	36.0	118	Mozambique	1.8
45	Malta	35.3	119	Jamaica	1.6
46	Azerbaijan	34.8	120	Angola	1.5
47	Cyprus	34.1	121	Gambia, The	1.4
48	Ghana	33.9	122	Iran, Islamic Rep.	1.3
49	Brazil	33.7	123	Nicaragua	1.0
50	Namibia	33.2	124	Mali	0.7
51	Belgium	33.0	125	Pakistan	0.7
52	Portugal	32.8	126	Zambia	0.6
53	Uruguay	32.5	127	Bangladesh	0.5
54	Indonesia	31.6	128	Timor-Leste	0.4
55	Armenia	29.1	129	Benin	0.4
56	Lebanon	28.3	130	Madagascar	0.3
57	Zimbabwe	28.1	131	Yemen	0.2
58	Chile	28.0	132	Thailand	0.1
59	Egypt	27.9	133	Guyana	0.1
60	Montenegro	27.5	134	Kyrgyz Republic ¹	0.0
61	Romania	27.0	135	Liberia	0.0
62	South Africa	25.2	136	Myanmar	0.0
63	Macedonia, FYR	25.1	137	Cameroon	0.0
64	Hungary	24.2	138	Burundi	0.0
65	Nepal	23.8	139	Burkina Faso	0.0
66	Cape Verde	23.0	140	Algeria	0.0
67	Mauritius	22.9	140	Chad	0.0
68	Ecuador	21.6	140	Côte d'Ivoire ²	0.0
69	Argentina	20.9	140	Gabon	0.0
70	Costa Rica	20.3	140	Guinea	0.0
71	Albania	18.8	140	Haiti ²	0.0
72	Vietnam	18.8	n/a	Kuwait	n/a
73	Lithuania	18.8	n/a	Libya	n/a
74	Nigeria	18.4	n/a	Sierra Leone	n/a

SOURCE: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

¹ 2010 ² 2011

6.07 Use of virtual social networks*

In your country, how widely used are virtual social networks (e.g., Facebook, Twitter, LinkedIn)? [1 = not used at all; 7 = widely used] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	5.5	7	RANK	COUNTRY/ECONOMY	VALUE	1	5.5	7
1	Iceland	6.7				75	Mongolia	5.6			
2	United Kingdom	6.6				76	Hungary	5.6			
3	Norway	6.6				77	Zambia	5.6			
4	Netherlands	6.6				78	Côte d'Ivoire	5.6			
5	Sweden	6.5				79	Bulgaria	5.6			
6	Finland	6.4				80	Colombia	5.6			
7	Malta	6.4				81	Kenya	5.5			
8	Estonia	6.4				82	Moldova	5.5			
9	United States	6.4				83	South Africa	5.5			
10	Australia	6.4				84	Romania	5.5			
11	United Arab Emirates	6.4				85	Namibia	5.5			
12	Bahrain	6.3				86	Mexico	5.4			
13	Canada	6.3				87	Morocco	5.4			
14	Singapore	6.3				88	Botswana	5.4			
15	Puerto Rico	6.3				89	Russian Federation	5.4			
16	Hong Kong SAR	6.3				90	Greece	5.4			
17	Qatar	6.3				91	India	5.4			
18	New Zealand	6.3				92	Paraguay	5.3			
19	Brunei Darussalam	6.3				93	Ukraine	5.3			
20	Lithuania	6.2				94	Seychelles	5.3			
21	Austria	6.2				95	Oman	5.3			
22	Philippines	6.2				96	Kazakhstan	5.3			
23	Macedonia, FYR	6.2				97	Cape Verde	5.3			
24	Switzerland	6.2				98	Honduras	5.3			
25	Barbados	6.2				99	Ghana	5.2			
26	Chile	6.1				100	Peru	5.2			
27	Panama	6.1				101	Gambia, The	5.2			
28	Belgium	6.1				102	Madagascar	5.2			
29	Ireland	6.1				103	Ecuador	5.1			
30	Luxembourg	6.1				104	Algeria	5.1			
31	Montenegro	6.1				105	Vietnam	5.1			
32	Israel	6.1				106	Bhutan	5.1			
33	Saudi Arabia	6.1				107	Suriname	5.1			
34	Taiwan, China	6.1				108	Cambodia	5.1			
35	Kuwait	6.0				109	Poland	5.1			
36	Costa Rica	6.0				110	Albania	5.1			
37	Brazil	6.0				111	El Salvador	5.0			
38	Azerbaijan	6.0				112	Serbia	5.0			
39	Jordan	6.0				113	Zimbabwe	5.0			
40	Tunisia	6.0				114	Sri Lanka	5.0			
41	Cyprus	6.0				115	Libya	5.0			
42	Malaysia	6.0				116	Pakistan	5.0			
43	Czech Republic	6.0				117	Kyrgyz Republic	4.9			
44	Bosnia and Herzegovina	6.0				118	Lao PDR	4.9			
45	Argentina	6.0				119	Haiti	4.9			
46	Denmark	5.9				120	Rwanda	4.9			
47	Spain	5.9				121	Cameroon	4.8			
48	Indonesia	5.9				122	Swaziland	4.8			
49	Thailand	5.9				123	Angola	4.8			
50	Egypt	5.9				124	Mauritania	4.8			
51	Dominican Republic	5.9				125	Benin	4.8			
52	Portugal	5.9				126	China	4.7			
53	Jamaica	5.9				127	Liberia	4.6			
54	France	5.9				128	Yemen	4.6			
55	Latvia	5.9				129	Malawi	4.6			
56	Germany	5.9				130	Mali	4.6			
57	Korea, Rep.	5.9				131	Nicaragua	4.6			
58	Slovak Republic	5.9				132	Myanmar	4.6			
59	Venezuela	5.8				133	Gabon	4.6			
60	Guyana	5.8				134	Nepal	4.5			
61	Turkey	5.8				135	Sierra Leone	4.5			
62	Uruguay	5.8				136	Tanzania	4.4			
63	Trinidad and Tobago	5.8				137	Lesotho	4.4			
64	Slovenia	5.8				138	Bangladesh	4.4			
65	Italy	5.8				139	Mozambique	4.4			
66	Georgia	5.8				140	Timor-Leste	4.4			
67	Armenia	5.8				141	Uganda	4.2			
68	Japan	5.7				142	Burkina Faso	4.2			
69	Mauritius	5.7				143	Guinea	4.2			
70	Lebanon	5.7				144	Ethiopia	3.9			
71	Croatia	5.6				145	Bolivia	3.8			
72	Nigeria	5.6				146	Chad	3.4			
73	Senegal	5.6				147	Iran, Islamic Rep.	3.3			
74	Guatemala	5.6				148	Burundi	3.1			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

7th pillar

Business usage

7.01 Firm-level technology absorption*

In your country, to what extent do businesses adopt new technology? [1 = not at all; 7 = adopt extensively] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.7	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.7	7
1	Sweden	6.2				75	Trinidad and Tobago	4.7			
2	Iceland	6.2				76	Croatia	4.7			
3	Switzerland	6.1				77	Zambia	4.6			
4	United Arab Emirates	6.1				78	Kazakhstan	4.6			
5	Israel	6.1				79	Mongolia	4.6			
6	Japan	6.1				80	Nigeria	4.6			
7	Finland	6.0				81	Pakistan	4.6			
8	Norway	6.0				82	Cambodia	4.6			
9	United States	6.0				83	Peru	4.6			
10	Qatar	5.9				84	Mali	4.5			
11	Luxembourg	5.9				85	Cape Verde	4.5			
12	Hong Kong SAR	5.9				86	Lebanon	4.5			
13	Singapore	5.8				87	Ecuador	4.5			
14	Australia	5.8				88	Greece	4.5			
15	Saudi Arabia	5.8				89	Montenegro	4.5			
16	Germany	5.8				90	Lao PDR	4.5			
17	Austria	5.8				91	Ghana	4.4			
18	Taiwan, China	5.8				92	Uruguay	4.4			
19	New Zealand	5.7				93	Bosnia and Herzegovina	4.4			
20	Denmark	5.7				94	Cameroon	4.4			
21	Korea, Rep.	5.7				95	Morocco	4.4			
22	Netherlands	5.7				96	Gabon	4.4			
23	Puerto Rico	5.7				97	Colombia	4.4			
24	United Kingdom	5.7				98	Armenia	4.4			
25	Ireland	5.6				99	Zimbabwe	4.3			
26	Belgium	5.6				100	Ukraine	4.3			
27	Jordan	5.6				101	Botswana	4.3			
28	Panama	5.6				102	El Salvador	4.3			
29	Portugal	5.5				103	Paraguay	4.3			
30	Bahrain	5.5				104	Romania	4.3			
31	Malta	5.5				105	Suriname	4.3			
32	France	5.5				106	Madagascar	4.3			
33	Malaysia	5.5				107	Mozambique	4.3			
34	Canada	5.4				108	Albania	4.2			
35	South Africa	5.4				109	Mauritania	4.2			
36	Estonia	5.4				110	Egypt	4.2			
37	Turkey	5.3				111	Bangladesh	4.2			
38	Cyprus	5.2				112	Italy	4.2			
39	Senegal	5.2				113	Bulgaria	4.2			
40	Philippines	5.2				114	Poland	4.1			
41	Guatemala	5.2				115	Argentina	4.1			
42	Lithuania	5.2				116	Uganda	4.1			
43	Costa Rica	5.2				117	Georgia	4.1			
44	Barbados	5.2				118	Venezuela	4.1			
45	Chile	5.1				119	Yemen	4.1			
46	Indonesia	5.1				120	Iran, Islamic Rep.	4.0			
47	Sri Lanka	5.1				121	Macedonia, FYR	4.0			
48	India	5.0				122	Benin	4.0			
49	Spain	5.0				123	Swaziland	4.0			
50	Thailand	5.0				124	Moldova	4.0			
51	Brazil	5.0				125	Bolivia	3.9			
52	Mauritius	5.0				126	Russian Federation	3.9			
53	Oman	5.0				127	Tanzania	3.9			
54	Czech Republic	4.9				128	Nepal	3.9			
55	Seychelles	4.9				129	Guinea	3.9			
56	Dominican Republic	4.9				130	Nicaragua	3.9			
57	Kuwait	4.9				131	Ethiopia	3.8			
58	Namibia	4.9				132	Haiti	3.8			
59	Azerbaijan	4.9				133	Malawi	3.8			
60	Gambia, The	4.9				134	Sierra Leone	3.8			
61	Rwanda	4.8				135	Vietnam	3.8			
62	Slovenia	4.8				136	Liberia	3.8			
63	Brunei Darussalam	4.8				137	Serbia	3.7			
64	Mexico	4.8				138	Bhutan	3.7			
65	Jamaica	4.8				139	Kyrgyz Republic	3.7			
66	Kenya	4.8				140	Burkina Faso	3.7			
67	Côte d'Ivoire	4.7				141	Lesotho	3.7			
68	Latvia	4.7				142	Libya	3.6			
69	Guyana	4.7				143	Burundi	3.5			
70	Tunisia	4.7				144	Chad	3.4			
71	China	4.7				145	Angola	3.3			
72	Slovak Republic	4.7				146	Timor-Leste	3.3			
73	Hungary	4.7				147	Algeria	3.2			
74	Honduras	4.7				148	Myanmar	2.7			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

7.02 Capacity for innovation*

In your country, to what extent do companies have the capacity to innovate? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	3.6	7	RANK	COUNTRY/ECONOMY	VALUE	1	3.6	7
1	Switzerland	5.8				75	Mexico	3.5			
2	Finland	5.7				76	Rwanda	3.5			
3	Germany	5.6				77	Armenia	3.4			
4	Israel	5.6				78	Bhutan	3.4			
5	United States	5.6				79	Nicaragua	3.4			
6	Japan	5.6				80	Nigeria	3.4			
7	Sweden	5.5				81	Barbados	3.4			
8	United Kingdom	5.2				82	Bahrain	3.4			
9	Netherlands	5.1				83	Colombia	3.4			
10	Belgium	5.1				84	Namibia	3.4			
11	Luxembourg	5.1				85	Iran, Islamic Rep.	3.4			
12	Norway	5.0				86	Vietnam	3.4			
13	Denmark	5.0				87	Thailand	3.4			
14	Austria	5.0				88	Uruguay	3.4			
15	Malaysia	4.9				89	Lebanon	3.4			
16	France	4.8				90	Romania	3.4			
17	Qatar	4.8				91	Argentina	3.3			
18	Singapore	4.8				92	Senegal	3.3			
19	Taiwan, China	4.8				93	Cyprus	3.3			
20	Ireland	4.6				94	Macedonia, FYR	3.2			
21	New Zealand	4.6				95	Swaziland	3.2			
22	Korea, Rep.	4.5				96	Slovak Republic	3.2			
23	Australia	4.5				97	Hungary	3.2			
24	Indonesia	4.4				98	Dominican Republic	3.2			
25	Puerto Rico	4.4				99	Tunisia	3.2			
26	Czech Republic	4.3				100	Ukraine	3.2			
27	Canada	4.3				101	Tanzania	3.2			
28	Estonia	4.3				102	Botswana	3.2			
29	Hong Kong SAR	4.2				103	Bulgaria	3.2			
30	China	4.2				104	Mali	3.2			
31	Italy	4.2				105	Cameroon	3.1			
32	Iceland	4.1				106	Peru	3.1			
33	South Africa	4.1				107	Mongolia	3.1			
34	Kenya	4.1				108	Bosnia and Herzegovina	3.1			
35	Azerbaijan	4.1				109	Uganda	3.1			
36	Brazil	4.0				110	Croatia	3.1			
37	Costa Rica	4.0				111	Egypt	3.1			
38	Guyana	4.0				112	Honduras	3.1			
39	United Arab Emirates	4.0				113	Suriname	3.1			
40	Lithuania	4.0				114	Benin	3.0			
41	India	4.0				115	Paraguay	3.0			
42	Portugal	3.9				116	Malawi	3.0			
43	Saudi Arabia	3.9				117	Greece	3.0			
44	Sri Lanka	3.8				118	Georgia	3.0			
45	Turkey	3.8				119	Burkina Faso	3.0			
46	Lao PDR	3.8				120	Bangladesh	3.0			
47	Malta	3.8				121	Albania	3.0			
48	Philippines	3.8				122	Zimbabwe	2.9			
49	Pakistan	3.7				123	Trinidad and Tobago	2.9			
50	Panama	3.7				124	Timor-Leste	2.9			
51	Guatemala	3.7				125	Nepal	2.9			
52	Zambia	3.7				126	Cape Verde	2.9			
53	Ecuador	3.7				127	Côte d'Ivoire	2.9			
54	Slovenia	3.7				128	Venezuela	2.8			
55	Ghana	3.7				129	Morocco	2.8			
56	El Salvador	3.7				130	Lesotho	2.8			
57	Spain	3.7				131	Sierra Leone	2.8			
58	Seychelles	3.6				132	Mozambique	2.8			
59	Montenegro	3.6				133	Serbia	2.8			
60	Jamaica	3.6				134	Moldova	2.7			
61	Oman	3.6				135	Myanmar	2.7			
62	Poland	3.6				136	Kuwait	2.6			
63	Chile	3.5				137	Mauritania	2.6			
64	Russian Federation	3.5				138	Kyrgyz Republic	2.6			
65	Gambia, The	3.5				139	Chad	2.6			
66	Latvia	3.5				140	Haiti	2.6			
67	Brunei Darussalam	3.5				141	Ethiopia	2.6			
68	Liberia	3.5				142	Yemen	2.6			
69	Jordan	3.5				143	Libya	2.5			
70	Bolivia	3.5				144	Gabon	2.5			
71	Cambodia	3.5				145	Guinea	2.5			
72	Mauritius	3.5				146	Angola	2.5			
73	Madagascar	3.5				147	Algeria	2.3			
74	Kazakhstan	3.5				148	Burundi	2.2			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

7.03 PCT patents applications

Number of applications filed under the Patent Cooperation Treaty (PCT) per million population | 2010–2011 average

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Japan ¹	301.1	75	Egypt ¹	0.6
2	Sweden ¹	294.5	76	Sri Lanka ¹	0.6
3	Switzerland ¹	293.5	77	Azerbaijan ¹	0.6
4	Finland ¹	283.6	78	Morocco ¹	0.5
5	Israel ¹	215.8	79	Suriname ¹	0.5
6	Germany ¹	210.5	80	Jordan ¹	0.4
7	Denmark ¹	208.5	81	Ecuador ¹	0.4
8	Korea, Rep. ¹	198.4	82	Bhutan ¹	0.4
9	Netherlands ¹	189.0	83	Dominican Republic ¹	0.4
10	Austria ¹	159.6	84	Philippines ¹	0.3
11	United States ¹	143.9	85	Albania ¹	0.3
12	Norway ¹	133.6	86	Gabon ¹	0.3
13	Singapore ¹	120.9	87	Mongolia ¹	0.3
14	Luxembourg ¹	112.6	88	Timor-Leste ¹	0.3
15	France ¹	111.3	89	Kuwait ¹	0.3
16	Belgium ¹	110.7	90	Peru ¹	0.3
17	United Kingdom ¹	87.0	91	Venezuela ¹	0.2
18	Iceland ¹	84.1	92	Vietnam ¹	0.2
19	Canada ¹	82.4	93	Kenya ¹	0.2
20	Ireland ¹	79.1	94	Botswana ¹	0.2
21	Australia ¹	76.2	95	Kyrgyz Republic ¹	0.1
22	New Zealand ¹	69.8	96	Zimbabwe ¹	0.1
23	Slovenia ¹	58.6	97	Paraguay ¹	0.1
24	Italy ¹	51.8	98	Algeria ¹	0.1
25	Spain ¹	39.2	99	Bolivia ¹	0.1
26	Estonia ¹	31.1	100	Nicaragua ¹	0.1
27	Seychelles ¹	25.7	101	Guatemala ¹	0.1
28	Hungary ¹	24.2	102	Senegal ¹	0.1
29	Czech Republic ¹	15.3	103	Indonesia ¹	0.1
30	Portugal ¹	12.7	104	Cameroon ¹	0.1
31	Malaysia ¹	12.5	105	Côte d'Ivoire ¹	0.1
32	China ¹	11.5	106	Iran, Islamic Rep. ¹	0.0
33	Malta ¹	10.2	107	Ghana ¹	0.0
34	Croatia ¹	9.8	108	Madagascar ¹	0.0
35	Slovak Republic ¹	8.8	109	Sierra Leone ¹	0.0
36	Latvia ¹	8.8	110	Burkina Faso ¹	0.0
37	Greece ¹	7.2	111	Uganda ¹	0.0
38	Poland ¹	6.9	112	Pakistan ¹	0.0
39	Russian Federation ¹	6.8	113	Lao PDR ¹	0.0
40	South Africa ¹	6.4	114	Nigeria ¹	0.0
41	Chile ¹	6.3	115	Tanzania ¹	0.0
42	Saudi Arabia ¹	6.2	116	Nepal ¹	0.0
43	Barbados ¹	6.2	117	Bangladesh ¹	0.0
44	Turkey ¹	6.2	118	Angola ¹	0.0
45	Lithuania ¹	5.8	119	El Salvador ¹	0.0
46	Qatar ¹	5.4	120	Malawi ¹	0.0
47	Cyprus ¹	5.2	121	Ethiopia ¹	0.0
48	Bulgaria ¹	4.8	122	Benin ¹	0.0
49	United Arab Emirates ¹	4.5	122	Burundi ¹	0.0
50	Armenia ¹	3.5	122	Cambodia ¹	0.0
51	Montenegro ¹	3.2	122	Cape Verde ¹	0.0
52	Ukraine ¹	3.2	122	Chad ¹	0.0
53	Brazil ¹	3.0	122	Gambia, The ¹	0.0
54	Uruguay ¹	2.2	122	Guinea ¹	0.0
55	Serbia ¹	2.2	122	Guyana ¹	0.0
56	Romania ¹	2.1	122	Haiti ¹	0.0
57	Bosnia and Herzegovina ¹	2.0	122	Honduras ¹	0.0
58	Brunei Darussalam ¹	1.8	122	Lesotho ¹	0.0
59	Mexico ¹	1.7	122	Liberia ¹	0.0
60	Lebanon ¹	1.5	122	Libya ¹	0.0
61	India ¹	1.5	122	Macedonia, FYR ¹	0.0
62	Argentina ¹	1.3	122	Mali ¹	0.0
63	Costa Rica ¹	1.2	122	Mauritania ¹	0.0
64	Panama ¹	1.2	122	Mauritius ¹	0.0
65	Thailand ¹	1.2	122	Mozambique ¹	0.0
66	Georgia ¹	1.2	122	Myanmar ¹	0.0
67	Tunisia ¹	1.1	122	Namibia ¹	0.0
68	Colombia ¹	1.0	122	Rwanda ¹	0.0
69	Bahrain ¹	1.0	122	Swaziland ¹	0.0
70	Kazakhstan ¹	1.0	122	Yemen ¹	0.0
71	Oman ¹	1.0	122	Zambia ¹	0.0
72	Trinidad and Tobago ¹	1.0	n/a	Hong Kong SAR	n/a
73	Moldova ¹	0.7	n/a	Puerto Rico	n/a
74	Jamaica ¹	0.6	n/a	Taiwan, China	n/a

SOURCES: Organisation for Economic Co-operation and Development (OECD), *Patent Database*, January 2014; World Bank, *World Development Indicators Online* (retrieved December 20, 2013)

¹ 2010-2011 average

7.04 Business-to-business Internet use*

In your country, to what extent do businesses use ICTs for transactions with other businesses? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.8	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.8	7
1	Finland.....	6.2				75	Jamaica.....	4.8			
2	Switzerland.....	6.2				76	Cyprus.....	4.8			
3	Sweden.....	6.1				77	Trinidad and Tobago.....	4.8			
4	Lithuania.....	6.1				78	Bulgaria.....	4.8			
5	United Kingdom.....	6.1				79	Gambia, The.....	4.8			
6	Estonia.....	6.0				80	Guyana.....	4.8			
7	Japan.....	6.0				81	Egypt.....	4.7			
8	Norway.....	6.0				82	Cambodia.....	4.7			
9	Austria.....	5.9				83	Senegal.....	4.7			
10	United Arab Emirates.....	5.9				84	Romania.....	4.7			
11	Netherlands.....	5.9				85	Mali.....	4.7			
12	Malta.....	5.9				86	Mauritania.....	4.7			
13	Taiwan, China.....	5.9				87	Ukraine.....	4.7			
14	Singapore.....	5.9				88	Mongolia.....	4.6			
15	Luxembourg.....	5.9				89	Uruguay.....	4.6			
16	Qatar.....	5.9				90	Rwanda.....	4.6			
17	Korea, Rep.....	5.8				91	Honduras.....	4.6			
18	Hong Kong SAR.....	5.8				92	Georgia.....	4.6			
19	New Zealand.....	5.7				93	Nigeria.....	4.6			
20	Germany.....	5.7				94	Russian Federation.....	4.6			
21	Denmark.....	5.7				95	Ecuador.....	4.6			
22	Iceland.....	5.7				96	Seychelles.....	4.6			
23	Saudi Arabia.....	5.7				97	Yemen.....	4.5			
24	Czech Republic.....	5.7				98	Lao PDR.....	4.5			
25	United States.....	5.6				99	Moldova.....	4.5			
26	Belgium.....	5.6				100	Cape Verde.....	4.5			
27	Australia.....	5.6				101	Bosnia and Herzegovina.....	4.5			
28	Malaysia.....	5.6				102	Ghana.....	4.4			
29	Portugal.....	5.6				103	Poland.....	4.4			
30	South Africa.....	5.6				104	Pakistan.....	4.4			
31	Canada.....	5.5				105	El Salvador.....	4.4			
32	Vietnam.....	5.5				106	Argentina.....	4.4			
33	Ireland.....	5.5				107	Greece.....	4.4			
34	Slovak Republic.....	5.5				108	Zimbabwe.....	4.4			
35	Chile.....	5.5				109	Paraguay.....	4.4			
36	Slovenia.....	5.5				110	Malawi.....	4.4			
37	France.....	5.5				111	Madagascar.....	4.4			
38	Bahrain.....	5.4				112	Serbia.....	4.3			
39	Puerto Rico.....	5.3				113	Italy.....	4.3			
40	Israel.....	5.3				114	Swaziland.....	4.3			
41	Spain.....	5.3				115	Morocco.....	4.3			
42	Hungary.....	5.3				116	Tunisia.....	4.3			
43	Costa Rica.....	5.3				117	Burkina Faso.....	4.3			
44	Panama.....	5.3				118	Uganda.....	4.3			
45	Jordan.....	5.3				119	Botswana.....	4.2			
46	Latvia.....	5.2				120	Côte d'Ivoire.....	4.2			
47	Azerbaijan.....	5.2				121	Mozambique.....	4.2			
48	Armenia.....	5.2				122	Gabon.....	4.1			
49	Croatia.....	5.2				123	Guinea.....	4.1			
50	Namibia.....	5.2				124	Venezuela.....	4.1			
51	Philippines.....	5.2				125	Tanzania.....	4.1			
52	Guatemala.....	5.2				126	Suriname.....	4.0			
53	Dominican Republic.....	5.1				127	Nicaragua.....	4.0			
54	Brazil.....	5.1				128	Nepal.....	4.0			
55	Turkey.....	5.1				129	Benin.....	4.0			
56	Macedonia, FYR.....	5.0				130	Bangladesh.....	4.0			
57	Kenya.....	5.0				131	Sierra Leone.....	4.0			
58	Sri Lanka.....	5.0				132	Liberia.....	3.9			
59	Brunei Darussalam.....	5.0				133	Kyrgyz Republic.....	3.8			
60	Mauritius.....	5.0				134	Bhutan.....	3.8			
61	Kuwait.....	4.9				135	Albania.....	3.8			
62	Colombia.....	4.9				136	Lebanon.....	3.7			
63	Indonesia.....	4.9				137	Bolivia.....	3.7			
64	Mexico.....	4.9				138	Haiti.....	3.7			
65	Oman.....	4.9				139	Iran, Islamic Rep.....	3.7			
66	China.....	4.9				140	Myanmar.....	3.7			
67	Kazakhstan.....	4.9				141	Ethiopia.....	3.5			
68	Cameroon.....	4.8				142	Libya.....	3.5			
69	India.....	4.8				143	Lesotho.....	3.5			
70	Barbados.....	4.8				144	Angola.....	3.2			
71	Montenegro.....	4.8				145	Timor-Leste.....	3.1			
72	Zambia.....	4.8				146	Burundi.....	3.0			
73	Peru.....	4.8				147	Algeria.....	3.0			
74	Thailand.....	4.8				148	Chad.....	2.9			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

7.05 Business-to-consumer Internet use*

In your country, to what extent do businesses use the Internet for selling their goods and services to consumers? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.4	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.4	7
1	United Kingdom.....	6.3				75	Brunei Darussalam.....	4.5			
2	Korea, Rep.	6.2				76	Mexico.....	4.4			
3	United States.....	6.2				77	Paraguay.....	4.4			
4	Netherlands.....	6.0				78	Armenia.....	4.4			
5	Sweden.....	6.0				79	Barbados.....	4.4			
6	Japan.....	6.0				80	Guyana.....	4.4			
7	Taiwan, China.....	5.9				81	Mongolia.....	4.3			
8	Norway.....	5.8				82	Italy.....	4.3			
9	Czech Republic.....	5.8				83	Nigeria.....	4.3			
10	Lithuania.....	5.8				84	Gambia, The.....	4.3			
11	Estonia.....	5.8				85	Macedonia, FYR.....	4.3			
12	Australia.....	5.8				86	Greece.....	4.2			
13	Switzerland.....	5.8				87	Bahrain.....	4.2			
14	Germany.....	5.8				88	Bosnia and Herzegovina.....	4.2			
15	New Zealand.....	5.7				89	Oman.....	4.2			
16	Finland.....	5.6				90	Namibia.....	4.2			
17	Austria.....	5.6				91	Venezuela.....	4.2			
18	Denmark.....	5.6				92	Senegal.....	4.2			
19	Hong Kong SAR.....	5.5				93	Honduras.....	4.1			
20	United Arab Emirates.....	5.5				94	Moldova.....	4.1			
21	Canada.....	5.5				95	Lao PDR.....	4.1			
22	Malaysia.....	5.4				96	Trinidad and Tobago.....	4.1			
23	Israel.....	5.4				97	Jamaica.....	4.0			
24	Latvia.....	5.4				98	Georgia.....	4.0			
25	Panama.....	5.4				99	Mauritius.....	4.0			
26	Luxembourg.....	5.3				100	Zambia.....	4.0			
27	France.....	5.3				101	Madagascar.....	4.0			
28	Iceland.....	5.3				102	Rwanda.....	4.0			
29	Singapore.....	5.3				103	Pakistan.....	4.0			
30	Brazil.....	5.2				104	Cameroon.....	4.0			
31	Indonesia.....	5.2				105	Kyrgyz Republic.....	3.9			
32	Portugal.....	5.2				106	Morocco.....	3.9			
33	Ireland.....	5.1				107	Cambodia.....	3.9			
34	Belgium.....	5.1				108	Bolivia.....	3.9			
35	Chile.....	5.1				109	Serbia.....	3.8			
36	Slovak Republic.....	5.1				110	Cape Verde.....	3.8			
37	Qatar.....	5.1				111	Nicaragua.....	3.8			
38	Vietnam.....	5.1				112	Benin.....	3.7			
39	Puerto Rico.....	5.1				113	Seychelles.....	3.7			
40	Spain.....	5.1				114	Tunisia.....	3.7			
41	China.....	5.1				115	Ghana.....	3.7			
42	Romania.....	5.0				116	Mozambique.....	3.6			
43	Malta.....	5.0				117	Mali.....	3.6			
44	Jordan.....	4.9				118	Côte d'Ivoire.....	3.6			
45	Slovenia.....	4.9				119	Suriname.....	3.6			
46	Poland.....	4.9				120	Tanzania.....	3.5			
47	Costa Rica.....	4.9				121	Iran, Islamic Rep.....	3.5			
48	Turkey.....	4.9				122	Botswana.....	3.5			
49	Russian Federation.....	4.9				123	Nepal.....	3.5			
50	Thailand.....	4.9				124	Bangladesh.....	3.5			
51	Azerbaijan.....	4.9				125	Swaziland.....	3.5			
52	Hungary.....	4.9				126	Malawi.....	3.4			
53	Cyprus.....	4.9				127	Zimbabwe.....	3.4			
54	Saudi Arabia.....	4.8				128	Haiti.....	3.4			
55	Guatemala.....	4.8				129	Burkina Faso.....	3.4			
56	Colombia.....	4.8				130	Uganda.....	3.4			
57	Ecuador.....	4.8				131	Albania.....	3.4			
58	Kazakhstan.....	4.8				132	Liberia.....	3.3			
59	Ukraine.....	4.7				133	Myanmar.....	3.2			
60	Sri Lanka.....	4.7				134	Guinea.....	3.1			
61	Dominican Republic.....	4.7				135	Gabon.....	3.1			
62	South Africa.....	4.7				136	Mauritania.....	3.1			
63	Philippines.....	4.7				137	Lesotho.....	3.1			
64	Bulgaria.....	4.7				138	Yemen.....	3.0			
65	Croatia.....	4.6				139	Angola.....	3.0			
66	Kenya.....	4.6				140	Lebanon.....	3.0			
67	Montenegro.....	4.6				141	Bhutan.....	3.0			
68	Argentina.....	4.6				142	Timor-Leste.....	2.7			
69	Kuwait.....	4.5				143	Sierra Leone.....	2.7			
70	Egypt.....	4.5				144	Libya.....	2.7			
71	India.....	4.5				145	Algeria.....	2.7			
72	Peru.....	4.5				146	Ethiopia.....	2.7			
73	El Salvador.....	4.5				147	Burundi.....	2.6			
74	Uruguay.....	4.5				148	Chad.....	2.5			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

7.06 Extent of staff training*

In your country, to what extent do companies invest in training and employee development? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.0	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.0	7
1	Switzerland	5.6				75	Poland	4.0			
2	Finland	5.5				76	Dominican Republic	4.0			
3	Luxembourg	5.4				77	Honduras	3.9			
4	Japan	5.3				78	Cameroon	3.9			
5	Qatar	5.3				79	Ghana	3.9			
6	Singapore	5.2				80	Azerbaijan	3.9			
7	Sweden	5.2				81	El Salvador	3.9			
8	Norway	5.2				82	Zimbabwe	3.9			
9	Netherlands	5.1				83	Jordan	3.9			
10	Germany	5.1				84	Malawi	3.9			
11	Malaysia	5.1				85	Nicaragua	3.8			
12	United States	5.0				86	Swaziland	3.8			
13	United Arab Emirates	5.0				87	Botswana	3.8			
14	Denmark	5.0				88	Russian Federation	3.8			
15	New Zealand	5.0				89	Zambia	3.8			
16	Austria	4.9				90	Peru	3.8			
17	South Africa	4.9				91	Slovak Republic	3.8			
18	Puerto Rico	4.9				92	Uruguay	3.8			
19	Belgium	4.9				93	Colombia	3.7			
20	Ireland	4.8				94	Kuwait	3.7			
21	Hong Kong SAR	4.7				95	Tanzania	3.7			
22	United Kingdom	4.7				96	Morocco	3.7			
23	Costa Rica	4.7				97	Spain	3.7			
24	Iceland	4.7				98	Vietnam	3.7			
25	Indonesia	4.6				99	Lebanon	3.7			
26	Brunei Darussalam	4.6				100	Argentina	3.7			
27	Philippines	4.6				101	Liberia	3.7			
28	Guatemala	4.5				102	Madagascar	3.7			
29	Gambia, The	4.5				103	Ukraine	3.7			
30	Australia	4.5				104	Macedonia, FYR	3.7			
31	Taiwan, China	4.5				105	Slovenia	3.6			
32	Barbados	4.5				106	Venezuela	3.6			
33	Oman	4.5				107	Georgia	3.6			
34	Canada	4.5				108	Hungary	3.6			
35	Malta	4.4				109	Paraguay	3.6			
36	Albania	4.4				110	Lesotho	3.6			
37	Estonia	4.4				111	Tunisia	3.6			
38	Mauritius	4.4				112	Bolivia	3.6			
39	Seychelles	4.4				113	Gabon	3.6			
40	Côte d'Ivoire	4.3				114	Armenia	3.6			
41	Bahrain	4.3				115	Uganda	3.5			
42	France	4.3				116	Greece	3.5			
43	Panama	4.3				117	Sierra Leone	3.5			
44	Brazil	4.3				118	Cape Verde	3.4			
45	Nigeria	4.3				119	Bhutan	3.4			
46	Chile	4.3				120	Mozambique	3.3			
47	Latvia	4.3				121	Croatia	3.3			
48	China	4.3				122	Yemen	3.3			
49	Israel	4.2				123	Ethiopia	3.3			
50	Thailand	4.2				124	Angola	3.3			
51	Korea, Rep.	4.2				125	Senegal	3.3			
52	Sri Lanka	4.2				126	Moldova	3.2			
53	India	4.2				127	Bulgaria	3.2			
54	Kenya	4.2				128	Pakistan	3.2			
55	Lao PDR	4.2				129	Guinea	3.2			
56	Kazakhstan	4.1				130	Italy	3.2			
57	Saudi Arabia	4.1				131	Kyrgyz Republic	3.2			
58	Bosnia and Herzegovina	4.1				132	Timor-Leste	3.2			
59	Lithuania	4.1				133	Nepal	3.2			
60	Trinidad and Tobago	4.1				134	Romania	3.1			
61	Ecuador	4.1				135	Mali	3.1			
62	Jamaica	4.1				136	Benin	3.1			
63	Montenegro	4.1				137	Bangladesh	3.1			
64	Guyana	4.1				138	Egypt	3.1			
65	Turkey	4.0				139	Algeria	3.0			
66	Cambodia	4.0				140	Serbia	3.0			
67	Cyprus	4.0				141	Iran, Islamic Rep.	3.0			
68	Czech Republic	4.0				142	Burkina Faso	2.9			
69	Namibia	4.0				143	Libya	2.9			
70	Portugal	4.0				144	Haiti	2.8			
71	Rwanda	4.0				145	Chad	2.8			
72	Mexico	4.0				146	Myanmar	2.6			
73	Mongolia	4.0				147	Burundi	2.6			
74	Suriname	4.0				148	Mauritania	2.5			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

8th pillar

Government usage

8.01 Importance of ICTs to government vision of the future*

To what extent does the government have a clear implementation plan for utilizing ICTs to improve your country's overall competitiveness?
[1 = no plan; 7 = clear plan] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.0	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.0	7
1	United Arab Emirates	5.9				75	Sierra Leone	3.9			
2	Qatar	5.9				76	Mexico	3.9			
3	Singapore	5.9				77	Cyprus	3.9			
4	Malta	5.7				78	Albania	3.9			
5	Rwanda	5.6				79	Spain	3.8			
6	Azerbaijan	5.5				80	Philippines	3.8			
7	Luxembourg	5.5				81	Côte d'Ivoire	3.8			
8	Saudi Arabia	5.4				82	Cameroon	3.8			
9	Malaysia	5.4				83	Liberia	3.8			
10	New Zealand	5.3				84	Uruguay	3.8			
11	Sweden	5.3				85	Cambodia	3.8			
12	Taiwan, China	5.2				86	Bosnia and Herzegovina	3.7			
13	Oman	5.2				87	Trinidad and Tobago	3.7			
14	Bahrain	5.2				88	Georgia	3.7			
15	Korea, Rep.	5.1				89	Jamaica	3.7			
16	Finland	5.1				90	Moldova	3.7			
17	Brunei Darussalam	5.0				91	Senegal	3.7			
18	Estonia	5.0				92	Tanzania	3.7			
19	Sri Lanka	4.9				93	Brazil	3.7			
20	Norway	4.9				94	Gabon	3.7			
21	Hong Kong SAR	4.9				95	Mongolia	3.7			
22	Panama	4.9				96	Guinea	3.7			
23	Gambia, The	4.8				97	Namibia	3.6			
24	China	4.8				98	Croatia	3.6			
25	Australia	4.7				99	Thailand	3.6			
26	Kenya	4.7				100	Zimbabwe	3.6			
27	Kazakhstan	4.6				101	Malawi	3.5			
28	Japan	4.6				102	Russian Federation	3.5			
29	Macedonia, FYR	4.6				103	Romania	3.5			
30	Jordan	4.6				104	Dominican Republic	3.5			
31	Mauritius	4.6				105	Iran, Islamic Rep.	3.5			
32	Cape Verde	4.6				106	Slovenia	3.5			
33	Bhutan	4.5				107	Latvia	3.4			
34	Germany	4.5				108	Hungary	3.4			
35	Lao PDR	4.5				109	Mozambique	3.4			
36	Portugal	4.5				110	Bulgaria	3.4			
37	United Kingdom	4.5				111	Nicaragua	3.4			
38	Seychelles	4.5				112	Bolivia	3.4			
39	United States	4.5				113	Czech Republic	3.3			
40	Chile	4.4				114	Peru	3.3			
41	Netherlands	4.4				115	Guatemala	3.3			
42	Indonesia	4.4				116	South Africa	3.3			
43	Israel	4.4				117	Slovak Republic	3.3			
44	Montenegro	4.4				118	Swaziland	3.2			
45	Ireland	4.4				119	El Salvador	3.2			
46	Guyana	4.4				120	Serbia	3.2			
47	Armenia	4.4				121	Chad	3.2			
48	Denmark	4.3				122	Algeria	3.2			
49	Ghana	4.3				123	Timor-Leste	3.2			
50	Zambia	4.3				124	Benin	3.1			
51	Morocco	4.3				125	Poland	3.1			
52	Switzerland	4.3				126	Kuwait	3.1			
53	Barbados	4.3				127	Burundi	3.0			
54	India	4.3				128	Pakistan	3.0			
55	Turkey	4.2				129	Madagascar	3.0			
56	Canada	4.2				130	Italy	3.0			
57	Colombia	4.2				131	Nepal	2.9			
58	Ecuador	4.2				132	Lesotho	2.9			
59	France	4.2				133	Myanmar	2.9			
60	Vietnam	4.2				134	Suriname	2.8			
61	Botswana	4.1				135	Paraguay	2.8			
62	Iceland	4.1				136	Mauritania	2.8			
63	Belgium	4.1				137	Angola	2.8			
64	Mali	4.1				138	Greece	2.8			
65	Bangladesh	4.1				139	Honduras	2.7			
66	Nigeria	4.0				140	Haiti	2.7			
67	Uganda	4.0				141	Egypt	2.6			
68	Burkina Faso	4.0				142	Ukraine	2.6			
69	Austria	3.9				143	Argentina	2.5			
70	Lithuania	3.9				144	Venezuela	2.5			
71	Costa Rica	3.9				145	Libya	2.5			
72	Ethiopia	3.9				146	Yemen	2.4			
73	Puerto Rico	3.9				147	Kyrgyz Republic	2.4			
74	Tunisia	3.9				148	Lebanon	2.2			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

8.02 Government Online Service Index

The Government Online Service Index assesses the quality of government's delivery of online services on a 0-to-1 (best) scale | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Korea, Rep.	1.00	74	Tunisia	0.48
1	Singapore	1.00	76	Ethiopia	0.47
1	United States	1.00	77	Guatemala	0.46
4	United Kingdom	0.97	77	Panama	0.46
5	Netherlands	0.96	77	Turkey	0.46
6	Canada	0.89	80	Ecuador	0.46
7	Finland	0.88	80	Paraguay	0.46
8	France	0.88	80	South Africa	0.46
9	Australia	0.86	83	Macedonia, FYR	0.45
9	Bahrain	0.86	84	Bangladesh	0.44
9	Japan	0.86	85	Cape Verde	0.44
9	United Arab Emirates	0.86	86	Kenya	0.43
13	Denmark	0.86	86	Mauritius	0.43
13	Norway	0.86	88	Albania	0.42
15	Israel	0.85	88	Kyrgyz Republic	0.42
16	Colombia	0.84	88	Ukraine	0.42
16	Sweden	0.84	88	Vietnam	0.42
18	Estonia	0.82	92	Bolivia	0.41
19	Saudi Arabia	0.80	93	Jordan	0.39
20	Malaysia	0.79	94	Honduras	0.38
21	Kazakhstan	0.78	94	Sri Lanka	0.38
21	New Zealand	0.78	96	Barbados	0.37
23	Spain	0.76	96	Bosnia and Herzegovina	0.37
24	Chile	0.75	98	Azerbaijan	0.37
24	Germany	0.75	98	Mozambique	0.37
26	Austria	0.75	98	Pakistan	0.37
27	Qatar	0.74	101	Botswana	0.36
28	Mexico	0.73	102	Bhutan	0.35
29	Lithuania	0.70	102	Tanzania	0.35
29	Luxembourg	0.70	104	Senegal	0.35
31	Hungary	0.69	105	Rwanda	0.34
32	Brazil	0.67	106	Angola	0.33
32	El Salvador	0.67	106	Côte d'Ivoire	0.33
32	Switzerland	0.67	106	Seychelles	0.33
35	Oman	0.67	109	Armenia	0.33
35	Slovenia	0.67	110	Gambia, The	0.32
37	Russian Federation	0.66	110	Madagascar	0.32
38	Portugal	0.65	110	Mali	0.32
39	Belgium	0.65	113	Nicaragua	0.31
40	Croatia	0.64	113	Zambia	0.31
41	Malta	0.61	115	Jamaica	0.31
42	Egypt	0.60	116	Cameroon	0.30
42	Georgia	0.60	116	Ghana	0.30
44	Brunei Darussalam	0.59	116	Lesotho	0.30
45	Latvia	0.59	116	Namibia	0.30
45	Mongolia	0.59	120	Burkina Faso	0.29
47	Kuwait	0.58	120	Uganda	0.29
48	Greece	0.58	122	Nepal	0.29
48	Italy	0.58	123	Algeria	0.25
48	Serbia	0.58	123	Guyana	0.25
51	Cyprus	0.56	125	Morocco	0.25
52	Uruguay	0.55	126	Nigeria	0.22
53	Czech Republic	0.54	127	Lao PDR	0.22
53	Iceland	0.54	127	Malawi	0.22
55	Dominican Republic	0.54	127	Timor-Leste	0.22
55	India	0.54	130	Benin	0.20
55	Ireland	0.54	131	Cambodia	0.19
55	Poland	0.54	131	Gabon	0.19
59	Argentina	0.53	131	Liberia	0.19
59	China	0.53	134	Yemen	0.18
61	Moldova	0.52	135	Sierra Leone	0.17
61	Peru	0.52	136	Suriname	0.16
61	Romania	0.52	137	Burundi	0.15
64	Montenegro	0.51	138	Swaziland	0.14
64	Thailand	0.51	139	Zimbabwe ¹	0.13
66	Slovak Republic	0.50	140	Myanmar	0.10
67	Costa Rica	0.50	141	Chad	0.10
67	Indonesia	0.50	142	Haiti	0.09
67	Philippines	0.50	143	Mauritania	0.08
70	Bulgaria	0.49	144	Guinea	0.00
70	Iran, Islamic Rep.	0.49	144	Libya	0.00
72	Trinidad and Tobago	0.48	n/a	Hong Kong SAR	n/a
72	Venezuela	0.48	n/a	Puerto Rico	n/a
74	Lebanon	0.48	n/a	Taiwan, China	n/a

SOURCE: United Nations, *United Nations E-Government Survey 2012: E-Government for the People*

¹ 2010

8.03 Government success in ICT promotion*

In your country, how successful is the government in promoting the use of information and communication technologies (ICTs)? [1 = not successful at all; 7 = extremely successful] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.3	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.3	7
1	Rwanda	6.2				75	Jamaica	4.3			
2	United Arab Emirates	6.1				76	Bangladesh	4.3			
3	Qatar	6.0				77	Tanzania	4.3			
4	Singapore	5.9				78	Nigeria	4.3			
5	Malta	5.8				79	Trinidad and Tobago	4.2			
6	Luxembourg	5.8				80	Burkina Faso	4.2			
7	Saudi Arabia	5.7				81	Mexico	4.2			
8	Azerbaijan	5.6				82	Moldova	4.2			
9	Malaysia	5.6				83	Tunisia	4.1			
10	Sweden	5.5				84	Botswana	4.1			
11	Taiwan, China	5.5				85	Dominican Republic	4.1			
12	Bahrain	5.5				86	Slovenia	4.1			
13	Estonia	5.5				87	Sierra Leone	4.1			
14	Korea, Rep.	5.4				88	Brazil	4.1			
15	Oman	5.3				89	Bosnia and Herzegovina	4.1			
16	Finland	5.3				90	Zimbabwe	4.1			
17	Hong Kong SAR	5.2				91	Pakistan	4.1			
18	Sri Lanka	5.1				92	Mozambique	4.0			
19	Israel	5.1				93	Namibia	4.0			
20	Norway	5.0				94	Thailand	4.0			
21	Brunei Darussalam	5.0				95	Gabon	4.0			
22	Panama	5.0				96	Cyprus	4.0			
23	New Zealand	5.0				97	Ethiopia	4.0			
24	Portugal	5.0				98	Côte d'Ivoire	3.9			
25	Netherlands	5.0				99	Latvia	3.9			
26	Kazakhstan	5.0				100	Russian Federation	3.9			
27	Gambia, The	5.0				101	Spain	3.9			
28	United States	5.0				102	Iran, Islamic Rep.	3.9			
29	India	4.9				103	Mongolia	3.9			
30	Jordan	4.9				104	Malawi	3.9			
31	Kenya	4.9				105	Guinea	3.9			
32	Macedonia, FYR	4.9				106	Albania	3.9			
33	Switzerland	4.9				107	Peru	3.8			
34	Germany	4.9				108	Liberia	3.8			
35	Mauritius	4.9				109	South Africa	3.8			
36	Vietnam	4.9				110	Croatia	3.8			
37	China	4.8				111	Bulgaria	3.8			
38	Cape Verde	4.7				112	El Salvador	3.7			
39	United Kingdom	4.7				113	Madagascar	3.7			
40	Zambia	4.7				114	Romania	3.7			
41	Ireland	4.7				115	Guatemala	3.6			
42	Seychelles	4.7				116	Czech Republic	3.6			
43	Mali	4.7				117	Hungary	3.6			
44	Lithuania	4.7				118	Nepal	3.6			
45	Japan	4.7				119	Bolivia	3.6			
46	Armenia	4.6				120	Suriname	3.5			
47	Senegal	4.6				121	Slovak Republic	3.5			
48	Australia	4.6				122	Nicaragua	3.5			
49	Lao PDR	4.6				123	Poland	3.4			
50	Denmark	4.6				124	Swaziland	3.4			
51	Canada	4.6				125	Myanmar	3.4			
52	Cambodia	4.6				126	Angola	3.4			
53	Indonesia	4.5				127	Paraguay	3.4			
54	Chile	4.5				128	Serbia	3.4			
55	Guyana	4.5				129	Benin	3.4			
56	Austria	4.5				130	Chad	3.3			
57	Barbados	4.5				131	Egypt	3.3			
58	Ghana	4.5				132	Mauritania	3.3			
59	Morocco	4.5				133	Kuwait	3.3			
60	Uganda	4.5				134	Yemen	3.3			
61	Bhutan	4.5				135	Ukraine	3.2			
62	Ecuador	4.5				136	Algeria	3.2			
63	France	4.5				137	Timor-Leste	3.2			
64	Montenegro	4.4				138	Haiti	3.2			
65	Costa Rica	4.4				139	Venezuela	3.1			
66	Iceland	4.4				140	Greece	3.1			
67	Uruguay	4.4				141	Argentina	3.1			
68	Belgium	4.4				142	Lesotho	3.1			
69	Turkey	4.4				143	Kyrgyz Republic	3.1			
70	Philippines	4.4				144	Italy	3.1			
71	Georgia	4.4				145	Burundi	3.0			
72	Cameroon	4.3				146	Honduras	2.9			
73	Puerto Rico	4.3				147	Libya	2.9			
74	Colombia	4.3				148	Lebanon	2.7			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

9th pillar

Economic impacts

9.01 Impact of ICTs on new services and products*

In your country, to what extent do ICTs enable new business models? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.3	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.3	7
1	Finland	5.8				75	Ghana	4.3			
2	Korea, Rep.	5.7				76	Cyprus	4.3			
3	Sweden	5.7				77	Cambodia	4.3			
4	United Arab Emirates	5.6				78	Czech Republic	4.3			
5	Luxembourg	5.6				79	Cape Verde	4.3			
6	United Kingdom	5.6				80	Kazakhstan	4.3			
7	Netherlands	5.5				81	Macedonia, FYR	4.2			
8	Qatar	5.5				82	Paraguay	4.2			
9	Estonia	5.5				83	Ecuador	4.2			
10	Singapore	5.5				84	Slovak Republic	4.2			
11	Norway	5.4				85	Jamaica	4.2			
12	Taiwan, China	5.4				86	Morocco	4.2			
13	Malaysia	5.4				87	Seychelles	4.2			
14	Ireland	5.4				88	El Salvador	4.1			
15	Germany	5.3				89	Burkina Faso	4.1			
16	United States	5.3				90	Uganda	4.1			
17	New Zealand	5.3				91	Bosnia and Herzegovina	4.1			
18	Switzerland	5.3				92	Mongolia	4.1			
19	Hong Kong SAR	5.3				93	Guyana	4.1			
20	Japan	5.2				94	Namibia	4.1			
21	France	5.2				95	Côte d'Ivoire	4.0			
22	Australia	5.1				96	Tunisia	4.0			
23	Portugal	5.1				97	Cameroon	4.0			
24	Saudi Arabia	5.1				98	Pakistan	4.0			
25	Malta	5.1				99	Benin	4.0			
26	Israel	5.1				100	Zimbabwe	3.9			
27	Spain	5.1				101	Egypt	3.9			
28	Canada	5.1				102	Georgia	3.9			
29	Chile	5.0				103	Romania	3.9			
30	Belgium	5.0				104	Bulgaria	3.9			
31	Iceland	5.0				105	Poland	3.9			
32	Lithuania	5.0				106	Iran, Islamic Rep.	3.9			
33	Denmark	4.9				107	Bolivia	3.9			
34	Rwanda	4.9				108	Tanzania	3.9			
35	Jordan	4.9				109	Honduras	3.9			
36	Austria	4.9				110	Bhutan	3.9			
37	Panama	4.9				111	Italy	3.8			
38	Indonesia	4.9				112	Bangladesh	3.8			
39	Vietnam	4.8				113	Russian Federation	3.8			
40	India	4.8				114	Madagascar	3.8			
41	Kenya	4.8				115	Malawi	3.7			
42	Philippines	4.8				116	Argentina	3.7			
43	Azerbaijan	4.8				117	Moldova	3.7			
44	Puerto Rico	4.8				118	Trinidad and Tobago	3.7			
45	Costa Rica	4.8				119	Suriname	3.7			
46	Armenia	4.7				120	Botswana	3.6			
47	South Africa	4.7				121	Albania	3.6			
48	Sri Lanka	4.7				122	Mozambique	3.6			
49	Bahrain	4.7				123	Sierra Leone	3.6			
50	Oman	4.7				124	Serbia	3.6			
51	Brazil	4.7				125	Ukraine	3.6			
52	China	4.6				126	Nicaragua	3.5			
53	Turkey	4.6				127	Gabon	3.5			
54	Senegal	4.6				128	Venezuela	3.5			
55	Mexico	4.6				129	Greece	3.5			
56	Nigeria	4.6				130	Swaziland	3.5			
57	Dominican Republic	4.6				131	Nepal	3.5			
58	Guatemala	4.6				132	Ethiopia	3.4			
59	Mauritius	4.6				133	Liberia	3.4			
60	Uruguay	4.6				134	Lebanon	3.4			
61	Gambia, The	4.6				135	Kuwait	3.3			
62	Colombia	4.5				136	Guinea	3.3			
63	Mali	4.5				137	Angola	3.3			
64	Croatia	4.5				138	Kyrgyz Republic	3.3			
65	Hungary	4.5				139	Haiti	3.2			
66	Brunei Darussalam	4.5				140	Myanmar	3.1			
67	Thailand	4.4				141	Mauritania	3.1			
68	Latvia	4.4				142	Lesotho	3.0			
69	Slovenia	4.4				143	Timor-Leste	2.9			
70	Zambia	4.4				144	Burundi	2.9			
71	Montenegro	4.4				145	Algeria	2.9			
72	Peru	4.4				146	Yemen	2.8			
73	Lao PDR	4.3				147	Chad	2.8			
74	Barbados	4.3				148	Libya	2.5			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

9.02 PCT ICT patent applications

Number of applications for information and communication technology-related patents filed under the Patent Cooperation Treaty (PCT) per million population | 2010–2011 average

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Japan ¹	118.9	75	Azerbaijan ¹	0.1
2	Finland ¹	110.1	76	Colombia ¹	0.1
3	Sweden ¹	88.8	77	Jordan ¹	0.1
4	Korea, Rep. ¹	87.8	78	Peru ¹	0.1
5	Israel ¹	79.4	79	Sri Lanka ¹	0.1
6	Switzerland ¹	61.6	80	Dominican Republic ¹	0.0
7	Netherlands ¹	55.8	81	Kenya ¹	0.0
8	United States ¹	51.6	82	Senegal ¹	0.0
9	Singapore ¹	51.1	83	Algeria ¹	0.0
10	Germany ¹	46.0	84	Iran, Islamic Rep. ¹	0.0
11	Denmark ¹	38.0	85	Tanzania ¹	0.0
12	Canada ¹	31.4	86	Vietnam ¹	0.0
13	Austria ¹	31.0	87	Cameroon ¹	0.0
14	France ¹	30.6	88	Indonesia ¹	0.0
15	Ireland ¹	29.9	89	Venezuela ¹	0.0
16	Norway ¹	28.5	90	Pakistan ¹	0.0
17	Belgium ¹	25.4	91	Nigeria ¹	0.0
18	United Kingdom ¹	25.1	92	Bangladesh ¹	0.0
19	Luxembourg ¹	23.0	93	Albania ¹	0.0
20	Australia ¹	20.1	93	Angola ¹	0.0
21	Iceland ¹	13.9	93	Barbados ¹	0.0
22	Estonia ¹	11.8	93	Benin ¹	0.0
23	New Zealand ¹	11.8	93	Bhutan ¹	0.0
24	Slovenia ¹	8.7	93	Bolivia ¹	0.0
25	Spain ¹	8.4	93	Botswana ¹	0.0
26	Italy ¹	8.2	93	Burkina Faso ¹	0.0
27	Malaysia ¹	6.2	93	Burundi ¹	0.0
28	China ¹	4.9	93	Cambodia ¹	0.0
29	Hungary ¹	4.8	93	Cape Verde ¹	0.0
30	Portugal ¹	3.4	93	Chad ¹	0.0
31	Qatar ¹	2.9	93	Côte d'Ivoire ¹	0.0
32	Czech Republic ¹	2.3	93	Ecuador ¹	0.0
33	Saudi Arabia ¹	2.0	93	El Salvador ¹	0.0
34	Russian Federation ¹	1.5	93	Ethiopia ¹	0.0
35	Slovak Republic ¹	1.5	93	Gabon ¹	0.0
36	Lithuania ¹	1.5	93	Gambia, The ¹	0.0
37	Croatia ¹	1.4	93	Ghana ¹	0.0
38	Greece ¹	1.4	93	Guatemala ¹	0.0
39	South Africa ¹	1.4	93	Guinea ¹	0.0
40	Poland ¹	1.3	93	Guyana ¹	0.0
41	Brunei Darussalam ¹	1.2	93	Haiti ¹	0.0
42	Malta ¹	1.2	93	Honduras ¹	0.0
43	Bulgaria ¹	1.1	93	Jamaica ¹	0.0
44	United Arab Emirates ¹	1.1	93	Kyrgyz Republic ¹	0.0
45	Latvia ¹	1.0	93	Lao PDR ¹	0.0
46	Panama ¹	0.9	93	Lesotho ¹	0.0
47	Ukraine ¹	0.8	93	Liberia ¹	0.0
48	Romania ¹	0.7	93	Libya ¹	0.0
49	Turkey ¹	0.6	93	Macedonia, FYR ¹	0.0
50	Lebanon ¹	0.6	93	Madagascar ¹	0.0
51	Chile ¹	0.5	93	Malawi ¹	0.0
52	Bahrain ¹	0.5	93	Mali ¹	0.0
53	Armenia ¹	0.5	93	Mauritania ¹	0.0
54	Moldova ¹	0.4	93	Mauritius ¹	0.0
55	India ¹	0.4	93	Mongolia ¹	0.0
56	Uruguay ¹	0.4	93	Montenegro ¹	0.0
57	Georgia ¹	0.4	93	Mozambique ¹	0.0
58	Brazil ¹	0.4	93	Myanmar ¹	0.0
59	Serbia ¹	0.4	93	Namibia ¹	0.0
60	Costa Rica ¹	0.3	93	Nepal ¹	0.0
61	Argentina ¹	0.3	93	Nicaragua ¹	0.0
62	Timor-Leste ¹	0.3	93	Paraguay ¹	0.0
63	Tunisia ¹	0.2	93	Rwanda ¹	0.0
64	Bosnia and Herzegovina ¹	0.2	93	Seychelles ¹	0.0
65	Kazakhstan ¹	0.2	93	Sierra Leone ¹	0.0
66	Mexico ¹	0.2	93	Suriname ¹	0.0
67	Oman ¹	0.2	93	Swaziland ¹	0.0
68	Kuwait ¹	0.2	93	Uganda ¹	0.0
69	Thailand ¹	0.2	93	Yemen ¹	0.0
70	Egypt ¹	0.2	93	Zambia ¹	0.0
71	Trinidad and Tobago ¹	0.2	93	Zimbabwe ¹	0.0
72	Morocco ¹	0.1	n/a	Hong Kong SAR	n/a
73	Cyprus ¹	0.1	n/a	Puerto Rico	n/a
74	Philippines ¹	0.1	n/a	Taiwan, China	n/a

SOURCES: Organisation for Economic Co-operation and Development (OECD), *Patent Database*, January 2014; World Bank, *World Development Indicators Online* (retrieved December 20, 2013)

¹ 2010–2011 average

9.03 Impact of ICTs on new organizational models*

In your country, to what extent do ICTs enable new organizational models (e.g., virtual teams, remote working, telecommuting) within businesses? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.1	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.1	7
1	Finland	5.7				75	Guyana	4.1			
2	Qatar	5.5				76	Barbados	4.1			
3	Estonia	5.5				77	Zambia	4.1			
4	Sweden	5.4				78	Egypt	4.0			
5	Netherlands	5.4				79	El Salvador	4.0			
6	United Kingdom	5.4				80	Nigeria	4.0			
7	United States	5.3				81	Bosnia and Herzegovina	4.0			
8	Norway	5.3				82	Cyprus	4.0			
9	United Arab Emirates	5.3				83	Slovak Republic	4.0			
10	Taiwan, China	5.3				84	Cape Verde	4.0			
11	Singapore	5.3				85	Paraguay	4.0			
12	Malaysia	5.3				86	Thailand	4.0			
13	Canada	5.1				87	Tunisia	3.9			
14	Luxembourg	5.1				88	Argentina	3.9			
15	Ireland	5.1				89	Ghana	3.9			
16	Korea, Rep.	5.1				90	Macedonia, FYR	3.9			
17	Germany	5.1				91	Uganda	3.9			
18	Hong Kong SAR	5.1				92	Pakistan	3.9			
19	Israel	5.0				93	Russian Federation	3.9			
20	New Zealand	5.0				94	Honduras	3.8			
21	Australia	4.9				95	Trinidad and Tobago	3.8			
22	Iceland	4.9				96	Poland	3.8			
23	Saudi Arabia	4.9				97	Tanzania	3.7			
24	Azerbaijan	4.9				98	Namibia	3.7			
25	Lithuania	4.9				99	Seychelles	3.7			
26	Puerto Rico	4.9				100	Bolivia	3.7			
27	Portugal	4.8				101	Morocco	3.7			
28	Philippines	4.8				102	Bulgaria	3.7			
29	Denmark	4.8				103	Côte d'Ivoire	3.7			
30	Belgium	4.8				104	Senegal	3.7			
31	Switzerland	4.8				105	Madagascar	3.7			
32	Malta	4.8				106	Malawi	3.6			
33	Spain	4.7				107	Iran, Islamic Rep.	3.6			
34	Jordan	4.7				108	Cameroon	3.6			
35	China	4.7				109	Moldova	3.6			
36	Armenia	4.7				110	Zimbabwe	3.6			
37	Japan	4.7				111	Venezuela	3.6			
38	Chile	4.7				112	Mongolia	3.6			
39	Costa Rica	4.6				113	Swaziland	3.6			
40	India	4.6				114	Bhutan	3.6			
41	Indonesia	4.6				115	Romania	3.6			
42	France	4.6				116	Nicaragua	3.6			
43	Brazil	4.5				117	Georgia	3.5			
44	Dominican Republic	4.5				118	Suriname	3.5			
45	Sri Lanka	4.5				119	Bangladesh	3.5			
46	Bahrain	4.5				120	Burkina Faso	3.5			
47	Panama	4.5				121	Italy	3.5			
48	Austria	4.5				122	Liberia	3.4			
49	Uruguay	4.5				123	Nepal	3.4			
50	South Africa	4.5				124	Albania	3.4			
51	Guatemala	4.5				125	Mozambique	3.4			
52	Kenya	4.5				126	Botswana	3.4			
53	Rwanda	4.4				127	Ukraine	3.3			
54	Brunei Darussalam	4.4				128	Greece	3.3			
55	Peru	4.4				129	Sierra Leone	3.3			
56	Colombia	4.4				130	Ethiopia	3.3			
57	Oman	4.4				131	Serbia	3.2			
58	Mexico	4.4				132	Benin	3.1			
59	Vietnam	4.4				133	Kuwait	3.1			
60	Mauritius	4.3				134	Kyrgyz Republic	3.0			
61	Turkey	4.3				135	Myanmar	3.0			
62	Cambodia	4.3				136	Haiti	3.0			
63	Jamaica	4.3				137	Angola	2.9			
64	Gambia, The	4.3				138	Lebanon	2.9			
65	Latvia	4.2				139	Timor-Leste	2.9			
66	Ecuador	4.2				140	Algeria	2.9			
67	Croatia	4.2				141	Yemen	2.9			
68	Slovenia	4.2				142	Guinea	2.9			
69	Mali	4.2				143	Libya	2.9			
70	Lao PDR	4.2				144	Mauritania	2.9			
71	Kazakhstan	4.2				145	Lesotho	2.7			
72	Montenegro	4.2				146	Gabon	2.7			
73	Czech Republic	4.1				147	Burundi	2.6			
74	Hungary	4.1				148	Chad	2.6			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

9.04 Share of workforce employed in knowledge-intensive activities (%)

Share of workforce employed in knowledge-intensive activities (%) | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Luxembourg	57.2	75	Brazil	20.5
2	Singapore ¹⁰	51.0	76	Mauritius	20.4
3	Switzerland	49.8	77	Turkey	20.2
4	Sweden	47.6	78	Jamaica ¹⁰	20.1
5	United Kingdom	47.2	79	Pakistan ¹⁰	19.5
6	Iceland	46.9	80	Algeria ⁶	19.1
7	Norway	46.0	81	Sri Lanka ¹²	19.1
8	Netherlands	45.9	82	Kuwait ⁷	18.7
9	Denmark	45.2	83	Venezuela	18.6
10	France	44.8	84	Kyrgyz Republic	17.6
11	Belgium	44.6	85	Dominican Republic	17.3
12	Finland	43.9	86	Botswana ⁸	17.1
13	Canada	43.8	87	Yemen ⁷	17.0
14	Germany	43.5	88	Namibia ⁶	16.9
15	New Zealand ¹⁰	42.9	89	Colombia ¹²	16.8
16	Australia ¹⁰	42.9	90	Bhutan ¹²	16.5
17	Russian Federation	42.8	91	Ethiopia ¹³	15.9
18	Lithuania	42.8	92	Paraguay	15.4
19	Israel	42.4	93	Iran, Islamic Rep. ¹¹	15.3
20	Estonia	41.8	94	Peru	15.3
21	Slovenia	41.4	95	Bolivia ¹¹	15.3
22	Ireland	41.2	96	Nicaragua ⁸	14.8
23	Malta	39.7	97	Mexico	14.7
24	Latvia	39.5	98	Ecuador	14.6
25	Austria	38.5	99	Albania	13.7
26	Czech Republic	37.3	100	Honduras ⁷	12.8
27	Montenegro	37.2	101	Guyana ⁴	12.7
28	United States ¹⁰	36.3	102	El Salvador	11.9
29	Hong Kong SAR ¹²	36.2	103	Thailand	10.9
30	United Arab Emirates ¹⁰	36.1	104	Guatemala	9.4
31	Hungary	35.4	105	Liberia ¹²	9.3
32	Poland	35.1	106	Indonesia ¹²	8.6
33	Cyprus	35.0	107	Vietnam ⁶	7.4
34	Italy	34.5	108	China ⁷	7.4
35	Egypt	34.0	109	Bangladesh ⁷	7.3
36	Ukraine	33.9	110	Zambia ¹²	7.3
37	Taiwan, China ¹⁰	33.7	111	Morocco ¹⁰	6.8
38	Slovak Republic	32.9	112	Zimbabwe ¹³	6.6
39	Spain	32.5	113	Lesotho ¹	6.0
40	Croatia	32.3	114	Nepal ³	4.8
41	Puerto Rico ¹⁰	31.9	115	Uganda ¹¹	4.4
42	Lebanon ⁹	31.9	116	Madagascar ¹²	2.9
43	Moldova	31.3	117	Tanzania ⁸	2.6
44	Greece	31.1	118	Cambodia ⁶	2.5
45	Portugal	31.0	119	Guinea ¹²	0.7
46	Serbia	30.4	n/a	Angola	n/a
47	Barbados ⁶	30.3	n/a	Benin	n/a
48	Macedonia, FYR	29.6	n/a	Bosnia and Herzegovina	n/a
49	Bulgaria	29.6	n/a	Burkina Faso	n/a
50	Kazakhstan ¹²	29.3	n/a	Burundi	n/a
51	Brunei Darussalam ⁵	28.4	n/a	Cameroon	n/a
52	Malaysia ¹²	27.5	n/a	Cape Verde	n/a
53	Seychelles ¹³	26.4	n/a	Chad	n/a
54	South Africa	25.3	n/a	Côte d'Ivoire	n/a
55	Trinidad and Tobago ¹²	25.0	n/a	Gabon	n/a
56	Argentina ¹²	25.0	n/a	Gambia, The	n/a
57	Japan	24.9	n/a	Ghana	n/a
58	Panama	24.4	n/a	Haiti	n/a
59	Oman ²	24.3	n/a	India	n/a
60	Azerbaijan ¹²	24.2	n/a	Jordan	n/a
61	Qatar ⁹	24.2	n/a	Kenya	n/a
62	Armenia ³	24.1	n/a	Lao PDR	n/a
63	Chile	24.1	n/a	Libya	n/a
64	Mongolia ¹²	24.0	n/a	Malawi	n/a
65	Costa Rica	23.9	n/a	Mali	n/a
66	Uruguay ¹³	23.1	n/a	Mauritania	n/a
67	Saudi Arabia ¹⁰	22.9	n/a	Mozambique	n/a
68	Philippines	22.5	n/a	Myanmar	n/a
69	Georgia ⁹	22.2	n/a	Nigeria	n/a
70	Romania	22.2	n/a	Rwanda	n/a
71	Suriname ⁶	21.6	n/a	Senegal	n/a
72	Korea, Rep. ¹²	21.5	n/a	Sierra Leone	n/a
73	Tunisia	20.9	n/a	Swaziland	n/a
74	Bahrain ¹⁰	20.7	n/a	Timor-Leste	n/a

SOURCE: Authors' calculations based on International Labour Organization ILOSTAT Database (retrieved November 29, 2013)

¹ 1999 ² 2000 ³ 2001 ⁴ 2002 ⁵ 2003 ⁶ 2004 ⁷ 2005 ⁸ 2006 ⁹ 2007 ¹⁰ 2008 ¹¹ 2009 ¹² 2010 ¹³ 2011

10th pillar

Social impacts

10.01 Impact of ICTs on access to basic services*

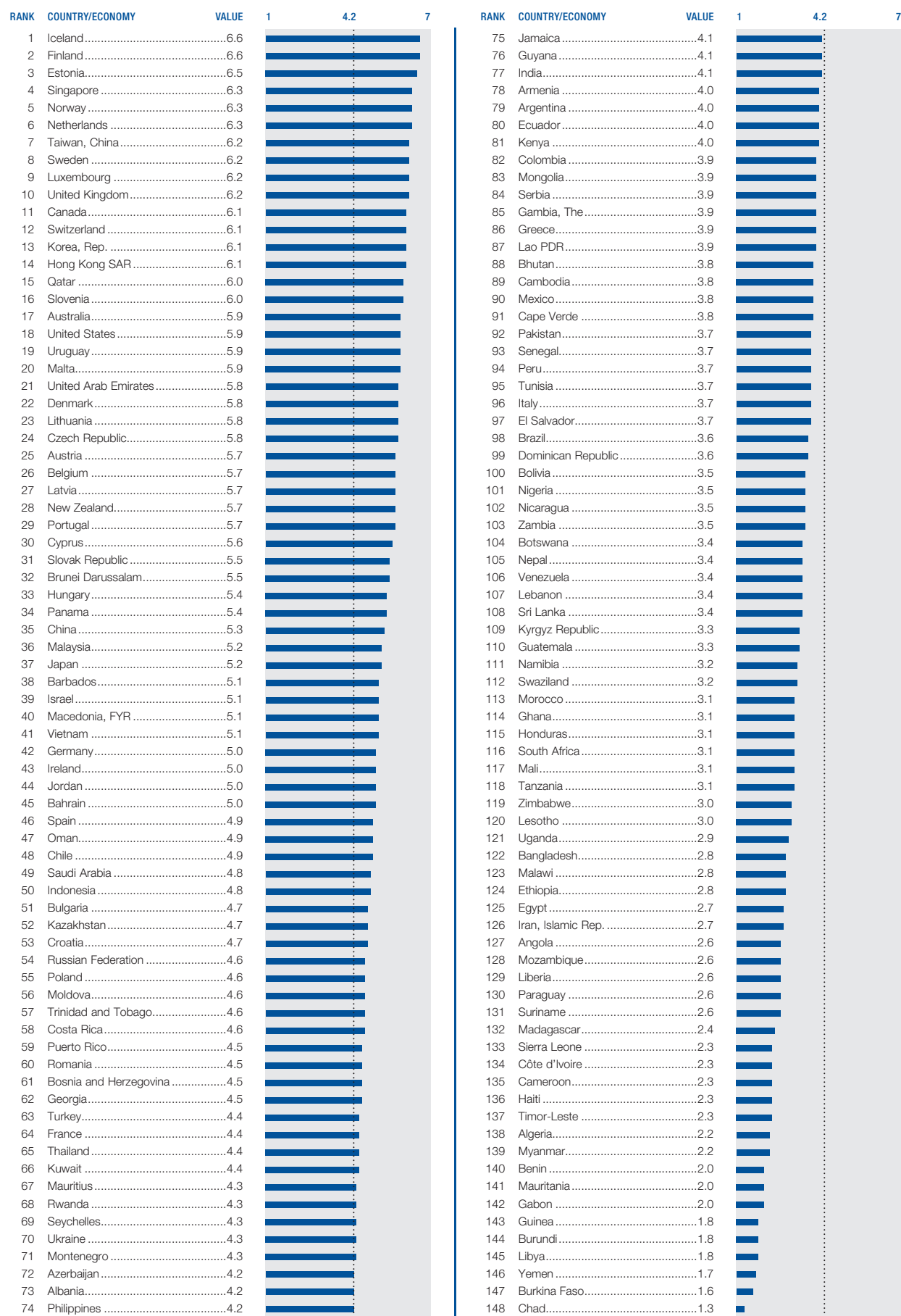
In your country, to what extent do ICTs enable access for all citizens to basic services (e.g., health, education, financial services, etc.)?
[1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.2	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.2	7
1	Qatar	6.1				75	Guatemala	4.1			
2	United Arab Emirates	6.1				76	Tunisia	4.1			
3	Singapore	5.9				77	Senegal	4.0			
4	Luxembourg	5.9				78	Kuwait	4.0			
5	Netherlands	5.8				79	Mexico	4.0			
6	Norway	5.8				80	Dominican Republic	4.0			
7	Estonia	5.8				81	Mongolia	4.0			
8	Taiwan, China	5.8				82	Peru	4.0			
9	Sweden	5.7				83	Hungary	4.0			
10	Finland	5.7				84	Ghana	3.9			
11	Malta	5.7				85	Zambia	3.9			
12	Korea, Rep.	5.7				86	Thailand	3.9			
13	Switzerland	5.7				87	Cambodia	3.9			
14	Hong Kong SAR	5.5				88	Brazil	3.9			
15	Iceland	5.5				89	Trinidad and Tobago	3.9			
16	Saudi Arabia	5.5				90	Slovak Republic	3.9			
17	New Zealand	5.4				91	Bulgaria	3.8			
18	Bahrain	5.4				92	Egypt	3.8			
19	Belgium	5.4				93	Botswana	3.8			
20	Malaysia	5.3				94	Jamaica	3.8			
21	United Kingdom	5.3				95	Iran, Islamic Rep.	3.8			
22	Israel	5.3				96	Bangladesh	3.7			
23	Austria	5.3				97	Namibia	3.7			
24	Australia	5.3				98	Moldova	3.7			
25	Germany	5.2				99	Bolivia	3.7			
26	Canada	5.2				100	Cameroon	3.7			
27	Portugal	5.2				101	El Salvador	3.7			
28	Denmark	5.2				102	Russian Federation	3.7			
29	United States	5.2				103	Serbia	3.7			
30	Brunei Darussalam	5.2				104	Nigeria	3.7			
31	Azerbaijan	5.2				105	Burkina Faso	3.6			
32	Japan	5.1				106	Morocco	3.6			
33	Rwanda	5.1				107	Italy	3.6			
34	Oman	5.1				108	Poland	3.6			
35	France	5.1				109	Greece	3.6			
36	Spain	5.1				110	Romania	3.6			
37	Lithuania	5.0				111	Nicaragua	3.6			
38	Chile	5.0				112	Uganda	3.5			
39	Jordan	4.9				113	Venezuela	3.5			
40	Turkey	4.9				114	Malawi	3.5			
41	Panama	4.8				115	Honduras	3.5			
42	Barbados	4.8				116	Madagascar	3.5			
43	Sri Lanka	4.8				117	Zimbabwe	3.5			
44	Ireland	4.7				118	Argentina	3.5			
45	China	4.7				119	Liberia	3.5			
46	Cyprus	4.6				120	Paraguay	3.5			
47	Costa Rica	4.6				121	Ukraine	3.4			
48	Slovenia	4.6				122	South Africa	3.4			
49	Macedonia, FYR	4.6				123	Tanzania	3.4			
50	Bhutan	4.5				124	Côte d'Ivoire	3.4			
51	Puerto Rico	4.5				125	Gabon	3.3			
52	Mauritius	4.5				126	Albania	3.3			
53	Vietnam	4.5				127	Swaziland	3.3			
54	Latvia	4.5				128	Pakistan	3.3			
55	Gambia, The	4.5				129	Mozambique	3.3			
56	Uruguay	4.5				130	Nepal	3.3			
57	Seychelles	4.5				131	Benin	3.2			
58	Czech Republic	4.5				132	Ethiopia	3.2			
59	Kazakhstan	4.4				133	Sierra Leone	3.2			
60	Montenegro	4.4				134	Suriname	3.1			
61	Cape Verde	4.4				135	Guinea	3.1			
62	Kenya	4.3				136	Lesotho	3.1			
63	India	4.3				137	Myanmar	3.0			
64	Armenia	4.3				138	Algeria	3.0			
65	Bosnia and Herzegovina	4.3				139	Timor-Leste	3.0			
66	Ecuador	4.3				140	Kyrgyz Republic	3.0			
67	Georgia	4.3				141	Haiti	2.9			
68	Guyana	4.3				142	Yemen	2.8			
69	Indonesia	4.2				143	Mauritania	2.7			
70	Colombia	4.2				144	Angola	2.7			
71	Mali	4.2				145	Lebanon	2.7			
72	Croatia	4.2				146	Chad	2.6			
73	Lao PDR	4.2				147	Libya	2.6			
74	Philippines	4.1				148	Burundi	2.6			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

10.02 Internet access in schools*

In your country, how widespread is Internet access in schools? [1 = nonexistent; 7 = extremely widespread] | 2012–2013 weighted average



SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

10.03 ICT use and government efficiency*

In your country, to what extent does the use of ICTs by the government improve the quality of government services to citizens? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

RANK	COUNTRY/ECONOMY	VALUE	1	4.1	7	RANK	COUNTRY/ECONOMY	VALUE	1	4.1	7
1	Singapore	6.1				75	Guyana	4.1			
2	United Arab Emirates	6.0				76	Costa Rica	4.1			
3	Qatar	6.0				77	Cameroon	4.1			
4	Rwanda	5.7				78	Botswana	4.1			
5	Estonia	5.6				79	Thailand	4.1			
6	Malta	5.6				80	Tunisia	4.0			
7	Saudi Arabia	5.5				81	Jamaica	4.0			
8	Korea, Rep.	5.5				82	Albania	4.0			
9	Malaysia	5.5				83	Slovenia	4.0			
10	Sweden	5.5				84	Uganda	4.0			
11	Azerbaijan	5.4				85	Morocco	4.0			
12	Taiwan, China	5.4				86	Ghana	4.0			
13	Bahrain	5.4				87	Hungary	3.9			
14	Finland	5.4				88	Senegal	3.9			
15	Portugal	5.3				89	Mongolia	3.9			
16	Luxembourg	5.3				90	Moldova	3.9			
17	Hong Kong SAR	5.2				91	Uruguay	3.9			
18	Oman	5.2				92	Ethiopia	3.8			
19	New Zealand	5.1				93	Russian Federation	3.8			
20	Netherlands	5.1				94	Croatia	3.7			
21	Norway	5.1				95	Tanzania	3.7			
22	Austria	5.1				96	Egypt	3.7			
23	Switzerland	5.0				97	Nigeria	3.7			
24	Armenia	5.0				98	Trinidad and Tobago	3.7			
25	Sri Lanka	4.9				99	Cambodia	3.7			
26	Jordan	4.9				100	Bulgaria	3.7			
27	United Kingdom	4.9				101	Czech Republic	3.6			
28	Chile	4.9				102	Peru	3.6			
29	Panama	4.9				103	Romania	3.6			
30	Kazakhstan	4.8				104	South Africa	3.6			
31	Israel	4.8				105	Sierra Leone	3.6			
32	Canada	4.8				106	Liberia	3.6			
33	Germany	4.8				107	Bangladesh	3.6			
34	Denmark	4.8				108	Guatemala	3.5			
35	Lithuania	4.8				109	Serbia	3.5			
36	Macedonia, FYR	4.8				110	Nicaragua	3.5			
37	Japan	4.8				111	Kuwait	3.5			
38	Iceland	4.8				112	Côte d'Ivoire	3.5			
39	Brunei Darussalam	4.8				113	Italy	3.5			
40	France	4.8				114	Mozambique	3.5			
41	Georgia	4.7				115	Bolivia	3.4			
42	Cape Verde	4.7				116	El Salvador	3.4			
43	Bhutan	4.7				117	Madagascar	3.4			
44	Turkey	4.7				118	Slovak Republic	3.4			
45	United States	4.6				119	Poland	3.4			
46	Ireland	4.6				120	Gabon	3.4			
47	China	4.6				121	Pakistan	3.3			
48	Gambia, The	4.6				122	Malawi	3.3			
49	Spain	4.5				123	Timor-Leste	3.2			
50	Montenegro	4.5				124	Greece	3.2			
51	Australia	4.5				125	Swaziland	3.2			
52	Belgium	4.5				126	Guinea	3.2			
53	India	4.4				127	Benin	3.2			
54	Mauritius	4.4				128	Ukraine	3.2			
55	Ecuador	4.4				129	Namibia	3.1			
56	Lao PDR	4.4				130	Paraguay	3.1			
57	Kenya	4.4				131	Chad	3.0			
58	Puerto Rico	4.3				132	Zimbabwe	3.0			
59	Seychelles	4.3				133	Myanmar	3.0			
60	Barbados	4.3				134	Honduras	3.0			
61	Brazil	4.2				135	Nepal	3.0			
62	Zambia	4.2				136	Yemen	3.0			
63	Latvia	4.2				137	Venezuela	3.0			
64	Bosnia and Herzegovina	4.2				138	Angola	2.9			
65	Mexico	4.2				139	Lesotho	2.9			
66	Cyprus	4.2				140	Argentina	2.9			
67	Vietnam	4.2				141	Algeria	2.9			
68	Colombia	4.1				142	Mauritania	2.8			
69	Burkina Faso	4.1				143	Suriname	2.8			
70	Iran, Islamic Rep.	4.1				144	Kyrgyz Republic	2.7			
71	Philippines	4.1				145	Haiti	2.7			
72	Mali	4.1				146	Burundi	2.6			
73	Indonesia	4.1				147	Libya	2.4			
74	Dominican Republic	4.1				148	Lebanon	2.3			

SOURCE: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

10.04 E-Participation Index

The E-Participation Index assesses, on a 0-to-1 (best) scale, the quality, relevance, and usefulness of government websites in providing online information and participatory tools and services to their citizens | 2012

RANK	COUNTRY/ECONOMY	VALUE	RANK	COUNTRY/ECONOMY	VALUE
1	Korea, Rep.	1.00	71	Poland	0.18
1	Netherlands	1.00	71	Uruguay	0.18
3	Kazakhstan	0.95	77	Burkina Faso	0.16
3	Singapore	0.95	77	Iceland	0.16
5	United Kingdom	0.92	77	Paraguay	0.16
5	United States	0.92	77	South Africa	0.16
7	Israel	0.89	77	Ukraine	0.16
8	Australia	0.76	82	Azerbaijan	0.13
8	Estonia	0.76	82	Belgium	0.13
8	Germany	0.76	82	Côte d'Ivoire	0.13
11	Colombia	0.74	82	Honduras	0.13
11	Finland	0.74	82	Ireland	0.13
11	Japan	0.74	82	Macedonia, FYR	0.13
11	United Arab Emirates	0.74	82	Mozambique	0.13
15	Canada	0.68	82	Nicaragua	0.13
15	Egypt	0.68	82	Pakistan	0.13
15	Norway	0.68	82	Slovak Republic	0.13
15	Sweden	0.68	92	Albania	0.11
19	Bahrain	0.66	92	Gabon	0.11
19	Chile	0.66	92	Ghana	0.11
19	Russian Federation	0.66	92	Jordan	0.11
22	Qatar	0.63	92	Vietnam	0.11
22	Saudi Arabia	0.63	97	Bangladesh	0.08
24	Mongolia	0.61	97	Benin	0.08
25	France	0.58	97	Cyprus	0.08
25	Mexico	0.58	97	Mauritius	0.08
25	New Zealand	0.58	97	Romania	0.08
28	Denmark	0.55	97	Seychelles	0.08
28	El Salvador	0.55	97	Sri Lanka	0.08
30	Lithuania	0.53	97	Tanzania	0.08
31	Brazil	0.50	97	Trinidad and Tobago	0.08
31	Malaysia	0.50	97	Uganda	0.08
31	Spain	0.50	107	Algeria	0.05
34	Brunei Darussalam	0.47	107	Kenya	0.05
34	Dominican Republic	0.47	107	Sierra Leone	0.05
36	Hungary	0.45	107	Swaziland	0.05
36	Oman	0.45	107	Turkey	0.05
38	Luxembourg	0.39	112	Angola	0.03
38	Moldova	0.39	112	Barbados	0.03
38	Peru	0.39	112	Bhutan	0.03
41	Austria	0.37	112	Botswana	0.03
41	Portugal	0.37	112	Bulgaria	0.03
41	Tunisia	0.37	112	Cameroon	0.03
44	Ethiopia	0.34	112	Chad	0.03
44	Greece	0.34	112	Lesotho	0.03
44	Switzerland	0.34	112	Liberia	0.03
47	Costa Rica	0.32	112	Madagascar	0.03
47	Lebanon	0.32	112	Namibia	0.03
47	Montenegro	0.32	112	Nepal	0.03
47	Panama	0.32	112	Rwanda	0.03
47	Thailand	0.32	112	Zambia	0.03
52	Argentina	0.29	112	Zimbabwe	0.03
52	Croatia	0.29	127	Armenia	0.00
52	Kyrgyz Republic	0.29	127	Bosnia and Herzegovina	0.00
55	Czech Republic	0.26	127	Burundi	0.00
55	Italy	0.26	127	Cambodia	0.00
55	Malta	0.26	127	Gambia, The	0.00
55	Venezuela	0.26	127	Guinea	0.00
59	Cape Verde	0.24	127	Guyana	0.00
59	Ecuador	0.24	127	Haiti	0.00
59	Guatemala	0.24	127	Jamaica	0.00
59	Serbia	0.24	127	Lao PDR	0.00
63	Bolivia	0.21	127	Libya	0.00
63	China	0.21	127	Malawi	0.00
63	Georgia	0.21	127	Mali	0.00
63	Indonesia	0.21	127	Mauritania	0.00
63	Latvia	0.21	127	Morocco	0.00
63	Philippines	0.21	127	Myanmar	0.00
63	Senegal	0.21	127	Suriname	0.00
63	Slovenia	0.21	127	Timor-Leste	0.00
71	India	0.18	127	Yemen	0.00
71	Iran, Islamic Rep.	0.18	n/a	Hong Kong SAR	n/a
71	Kuwait	0.18	n/a	Puerto Rico	n/a
71	Nigeria	0.18	n/a	Taiwan, China	n/a

SOURCE: United Nations, *United Nations E-Government Survey 2012: E-Government for the People*

Technical Notes and Sources

The present section complements the data tables by providing additional information for all 54 indicators that enter the composition of the Networked Readiness Index 2014.

The number next to the indicator corresponds to the number of the data table that reports ranks and scores for all economies on this particular indicator. The indicators derived from the 2012 and 2013 editions of the World Economic Forum's Executive Opinion Survey are identified by an asterisk (*).

The data used in this *Report* represent the most recent available figures from various international agencies and national authorities at the time when the data collection took place. It is possible that some data have been updated or revised since then.

1st pillar: Political and regulatory environment

1.01 Effectiveness of law-making bodies*

How effective is your national parliament/congress as a law-making institution? [1 = not effective at all—among the worst in the world; 7 = extremely effective—among the best in the world] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.02 Laws relating to ICTs*

How developed are your country's laws relating to the use of ICTs (e.g., electronic commerce, digital signatures, consumer protection)? [1 = not developed at all; 7 = extremely well developed] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.03 Judicial independence*

In your country, to what extent is the judiciary independent from influences of members of government, citizens, or firms? [1 = heavily influenced; 7 = entirely independent] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.04 Efficiency of legal framework in settling disputes*

In your country, how efficient is the legal framework for private businesses in settling disputes? [1 = extremely inefficient; 7 = extremely efficient] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.05 Efficiency of legal framework in challenging regulations*

In your country, how easy is it for private businesses to challenge government actions and/or regulations through the legal system? [1 = extremely difficult; 7 = extremely easy] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.06 Intellectual property protection*

In your country, how strong is the protection of intellectual property, including anti-counterfeiting measures? [1 = extremely weak; 7 = extremely strong] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

1.07 Software piracy rate

Unlicensed software units as a percentage of total software units installed | 2011

This measure covers piracy of all packaged software that runs on personal computers (PCs), including desktops, laptops, and ultra-portables, including netbooks. This includes operating systems; systems software such as databases and security packages; business applications; and consumer applications such as games, personal finance, and reference software. The study does not include software that runs on servers or mainframes. For more information about the methodology, refer to the study available at <http://portal.bsa.org/globalpiracy2011/>.

Source: Business Software Alliance, *Shadow Market: 2011 BSA Global Software Piracy Study* (ninth edition)

1.08 Number of procedures to enforce a contract

Number of procedures to resolve a dispute, counted from the moment the plaintiff files a lawsuit in court until payment | 2013

The list of procedural steps compiled for each economy traces the chronology of a commercial dispute before the relevant court. A *procedure* is defined as any interaction, required by law or commonly used in practice, between the parties or between them and the judge or court officer. This includes steps to file and serve the case, steps for trial and judgment, and steps necessary to enforce the judgment. For more details about the methodology employed and the assumptions made to compute this indicator, visit <http://www.doingbusiness.org/methodologysurveys/>.

Source: World Bank/International Finance Corporation, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

1.09 Time required to enforce a contract

Number of days to resolve a dispute, counted from the moment the plaintiff decides to file the lawsuit in court until payment | 2013

Time is recorded in calendar days, counted from the moment the plaintiff decides to file the lawsuit in court until payment. This includes both the days when actions take place and the waiting periods between. For more details about the methodology employed and the assumptions made to compute this indicator, visit <http://www.doingbusiness.org/methodologysurveys/>.

Source: World Bank/International Finance Corporation, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

2nd pillar: Business and innovation environment

2.01 Availability of latest technologies*

In your country, to what extent are the latest technologies available? [1 = not available at all; 7 = widely available] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

2.02 Venture capital availability*

In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? [1 = extremely difficult; 7 = extremely easy] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

2.03 Total tax rate

Sum of profit tax, labor tax and social contributions, property taxes, turnover taxes, and other taxes as a share (%) of commercial profits | 2013

The total tax rate measures the amount of taxes and mandatory contributions borne by the business in the second year of operation, expressed as a share of commercial profit. *Doing Business 2014* reports the total tax rate for calendar year 2012. The total amount of taxes borne is the sum of all the different taxes and contributions payable after accounting for allowable deductions and exemptions. The taxes withheld (such as personal income tax) or collected by the company and remitted to the tax authorities (such as value-added tax, sales tax, or goods and service tax) but not borne by the company are excluded. The taxes included can be divided into five categories: profit or corporate income taxes; social contributions and labor taxes paid by the employer (in respect of which all mandatory contributions are included, even if paid to a private entity such as a required pension fund); property taxes; turnover taxes; and other taxes (such as municipal fees and vehicle and fuel taxes). For more details about the methodology employed and the assumptions made to compute this indicator, visit <http://www.doingbusiness.org/methodologysurveys/>.

Source: World Bank/International Finance Corporation, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

2.04 Time required to start a business

Number of days required to start a business | 2013

Time is recorded in calendar days. The measure captures the median duration that incorporation lawyers indicate is necessary in practice to complete a procedure with minimum follow-up with government agencies and no extra payments. For more details about the methodology employed and the assumptions made to compute this indicator, visit <http://www.doingbusiness.org/methodologysurveys/>.

Source: World Bank/International Finance Corporation, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

2.05 Number of procedures required to start a business

Number of procedures required to start a business | 2013

A *procedure* is defined as any interaction of the company founders with external parties (e.g., government agencies, lawyers, auditors, or notaries). For details about the methodology employed and the assumptions made to compute this indicator, visit <http://www.doingbusiness.org/methodologysurveys/>.

Source: World Bank/International Finance Corporation, *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

2.06 Intensity of local competition*

In your country, how intense is competition in the local markets? [1 = not intense at all; 7 = extremely intense] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

2.07 Tertiary education enrollment rate

Gross tertiary education enrollment rate (%) | 2011

Tertiary enrollment rate is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the tertiary education level. Tertiary education, whether or not leading to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.

Sources: United Nations Education, Science and Culture Organization (UNESCO), UNESCO Institute for Statistics Data Centre (accessed November 5, 2013); World Bank, *World Development Indicators 2013* (December edition); national sources

2.08 Quality of management schools*

In your country, how would you assess the quality of business schools? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

2.09 Government procurement of advanced technology products*

In your country, to what extent do government purchasing decisions foster innovation? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

3rd pillar: Infrastructure and digital content

3.01 Electricity production

Electricity production (kWh) per capita | 2011

Electricity production is measured at the terminals of all alternator sets in a station. In addition to hydropower, coal, oil, gas, and nuclear power generation, it covers generation by geothermal, solar, wind, and tide and wave energy as well as that from combustible renewables and waste. Production includes the output of electricity plants designed to produce electricity only, as well as that of combined heat and power plants. Total electricity production is then divided by total population. Population figures are from the World Bank's *World Development Indicators Online* (retrieved November 11, 2013).

Sources: The World Bank, *World Development Indicators Online* (October 2013 update); US Central Intelligence Agency (CIA), *The World Factbook* (accessed November 11, 2013)

3.02 Mobile network coverage rate

Percentage of total population covered by a mobile network signal | 2012

This indicator measures the percentage of inhabitants who are within range of a mobile cellular signal, irrespective of whether or not they are subscribers. This is calculated by dividing the number of inhabitants within range of a mobile cellular signal by the total population. Note that this is not the same as the mobile subscription density or penetration.

Source: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

3.03 International Internet bandwidth

International Internet bandwidth (kb/s) per Internet user | 2012

International Internet bandwidth is the sum of capacity of all Internet exchanges offering international bandwidth measured in kilobits per second (kb/s).

Source: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

3.04 Secure Internet servers

Secure Internet servers per million population | 2012

Secure Internet servers are servers using encryption technology in Internet transactions.

Sources: The World Bank, *World Development Indicators Online* (December 2013 edition); national sources

3.05 Accessibility of digital content*

In your country, how available is digital content via multiple platforms (e.g., fixed-line Internet, wireless Internet, mobile network, satellite)? [1 = not available at all; 7 = widely available] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

4th pillar: Affordability

4.01 Prepaid mobile cellular tariffs

Average per-minute cost of different types of mobile cellular calls (PPP \$) | 2012

This measure is constructed by first taking the average per-minute cost of a local call to another mobile cellular phone on the same network (on-net) and on another network (off-net). This amount is then averaged with the per-minute cost of a local call to a fixed telephone line. All the tariffs are for calls placed during peak hours and based on a basic, representative mobile cellular prepaid subscription service. The amount is adjusted for purchasing power parity (PPP) and expressed in current international dollars. PPP figures were sourced from the World Bank's *World Development Indicators Online* (retrieved December 10, 2013) and the International Monetary Fund's *World Economic Outlook* (October 2013 edition).

Sources: Author's calculations based on International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition); International Monetary Fund, *World Economic Outlook* (October 2013 edition); World Bank, *World Development Indicators* (December 2013 edition)

4.02 Fixed broadband Internet tariffs

Monthly subscription charge for fixed (wired) broadband Internet service (PPP \$) | 2012

Fixed (wired) broadband is considered any dedicated connection to the Internet at downstream speeds equal to, or greater than, 256 kilobits per second, using DSL. The amount is adjusted for purchasing power parity (PPP) and expressed in current international dollars. PPP figures were sourced from the World Bank's *World Development Indicators Online* (December 2013) and the International Monetary Fund's *World Economic Outlook* (October 2013 edition).

Sources: Author's calculations based on International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition); International Monetary Fund, *World Economic Outlook* (October 2013 edition); World Bank, *World Development Indicators* (December 2013 edition)

4.03 Internet and telephony sectors competition index

Level of competition index for Internet services, international long distance services, and mobile telephone services on a 0-to-2 (best) scale | 2010 or most recent

This variable measures the degree of liberalization in 19 categories of ICT services, including 3G telephony, retail Internet access services, international long distance calls, and international gateways. For each economy, the level of competition in each of the categories is assessed as follows: monopoly, partial competition, and full competition. The results reflect the situation as of 2010 for the majority of countries (for others, data are available as of 2009, 2011, or 2012). The index is calculated as the average of points obtained in each of the 19 categories for which data are available. Full liberalization across all categories yields a score of 2, the best possible score. For more information, consult <http://www.itu.int/ITU-D/ICTEYE/Reports.aspx>.

Source: Authors' calculations based on International Telecommunication Union (ITU), *ITU World Telecommunication Regulatory Database* (accessed December 2013)

5th pillar: Skills

5.01 Quality of the educational system*

How well does the educational system in your country meet the needs of a competitive economy? [1 = not well at all; 7 = extremely well] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

5.02 Quality of math and science education*

In your country, how would you assess the quality of math and science education in schools? [1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

5.03 Secondary enrollment rate

Secondary education gross enrollment rate (%) | 2011

The reported value corresponds to the ratio of total secondary enrollment, regardless of age, to the population of the age group that officially corresponds to the secondary education level. Secondary education (ISCED levels 2 and 3) completes the provision of basic education that began at the primary level, and aims to lay the foundations for lifelong learning and human development by offering more subject- or skills-oriented instruction using more specialized teachers.

Sources: United Nations Education, Science and Culture Organization (UNESCO), UNESCO Institute for Statistics Data Centre (accessed November 5, 2013); World Bank, *World Development Indicators* (December 2013 edition); national sources

5.04 Adult literacy rate

Adult literacy rate (%) | 2011

Adult literacy is defined as the percentage of the population aged 15 years and over who can both read and write with understanding a short, simple statement on his/her everyday life. For OECD member countries, when data are missing, we apply a value of 99 percent for the purposes of calculating the NRI. This is in line with the approach adopted by the United Nations Development Programme (UNDP) in calculating the 2009 edition of the Human Development Index. In the corresponding table, those countries are identified by an asterisk.

Sources: United Nations Education, Science and Culture Organization (UNESCO), UNESCO Institute for Statistics Data Centre (accessed November 5, 2013); national sources

6th pillar: Individual usage

6.01 Mobile telephone subscriptions

Mobile telephone subscriptions (post-paid and pre-paid) per 100 population | 2012

A *mobile telephone subscription* refers to a subscription to a public mobile telephone service that provides access to the Public Switched Telephone Network using cellular technology, including prepaid SIM cards active during the past three months. This includes both analog and digital cellular systems (IMT-2000, Third Generation, 3G) and 4G subscriptions, but excludes mobile broadband subscriptions via data cards or USB modems. Subscriptions to public mobile data services, private trunked mobile radio, telepoint or radio paging, and telemetry services are also excluded. It includes all mobile cellular subscriptions that offer voice communications.

Source: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

6.02 Internet users

Percentage of individuals using the Internet | 2012

Internet users are people with access to the worldwide network.

Source: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

6.03 Households with a personal computer

Percentage of households equipped with a personal computer | 2012

The proportion of households with a computer is calculated by dividing the number of households with a computer by the total number of households. A *computer* refers to a desktop or a laptop computer. It does not include equipment with some embedded computing abilities such as mobile cellular phones, personal digital assistants (PDAs), or TV sets.

Source: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

6.04 Households with Internet access

Percentage of households with Internet access at home | 2012

The share of households with Internet access at home is calculated by dividing the number of in-scope households (where at least one household member is aged 15–74) with Internet access by the total number of in-scope households.

Source: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

6.05 Fixed broadband Internet subscriptions

Fixed broadband Internet subscriptions per 100 population | 2012

This refers to total fixed (wired) broadband Internet subscriptions (that is, subscriptions to high-speed access to the public Internet—a TCP/IP connection—at downstream speeds equal to, or greater than, 256 kb/s).

Source: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

6.06 Mobile broadband Internet subscriptions

Mobile broadband Internet subscriptions per 100 population | 2012

Source: International Telecommunication Union (ITU), *ITU World Telecommunication/ICT Indicators Database 2013* (December 2013 edition)

6.07 Use of virtual social networks*

In your country, how widely used are virtual social networks (e.g., Facebook, Twitter, LinkedIn)? [1 = not used at all; 7 = widely used] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

7th pillar: Business usage

7.01 Firm-level technology absorption*

In your country, to what extent do businesses adopt new technology? [1 = not at all; 7 = adopt extensively] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

7.02 Capacity for innovation*

In your country, to what extent do companies have the capacity to innovate? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

7.03 PCT patents applications**Number of applications filed under the Patent Cooperation Treaty (PCT) per million population | 2010–2011 average**

This measures the total count of applications filed under the Patent Cooperation Treaty (PCT), by priority date and inventor nationality, using fractional count if an application is filed by multiple inventors. The average count of applications filed in 2010 and 2011 is divided by population, using figures from the World Bank's *World Development Indicators Online* (retrieved November 28, 2012).

Sources: Organisation for Economic Co-operation and Development (OECD), *Patent Database*, January 2014; World Bank, *World Development Indicators Online* (retrieved December 20, 2013)

7.04 Business-to-business Internet use***In your country, to what extent do businesses use ICTs for transactions with other businesses? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average**

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

7.05 Business-to-consumer Internet use***In your country, to what extent do businesses use the Internet for selling their goods and services to consumers? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average**

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

7.06 Extent of staff training***In your country, to what extent do companies invest in training and employee development? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average**

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

8th pillar: Government usage**8.01 Importance of ICTs to government vision of the future*****To what extent does the government have a clear implementation plan for utilizing ICTs to improve your country's overall competitiveness? [1 = no plan; 7 = clear plan] | 2012–2013 weighted average**

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

8.02 Government Online Service Index**The Government Online Service Index assesses the quality of government's delivery of online services on a 0-to-1 (best) scale | 2012**

According to the United Nations' Public Administration Network, the Government Online Service Index captures a government's performance in delivering online services to the citizens. There are four stages of service delivery: *Emerging*, *Enhanced*, *Transactional*, and *Connected*. Online services are assigned to each stage according to their degree of sophistication, from the more basic to the more sophisticated. In each country, the performance of the government in each of the four stages is measured as the number of services provided as a percentage of the maximum services in the corresponding stage. Examples of services include online presence, deployment of multimedia content, governments' solicitation of citizen input, widespread data sharing, and use of social networking. For more information about the methodology, consult www2.unpan.org/egovkb/datacenter/CountryView.aspx.

Source: United Nations, *United Nations E-Government Survey 2012: E-Government for the People*

8.03 Government success in ICT promotion***In your country, how successful is the government in promoting the use of information and communication technologies (ICTs)? [1 = not successful at all; 7 = extremely successful] | 2012–2013 weighted average**

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

9th pillar: Economic impacts**9.01 Impact of ICTs on new services and products*****In your country, to what extent do ICTs enable new business models? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average**

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

9.02 PCT ICT patent applications**Number of applications for information and communication technology-related patents filed under the Patent Cooperation Treaty (PCT) per million population | 2010–2011 average**

This measures the count of applications filed under the Patent Cooperation Treaty (PCT) in the technology domain of information and communication technologies by priority date and inventor nationality, using a fractional count if an application is filed by multiple inventors. For more information, consult www.oecd.org/sti/innovation/science/technologyandindustry/oecdpatentdatabases.htm. The average count of applications filed in 2010 and 2011 is divided by population, using figures from the World Bank's *World Development Indicators Online* (retrieved December 20, 2013).

Sources: Organisation for Economic Co-operation and Development (OECD), *Patent Database*, January 2014; World Bank, *World Development Indicators Online* (retrieved December 20, 2013)

9.03 Impact of ICTs on new organizational models***In your country, to what extent do ICTs enable new organizational models (e.g., virtual teams, remote working, telecommuting) within businesses? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average**

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

9.04 Share of workforce employed in knowledge-intensive activities (%)**Share of workforce employed in knowledge-intensive activities (%) | 2012**

Count of people employed in categories 0 to 3 as a percentage of total people employed, according to ISCO-1968, ISCO-88, and NSCO (excluding 0 Armed forces in ISCO-88). Categories included: ISCO-1968: (0/1) Professional, technical and related workers; (2) Administrative and managerial workers; and (3) Clerical and related workers. ISCO-88: (1) Legislators, senior officials and managers; (2) Professionals; and (3) Technicians and associate professionals.

Source: Authors' calculations based on International Labour Organization ILOSTAT Database (retrieved November 29, 2013)

10th pillar: Social impacts

10.01 Impact of ICTs on access to basic services*

In your country, to what extent do ICTs enable access for all citizens to basic services (e.g., health, education, financial services, etc.)? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

10.02 Internet access in schools*

In your country, how widespread is Internet access in schools? [1 = nonexistent; 7 = extremely widespread] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

10.03 ICT use and government efficiency*

In your country, to what extent does the use of ICTs by the government improve the quality of government services to citizens? [1 = not at all; 7 = to a great extent] | 2012–2013 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2012 and 2013 editions

10.04 E-Participation Index

The E-Participation Index assesses, on a 0-to-1 (best) scale, the quality, relevance, and usefulness of government websites in providing online information and participatory tools and services to their citizens | 2012

According to the United Nations, the *E-Participation Index* assesses the quality and usefulness of information and services provided by a country for the purpose of engaging its citizens in public policy making through the use of e-government programs. As such it is indicative of both the capacity and the willingness of the state in encouraging the citizen in promoting deliberative, participatory decision-making in public policy and of the reach of its own socially inclusive governance program. For more information about the methodology, consult www2.unpan.org/egovkb/datacenter/CountryView.aspx.

Source: United Nations, *United Nations E-Government Survey 2012: E-Government for the People*

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Information and communication technologies (ICTs) have evolved into key enablers across industries while proving to be powerful drivers of enhanced living conditions and opportunities around the globe. ICTs have changed the world dramatically over the last decade or so, and they are bound to continue to do so at an even higher rate as we begin to feel the full effects of the information revolution.

The Global Information Technology Report 2014, the 13th in the series, analyzes the drivers of ICTs and the impacts they can have for competitiveness and well-being. This year the *Report* focuses on the role that big data may play in this process and the conditions that leading organizations will need to adopt in order to fully take advantage of this transformative resource. Over the past 13 years, the *Report* has become the most comprehensive and respected international assessment of the preparedness of economies to leverage the networked economy, providing a unique platform for public-private dialogue on best policies and for determining what actions will further national ICT readiness and innovation potential.

Through the methodological framework of the Networked Readiness Index (NRI), the *Report* measures the extent to which 148 economies, from both the developed and developing worlds, take advantage of ICTs and other new technologies to increase their growth and well-being. The NRI identifies the most relevant factors driving ICT readiness and impacts, providing policymakers, business leaders, and civil society at large with a useful tool for designing national strategies for increased networked readiness and for benchmarking their country's performance against other relevant comparators.

The Global Information Technology Report 2014 features the latest computation and rankings of the NRI and, referring to this year's theme, dives deeper into the rewards and risks that derive from the advent of big data. In addition, the *Report* includes detailed profiles for the 148 economies covered this year together with data tables for each of the 54 indicators used in the computation of the NRI.

The *Report* is the result of a long-lasting collaboration, dating back to 2002, between the World Economic Forum and INSEAD.

Written in a nontechnical language and style, the *Report* appeals to a large audience made up of policymakers, business leaders, academics, and different organizations of civil society. In line with other projects of the World Economic Forum's Global Competitiveness and Benchmarking Network, the *Report* brings together a range of leading academics, experts, and industry leaders.

The full *Report* can be downloaded at www.weforum.org/gitr.