WMRC Global E-Government Survey, October, 2001

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Table of Contents

Executive Summary

E-government refers to the delivery of information and services online through the Internet. Many governmental units across the world have embraced the digital revolution and placed a wide range of materials on the web from publications to databases. Since global e-government still is in its infancy, it is a perfect time to measure the extent of web service delivery and compare differences that exist across the 196 nations of the world.

In this report, we study the features that are available online at national government websites. Using a detailed analysis of 2,288 government websites in 196 different nations, we measure the information and services that are online, chart the variations that exist across countries, and discuss how e-government sites vary by region of the world. Funding for this project was provided by World Markets Research Centre of London, England.

In general, we found that e-government is falling short of its true potential. While some countries have embraced e-government, a number of other countries have not placed much information or services online, and are not taking advantage of the interactive features of the Internet. Countries with limited wealth and with populations that do not make much use of the Internet generally do not have very strong e-government sites. We also document problems in the areas of privacy, security, and special needs populations such as the handicapped that need to be addressed. We close our report by making several practical suggestions for improving the delivery of government information and services over the Internet.

Among the more important findings of the research are:

1) English has become the language of e-government. Seventy-two percent of national government websites have an English version, while only 28 percent do not

2) 45 percent of sites are multi-lingual, meaning that they offer two or more languages

3) 6 percent of websites feature a one-stop services "portal" or have links to a government portal

4) 8 percent offered services that are fully executable online

5) the most frequent services are being able to order publications online, buy stamps, and file complaints

6) 71 percent of websites provide access to publications and 41 percent have links to databases

7) 6 percent show privacy policies, while 3 percent have security policies

8) only 2 percent of government websites have some form of disability access, meaning access for persons with disabilities

9) countries vary enormously in their overall e-government performance based on our analysis. The most highly ranked nations include the United States, Taiwan, Australia, Canada, Great Britain, Ireland, Israel, Singapore, Germany, and Finland

10) there were major differences in e-government performance based on region of the world. In general, countries in North America, Europe, Asia, the Middle East rank more highly than those in Russia and Central Asia, South America, Pacific Ocean islands, Central America, and Africa.

A Note on Methodology

In our analysis of websites, we looked for material that would aid an average citizen logging onto a governmental site. This included contact information that would enable a citizen to find out who to

call or write at an agency to resolve a problem, material on information, services, and databases, features that would facilitate e-government access by special populations such as the handicapped and non-native language speakers, interactive features that would facilitate outreach to the public, and visible statements that would reassure citizens worried about privacy and security over the Internet. During the course of our study, we looked at a wide variety of political and economic systems, from monarchies, federated systems, and presidential democracies to parliamentary systems, dictatorships, and communist countries. In each system analyzed, we employed the same type of criteria in order to be able to compare the results across countries.

The data for our analysis consisted of 2,288 national government websites for the 196 nations around the world. Among the sites analyzed were those of executive offices (such as a president, prime minister, ruler, party leader, or royalty), legislative offices (such as Congress, Parliament, or People's Assemblies), judicial offices (such as major national courts), Cabinet offices, and major agencies serving crucial functions of government, such as health, human services, taxation, education, interior, economic development, administration, natural resources, foreign affairs, foreign investment, transportation, military, tourism, and business regulation. Websites for subnational units, obscure boards and commissions, local government, regional units, and municipal offices were not included in this study. The analysis was undertaken during Summer, 2001 at Brown University in Providence, Rhode Island. Tabulation for this project was completed by Kim O'Keefe, Julia Fischer-Mackey, Sheryl Shapiro, Chris Walther, Shih-Chieh Su, Ebru Bekyel, and Mariam Ayad.

In general, we found different numbers of websites in each country. Based on our research, there are a number of countries that have 1-4 sites, another group that has 5-10, a third group that has 10-20 sites, a fourth group that falls within the range of 20-30 sites, and a small number that have more than 30 sites. We analyzed a range of sites within each country to get a full sense of what is available in particular nations.

The regional breakdowns for the websites we studied were 25 percent from Western or Eastern European countries, followed by 18 percent from Africa, 14 percent from Asia, 9 percent from Central America, 8 percent the Middle East, 7 percent Russia and Central Asia (such as the areas of the former Soviet Union), 7 percent South America, 7 percent Pacific Ocean countries (meaning those off the continent of Asia), and 5 percent North America (which included Canada, the United States, and Mexico).

National government websites reflected the social, economic, political, and religious background of that area. Muslim countries often had links to religious unity pages or offered forums where visitors could discuss religious issues. In some former communist nations, ministries of privatization aimed at foreign investors appeared to be the most elaborate sites. Nations that relied heavily on tourism (such as those in the Caribbean or Pacific islands) often centered their e-government activities around tourism sites.

Regardless of the type of system or cultural background of a country, websites were evaluated for the presence of 28 features dealing with information availability, service delivery, and public access. Features assessed included type of site, name of nation, region of the world, office phone number, office address, online publications, online database, external links to non-governmental sites, audio clips, video clips, non-native languages or foreign language translation, commercial advertising, user payments or fees, subject index, handicap access, privacy policy, security features, presence of online services, number of different services, links to a government services portal, digital signatures, credit card payments, email address, search capability, comment form or chat-room, broadcast of events, automatic email updates, and having an English version of the website.

For e-government service delivery, we looked at the number and type of online services offered. Features were defined as services only if the entire transaction could occur online. If a citizen had to print out a form and then mail it back to the agency to obtain the service, we did not count that as a service that could be fully executed online. Searchable databases counted as services only if they

involved accessing information that resulted in a specific government service response.

Where national government websites were not in English, our research team employed foreign language readers who translated and evaluated national government websites where possible. In some cases, we have made use of foreign language translation software available online through http://babelfish.altavista.com. The remainder of this report outlines the detailed results that came out of this research.

Overview of Global E-Government

Several general patterns stand out in the study of e-government. The most noteworthy feature is the extent to which English has become the language of global e-government. Seventy-two percent of national government websites have an English version of the site, while 28 percent do not. Reflecting the multi-linguistic nature of global interactions, many nations offer more than one language on their websites. For example, almost half (45 percent) have two or more languages on their government sites. Other than English, common languages included Spanish, French, Russian, German, Italian, Portuguese, Arabic, and Chinese.

In terms of information availability, many countries have made considerable progress at putting publications, forms, and databases online for citizen access. Government agencies have discovered that it is very efficient for the general public to be able to download common documents rather than having to visit or call the particular agency.

However, many countries have not made similar progress in placing official government services online. There is wide variation across countries and by region of the world in the extent to which citizens can access government services through the Internet. While some governments offer a number of services online, most do not.

Not surprisingly, given this situation, most countries do not have portals that link the services of various agencies and departments of that country. Portals offer many advantages for government offices. Having a single entry point into a national government helps citizens because these portals integrate e-government service offerings across different agencies. Portals reduce the need to log on to different agency websites to order services or find information. Instead, citizens can engage in "one-stop" shopping, and find what they need at a single source. Service portals improve citizen access because they encourage more uniform designs for particular countries. Rather than have a "Tower of Babel" across different government agencies where websites do not share a common navigational system, presentational style, or method of organization, these "one-stop" portals make it much easier for citizens to access online information and services.

Finally, as we discuss later in this report, there remains a need for continuing advancement in the areas of privacy, security, and interactive features, such as search engines. Compared to various commercial websites, the public sector lags the private sector in making full use of the technological power of the Internet to improve the lives of citizens and enhance the performance of governmental units. Given public concerns about privacy and security on the Internet, governmental agencies need to do more to reassure the public that e-government is safe and secure for users.

Online Information

In looking at specific features of government websites, we wanted to see how much material was available that would help citizens contact government agencies and navigate websites. In general, contact information is quite prevalent. The vast majority of sites provide their department's telephone number (70 percent) and mailing address (67 percent). These are materials that would help an ordinary citizen needing to contact a government agency reach that office. In addition, features such as a subject area index that organize a site and tell a citizen how to navigate the site were abundant. Eighty-five percent of government sites had subject indices.

In terms of the content of online material, many agencies have made extensive progress at placing information online for public access. Seventy-one percent of government websites around the world offered publications that a citizen could access, and 41 percent provided databases. Forty-two percent had links to external, non-governmental sites where a citizen could turn for additional information.

Percentage of Websites Offering Publications and Databases

Phone Contact Info.	70%
Address Info	67
Links to Other Sites	42
Publications	71
Databases	41
Index	85
Audio Clips	4
Video Clips	4

As a sign of the early stage of global e-government, most public sector websites do not incorporate audio clips or video clips on their official sites. Despite the fact that these are becoming much more common features of e-commerce and private sector enterprise, only four percent of government websites provided audio clips or video clips. A common type of audio clip was a national anthem or a musical selection

Services Provided

Fully executable, online service delivery benefits both government and its constituents. In the long run, such services have the potential to lower the costs of service delivery and make services more widely accessible to the general public, because they no longer have to visit, write, or call an agency in order to execute a specific service. As more and more services are put online, e-government will revolutionize the relationship between government and citizens.

Of the websites examined around the world, however, only 8 percent offer services that are fully executable online. Of this group, 5 percent offer one service, 1 percent have two services, and two percent have three or more services. Ninety-two percent have no online services.

North America (including the United States, Canada, and Mexico) was the area offering the highest percentage of online services as 28 percent of sites analyzed had fully executable, online services. This was followed by the Pacific Ocean islands (19 percent of which had services), Asia (12 percent), the Middle East (10 percent), and Europe (9 percent). Only 2 percent of sites in Africa and 2 percent in Russia/Central Asia offered online government services. Three percent of sites in South America had online services as did 4 percent in Central America. Pacific Ocean islands did well on services mainly because of their efforts to promote tourism.

Percentage of Government Sites Offering Online Services by Region of World

North America	28%
Pacific Ocean Islands	19

Asia	12
Middle East	10
Europe	9
Central America	4
South America	3
Russia/Central Asia	2
Africa	2

There is a great deal of variation in the services available on national government websites. The most frequent services found included ordering publications online, buying stamps, and filing complaints. Several countries had novel online services. For example, the Dominican Republic's National Drug Control office had a "drug information" link in which anonymous citizens could report illegal drug dealing. Australia offered the possibility of applying for jobs online at some national agencies. Bangladesh's National Tourism Organization offered online booking of hotel rooms. Canada offers a number of services online such as change of postal address forms, package tracking, and ordering stamps. Egypt allows for personal and union registration online at the Ministry for Manpower and Emigration. Lithuania offers searches for stolen vehicles, invalid identity documents, and wanted persons through its Ministry of the Interior.

One of the features that has slowed the development of online services has been an inability to use credit cards and digital signatures on financial transactions. On commercial sites, it is becoming a more common practice to offer goods and services online for purchase through the use of credit cards. However, of the government websites analyzed, only 1 percent accepted credit cards and two-tenths of 1 percent allowed digital signatures for financial transactions. Among the sites having a capacity for digital signatures were the Taiwanese governmental portal and Ireland's Revenue Department. Since some government services require a fee, not having a credit card payment system makes it difficult to place government services that are fully executable online.

Services by Top Nations

Of the 196 nations analyzed, there is wide variance in the percentage of government sites with online services. Taiwan is first, with 65 percent of its websites providing some type of service, followed by Germany (59 percent), Australia (50 percent), Cook Islands (50 percent), New Zealand (48 percent), and Singapore (47 percent). It is important to keep in mind that our definition of services included only those services that were fully executable online. If a citizen had to print out a form and mail or take it to a government agency to execute the service, we did not count that as an online service.

Percent of National Sites Offering Online Services

Taiwan	65%	Germany	59%
Australia	50	Cook Islands	50
New Zealand	48	Singapore	47

Seychelles	40	Canada	34
United States	34	Bahamas	33
Great Britain	30	Israel	27
China	26	France	25
Jamaica	25	Liechtenstein	20
Barbados	20	Spain	17
Malaysia	16	Austria	15
Switzerland	15		

Privacy and Security

The unregulated and accessible structure of the Internet has prompted many to question the privacy and security of government websites. Public opinion surveys place these areas near the top of the list of citizen concerns about e-government. Having visible statements outlining what the site is doing on privacy and security are valuable assets for reassuring a fearful population and encouraging citizens to make use of e-government services and information.

However, few global e-government sites offer policy statements dealing with these topics. Only 6 percent of examined sites have some form of privacy policy on their site, and 3 percent have a visible security policy. Both of these are areas that government officials need to take much more seriously. Unless ordinary citizens feel safe and secure in their online information and service activities, e-government is not going to grow very rapidly.

Security by Top Nations

Despite the importance of security in the virtual world, there are wide variations across nations in the percentage of websites showing a security policy. The United States was the nation most likely to show a visible security policy, with 56 percent of its sites including a statement. This was followed by Australia (54 percent), Bahamas (33 percent), Taiwan (22 percent), Canada (14 percent), Jamaica (8 percent), Costa Rica (7 percent), Ukraine (6 percent), and Japan (6 percent). Most other nations did not have sites with a security statement.

Top Countries in Security Policy

United States	56%	Australia	54%
Bahamas	33	Taiwan	22
Canada	14	Jamaica	8
Costa Rica	7	Ukraine	6
Japan	6	All others	0

Privacy by Top Nations

Similar to the security area, there are widespread variations across the nations in providing privacy policies on their websites. The country with the highest percentage of websites offering a visible privacy policy was St. Lucia (100 percent), followed by Australia (96 percent), St. Vincent (88 percent), United States (81 percent), Canada (79 percent), and the Bahamas (33 percent). Most other countries did not offer privacy statements online.

Top Countries in Privacy Features

St. Lucia	100%	Australia	96%
St. Vincent	88	United States	81
Canada	79	Bahamas	33
Israel	19	Taiwan	17
Sri Lanka	11	New Zealand	8
Great Britain	7	Costa Rica	7
Oman	7	Thailand	6
Japan	6	Singapore	5
Belgium	5	Ireland	5
Turkey	5	All others	0

Disability Access

Disability access is vitally important to citizens who are hearing impaired, visually impaired, or suffer from some other type of handicap. If a site is ill-equipped to provide access to individuals with disabilities, it fails in its attempt to reach out to as many people as possible. Two percent of government websites had some form of disability access using measures that we employed.

To be recorded as accessible to the disabled, the site had to display features that would be helpful to the hearing or visually impaired. For example, TTY (Text Telephone) or TDD (Telephonic Device for the Deaf) phone numbers allow hearing-impaired individuals to contact the agency by phone. Second, the site could be "Bobby Approved," meaning that the site has been deemed disability-accessible by a non-profit group that rates Internet web sites for such accessibility (http://www.cast.org/bobby/). Third, the site could have web accessibility features consistent with standards mandated by groups such as the World Wide Web Consortium (W3C) or legislative acts of the national government.

Disability Access by Top Nations

When looking at disability access by individual countries, it is clear there is tremendous variation in the percentage of sites that are accessible. The nations doing the best job on disability access are United States (37 percent of their sites are accessible), Ireland (24 percent), Australia (23 percent), Italy (20 percent), Madagascar (17 percent), Jamaica (8 percent), and South Korea (8 percent).

Top Disability Access Countries

United States	37%	Ireland	24

Australia	23	Italy	20
Madagascar	17	Jamaica	8
South Korea	8	Great Britain	7
Canada	7	Luxembourg	6
Latvia	6	India	3
All others	0		

Foreign Language Access

As pointed out earlier, about half (45 percent) of national government websites have foreign language features that allow access to non-native speaking individuals. By foreign language feature, we mean any accommodation to the non-native speakers in a particular country, such as text translation into a different language. There were 46 countries (about one-quarter of the world total) that had bilingual or multi-lingual websites. This included nations such as Estonia, Finland, Libya, Lichtenstein, Maldives, Moldova, Morocco, and other countries with mixed language populations. Eighty countries had no language translation on their site other than their native tongue.

Ads and User Fees

Overall, use of ads to finance government websites is not very prevalent. Only 4 percent of sites had commercial advertisements on their sites, meaning non-governmental corporate and group sponsorships. In general, tourism sites had the most ads. For example, these websites had banners or "fly-by" ads for hotels, travel agents, or special travel packages.

When defining an advertisement, we eliminated computer software available for free download (such as Adobe Acrobat Reader, Netscape Navigator, and Microsoft Internet Explorer) since they are necessary for viewing or accessing particular products or publications. Links to commercial products or services available for a fee were included as advertisements as were banner, pop-up, and fly-by advertisements.

Examples of advertisements on national government sites included hotel information and booking ("Intimate Hotels" at the Barbados Tourism Authority and "Island Resort Tours" at the Antigua and Barbuda Department of Tourism), a Lycos shopping ad on the Algerian Ministry of Finance, a jobs online banner ad at the Afghanistan portal page, "Chez.com" at the Comoros government site, and the Algerian National Meteorology site sponsored by Hilton Hotels.

Countries that had the largest percentage of websites with commercial advertising were Comoros (100 percent of its sites), Antigua and Barbuda (100 percent), Uzbekistan (67 percent), Laos (50 percent), Brazil (44 percent), Afghanistan (33 percent), Tonga (33 percent), Eritrea (33 percent), Ukraine (29 percent), Sierra Leone (25 percent), Uruguay (25 percent), Grenada (25 percent), and Kyrgyzstan (25 percent).

Furthermore, less than 1 percent of sites required user fees to access information and services. A growing concern of e-government is that without adequate funding and support, states will increase the use of commercial advertisements and begin charging citizens for the right to access public information in order to generate the necessary revenue. The first creates potential conflicts of interest, while the latter exacerbates the digital divide between rich and poor people in terms of their ability to access the Internet. The government that had the highest percentage of websites with user fees was the

United States (17 percent of its sites). Most other countries had no user fees.

Public Outreach

E-government offers the potential to bring citizens closer to their governments. Regardless of the type of political system that a country has, the public benefits from interactive features that facilitate communication between citizens and government. In our examination of national government websites, we looked for various features that would help citizens contact government officials and make use of information on websites.

For example, email is an interactive feature that allows ordinary citizens to pose questions of government officials or request information or services. In our study, we found that 73 percent of government websites offered email contact material so that a visitor could email a person in a particular department other than the Webmaster.

Percentage of Government Websites Offering Public Outreach

Email	73%
Search	38
Comments	8
Email Updates	6
Broadcast	2

While email is certainly the easiest method of contact, there are other methods that government websites can employ to facilitate public feedback. These include areas to post comments (other than through email), the use of message boards, and chat rooms. Websites using these features allow citizens and department members alike to read and respond to others' comments regarding issues facing the department. This technology is nowhere near as prevalent as email-only 8 percent of websites offer this feature.

Thirty-eight percent of the sites we examined had the ability to search the particular website. This is a feature that is helpful to citizens because it allows them to find the specific information they want. Two percent of sites offer live broadcasts of important speeches or events ranging from live coverage of the government hearings and broadcasts of public speeches to weekly Internet radio shows featuring various department officials. Six percent of government websites allow citizens to register to receive updates regarding specific issues. With this feature, web visitors can input their email addresses, street addresses, or telephone numbers to receive information about a particular subject as new information becomes available. The information can be in the form of a monthly e-newsletter highlighting a prime minister's views (such as Japan Prime Minister Junichino Koizumi's successful e-magazine) or in the form of alerts notifying citizens whenever a particular portion of the website is updated. The specific type of updated material varies from nation to nation.

Top E-Government Countries

In order to see how the 196 nations ranked overall, we created a 0 to 100 point e-government index and applied it to each nation's websites based on the availability of contact information, publications, databases, portals, and number of online services. Four points were awarded to each website for the presence of each of the following 22 features: phone contact information, addresses, publications, databases, links to other sites, audio clips, video clips, foreign language access, not having ads, not having user fees, disability access, having privacy policies, security policies, an index, having online

services, having a portal connection, allowing digital signatures on transactions, an option to pay via credit cards, email contact information, search capabilities, areas to post comments, broadcasts of events, and option for email updates. These features provided a maximum of 88 points for particular websites.

Each site then qualified for a bonus of six points if it were linked to a portal site, and another six points based on the number of online services executable on that site (1 point for one service, two points for two services, three points for three services, four points for four services, five points for five services, and six points for six or more services). Only six percent of sites linked to a national governmental portal. Three percent of government websites had two or more services. The e-government index therefore ran along a scale from 0 (having none of these features, no portal, or no online services) to 100 (having all 22 features plus having a portal and at least six online services). This total for each website was averaged across all of a specific country's web sites to produce a 0 to 100 overall rating for that nation.

The top country in our ranking is the United States at 57.2 percent. This means that every website we analyzed for that nation has slightly more than half the features important for information availability, citizen access, portal access, and service delivery. Other nations which score well on e-government include Taiwan (52.5 percent), Australia (50.7 percent), Canada (49.6 percent), Great Britain (47.1 percent), Ireland (46.9 percent), Israel (46.2 percent), Singapore (44.0 percent), Germany (40.6 percent), and Finland (40.2 percent). The Appendix lists e-government scores for each of the 196 countries.

Top E-Government Countries

United States	57.2	*Taiwan*	52.5
Australia	50.7	*Canada*	49.6
Great Britain	47.1	*Ireland*	46.9
Israel	46.2	*Singapore*	44.0
Germany	40.6	*Finland*	40.2
France	40.1	*Lesotho*	40.0
St. Kitts	40.0	*Vatican*	40.0
Bahamas	39.7	*Malaysia*	39.0
Iceland	38.3	*Belgium*	38.0
Bolivia	38.0	*Argentina*	38.0

Differences by Region of World

There are some differences in e-government by region of the world. In looking at the overall e-government scores by region, North America scores the highest (51.0 percent), followed by Europe (34.1 percent), Asia (34.0 percent), the Middle East (31.1 percent), Russia and Central Asia (30.9 percent), South America (30.7 percent), Pacific Ocean Islands (30.6 percent), Central America (27.7 percent), and Africa (23.5 percent).

In looking at regional differences by particular feature, North America and Pacific Island nations rank

most highly on services, while North America, Asia, South America, and Europe score highest on access to publications. Many Pacific Island nations did well on services mainly because of their extensive efforts to promote tourism. The areas having the greatest access to foreign language translation included Russia/Central Asia, Europe, Asia, and the Middle East.

	Nor Am	Cent Am	S. Am	Eur	Rus	Mid Eas	Afric	Asia	Pac Oc
Phone	91	65	75	75	76	54	60	63	85
Address	92	58	69	76	72	47	54	64	83
Publication	98	57	85	81	73	56	51	85	61
Database	83	32	48	40	36	51	21	56	36
Links	68	50	53	45	36	50	19	43	41
Audio Clip	14	2	3	4	2	6	2	3	5
Video Clip	19	2	2	5	2	4	1	6	4
Foreign Lang	49	13	13	66	75	64	13	65	7
Ads	1	4	9	3	7	4	2	3	4
User Fees	9	0	0	0	0	0	0	0	0
Index	99	83	92	92	85	91	72	90	66
Privacy	67	10	0	1	0	4	0	2	19
Security	35	1	0	0	1	0	0	2	10
Disability	23	1	0	2	1	0	0	1	4
Services	28	4	3	9	2	10	2	12	21
Link to Portal	38	1	1	8	0	10	0	13	1
Credit Cards	16	1	0	1	0	1	0	0	3
Digital Sign	1	0	0	0	0	0	0	1	0
Email	83	69	87	78	77	72	60	70	81
Search	82	21	34	54	34	31	19	30	60
Comment	11	5	5	6	10	12	4	16	10
Broadcast	7	1	1	2	0	2	0	2	3
Updates	31	4	3	6	3	4	1	6	12
English	89	60	14	76	72	77	67	85	100

Conclusions

To summarize, we find that some helpful material has been placed online, but that much more work needs to be undertaken by central governments to upgrade e-government. Aside from publications and links to other sources of information, few countries offer online services, describe their privacy and security policies, or provide any type of disability access. In addition, other than email contact information, many nations have been slow to embrace the interactive features of the Internet that facilitate communication between citizens and government agencies. One of the prime virtues of the web is its capacity for interactivity, such as features that put citizens in control of online information. However, most sites do not help citizens tailor the information to their particular interests or needs.

In looking toward the future, it is important that all nations create government portals that serve as the gateway to a particular country's websites and offer a "one-stop" web address for online services. A number of countries have adopted portals and put services for citizens, businesses, and government agencies in one place. This is a tremendous help to citizens interested in making use of online resources. Portals are helpful from the citizen standpoint because they offer more uniform, integrated, and standardized navigational features. One of the weaknesses of many national websites has been their inconsistency in terms of design features. Government agencies guard their autonomy very carefully, and it has taken a while to get agencies to work together to make the tasks of citizens easier to undertake. Common navigational systems help the average citizen make use of the wealth of material that is online.

Governments need to figure out how to take advantage of features that enhance public accountability. Simple tools such as website search engines are important because such technologies give citizens the power to find the information they want on a particular site. Right now, only one-third of government websites are searchable, which limits the ability of ordinary citizens to find information that is relevant to them.

The same logic applies in regard to features that allow citizens to post comments or otherwise provide feedback about a government agency. Citizens bring diverse perspectives and experiences to e-government, and agencies benefit from citizen suggestions, complaints, and feedback. Even a simple feature such as a comment form empowers citizens and gives them an opportunity to voice their opinion about government services they would like to see.

The issue of how to pay for portals and other e-government costs remains a pressing challenge for almost every country. The start-up costs of e-government are extensive and small or poor countries have difficulty reaching the economies of scale necessary to pay for the technology.

While a few sites employ commercial advertising or user fees for their public sector sites right now, there still are risks either in commercializing e-government or relying on user fees. The former creates potential conflicts of interest for government agencies if their websites become dependent on commercial revenue. The latter disenfranchises people of more limited means and widens the digital divide between rich and poor. Our view is that e-government is a valuable part of the public sector and needs to be supported with tax dollars. In the long run, a flourishing e-government offers the potential for improved service delivery with enhanced accountability.

Clearly, one major problem of e-government is the up-front costs of developing a website and putting information and services online. Right now, many nations appear to be undertaking these tasks in isolation from other nations, thereby robbing each country of the opportunity to achieve economies of scale that would lower the per unit cost of e-government websites. Smaller and poorer countries should undertake regional e-government alliances that would allow them to pool resources and gain greater efficiency at building their infrastructure.

One example of this kind of alliance is "IslamWeb". This is a site that puts information online

(www.islamweb.net) of mutual interest to Islamic nations. It gives citizens interested in this topic one place to find information that cuts across individual nations. At the same time, such a site also offers economies of scale to specific countries in placing cultural and religious material on the Internet. These efforts at regional cooperation are valuable because they put countries in a position where they can share knowledge and expertise as well as lower their overall costs.

Countries furthermore should undertake steps that allow for online credit card transactions and digital signatures. It will be difficult to extend some services online without there being some means by which citizens can transfer funds electronically through the website.

They also need more visible phone numbers and more frequent updates of the government site. Some websites appeared as if they had not been updated in several years, with the result being that information on the web is seriously outdated. If countries both update and place more material online, it would encourage citizens to make greater use of e-government resources.

Appendix

Note: The following table shows e-government rank orderings for the 196 countries.

Table A-1 Complete E-Government Rankings by Country			
United States	57.2%	Taiwan	52.5%
Australia	50.7	Canada	49.6
Great Britain	47.1	Ireland	46.9
Israel	46.2	Singapore	43.4
Germany	40.6	Finland	40.2
France	40.1	Lesotho	40.0
St. Kitts	40.0	Vatican	40.0
Bahamas	39.7	Malaysia	39.0
Iceland	38.3	Belgium	38.0
Bolivia	38.0	Argentina	38.0
Italy	37.8	Switzerland	37.7
Slovenia	37.6	St. Lucia	37.0
Denmark	37.0	New Zealand	36.8
Saudi Arabia	36.8	Austria	36.8
Norway	36.5	Estonia	36.2
Peru	36.1	Mauritania	36.0
Morocco	36.0	Luxembourg	35.9

El Salvador	35.6	Armenia	35.3
Lithuania	35.1	Japan	34.9
Bulgaria	34.5	Greece	34.2
South Africa	34.2	Bosnia	34.1
Brazil	33.8	Latvia	33.8
Iran	33.4	St. Vincent	33.4
South Korea	33.4	Mexico	33.1
Egypt	33.0	Hungary	33.0
Spain	32.8	Philippines	32.8
Vietnam	32.8	Georgia	32.7
Nepal	32.7	Brunei	32.7
Chile	32.6	Netherlands	32.6
Croatia	32.6	Maldives	32.5
Russia	32.5	Jamaica	32.3
Mongolia	32.3	Libya	32.0
Poland	32.0	Slovakia	32.0
Djibouti	32.0	Antigua	32.0
India	31.8	Lebanon	31.3
Thailand	30.8	Cyprus-Republic	30.8
Guyana	30.8	Romania	30.7
Rwanda	30.7	Albania	30.7
Ecuador	30.7	Costa Rica	30.6
Barbados	30.6	Ethiopia	30.5
Ukraine	30.4	Turkey	30.3
China	30.2	Tajikistan	30.0
Vanuatu	30.0	Congo Dem Rep	30.0
Laos	30.0	Indonesia	30.0
Sri Lanka	29.8	Macedonia	29.7

Cambodia	29.6	Cook Islands	29.5
Sweden	29.4	Mauritius	29.4
Monaco	29.3	Oman	29.1
Paraguay	29.0	Pakistan	28.8
Algeria	28.7	Kuwait	28.7
Bangladesh	28.5	Panama	28.4
Uruguay	28.4	Jordan	28.1
Malawi	28.0	Micronesia	28.0
Palau	28.0	Samoa	28.0
Turkmenistan	28.0	Bhutan	28.0
Guatemala	28.0	San Marino	27.7
Nicaragua	27.7	Seychelles	27.6
Malta	27.6	Honduras	27.3
Dominican Republic	27.2	Sierra Leone	27.0
Myanmar	26.8	Yemen	26.7
Eritrea	26.7	Kenya	26.7
Liechtenstein	26.6	Angola	26.4
Bahrain	26.2	Belarus	26.2
Arab Emirates	26.1	Czech Republic	26.1
Ghana	26.1	Madagascar	26.0
Namibia	26.0	Senegal	26.0
Suriname	26.0	Togo	26.0
Grenada	26.0	Kyrgyzstan	26.0
Colombia	25.7	Botswana	25.3
Cuba	24.6	Fiji	24.4
Trinidad	24.4	Niue	24.0
Syria	24.0	Tuvalu	24.0

Cape Verde	24.0	Iraq	24.0
North Korea	24.0	Tunisia	23.8
Belize	23.8	Sudan	23.0
Gabon	22.7	Zambia	22.5
Cameroon	22.2	Sao Tome	22.0
Moldova	21.6	Papua New Guinea	21.6
Tonga	21.3	Azerbaijan	20.5
Uganda	20.5	Mali	20.0
Somalia	20.0	Uzbekistan	20.0
Chad	20.0	Andorra	20.0
Comoros	20.0	Ivory Coast	20.0
Cyprus (Turkish Rep)	20.0	Kazakhstan	20.0
Kiribati	20.0	Solomon Islands	19.8
Yugoslavia	19.7	Burkina Faso	19.6
Gambia	19.5	Niger	18.7
Marshall Islands	18.6	Benin	18.6
Tanzania	17.6	Portugal	17.5
Liberia	17.3	Swaziland	16.2
Afghanistan	16.0	Mozambique	16.0
Zimbabwe	16.0	Central Africa	16.0
Equatorial Guinea	16.0	Nigeria	15.2
Burundi	14.6	Haiti	13.0
Qatar	12.8	Somalia	12.4
Guinea	12.3	Nauru	12.0
Dominica	12.0	Venezuela	9.3
Congo (Rep)	8.0	Guinea-Bissau	8.0

Note: The following table shows the percentage of websites in each country that have each feature,

such as online services, publications, and databases.

Table A-2 Individual Country Profiles for Selected Features						
	Online Services	*Publications*	*Data bases*	*Privacy Policy*	*Security Policy*	*Handicap Accessibility*
Afghanistan	0%	33%	0%	0%	0%	0%
Albania	0	78	33	0	0	0
Algeria	0	76	65	0	0	0
Andorra	0	60	20	0	0	0
Angola	0	40	60	0	0	0
Antigua	0	100	0	0	0	0
Arab Emirates	7	43	50	0	0	0
Argentina	0	81	38	0	0	0
Armenia	10	90	50	0	0	0
Australia	50	100	85	96	54	23
Austria	15	93	36	0	0	0
Azerbaijan	7	40	20	0	0	0
Bahamas	33	67	67	33	33	0
Bahrain	11	32	58	0	0	0
Bangladesh	6	59	41	0	0	0
Barbados	20	40	40	0	0	0
Belarus	0	47	33	0	0	0
Belgium	11	95	21	5	0	0
Belize	0	65	12	0	0	0
Benin	0	18	9	0	0	0
Bhutan	0	0	0	0	0	0
Bolivia	0	100	50	0	0	0
Bosnia	0	7	100	0	0	0

Botswana	0	100	0	0	0	0
Brazil	6	100	50	0	0	0
Brunei	0	100	100	0	0	0
Bulgaria	0	100	23	0	0	0
Burkina Faso	0	60	20	0	0	0
Burundi	0	36	18	0	0	0
Cambodia	13	50	50	0	0	0
Cameroon	0	44	33	0	0	0
Canada	34	100	72	79	14	7
Cape Verde	0	100	0	0	0	0
Central Africa	0	0	0	0	0	0
Chad	0	0	0	0	0	0
Chile	12	100	59	0	0	0
China-Mainlan	26	70	30	0	0	0
China -Taiwan	65	100	87	17	22	0
Colombia	0	74	42	0	0	0
Comoros	0	100	100	0	0	0
Congo-Dem Rep	0	100	0	0	0	0
Congo-Rep	0	0	0	0	0	0
Cook Islands	50	50	25	0	0	0
Costa Rica	7	93	57	7	7	0
Cote d'Ivoire	0	75	50	0	0	0
Croatia	0	81	48	0	0	0
Cuba	3	42	35	0	0	0
Cyprus-Rep	0	54	54	0	0	0
Cyprus-Turk	0	0	100	0	0	0

Czech Rep	0	50	17	0	0	0
Denmark	12	92	58	0	0	0
Djibouti	0	100	0	0	0	0
Dominica	0	0	0	0	0	0
Dominican Rep	4	71	33	0	0	0
Ecuador	0	89	44	0	0	0
Egypt	5	74	42	0	0	0
El Salvador	0	100	89	0	0	0
Eq Guinea	0	0	0	0	0	0
Eritrea	0	33	0	0	0	0
Estonia	0	84	32	0	0	0
Ethiopia	0	63	38	0	0	0
Fiji	3	10	3	0	0	0
Finland	0	100	76	0	0	0
France	25	100	63	0	0	0
Gabon	0	67	33	0	0	0
Gambia	0	38	13	0	0	0
Georgia	0	82	55	0	0	0
Germany	59	88	56	0	0	0
Ghana	6	72	50	0	0	0
Great Britain	30	100	67	7	0	7
Greece	0	100	18	0	0	0
Grenada	0	0	0	0	0	0
Guatemala	0	92	25	0	0	0
Guinea	0	15	8	0	0	0
Guinea-Bissau	0	0	0	0	0	0
Guyana	0	85	46	0	0	0

Haiti	11	44	11	0	0	0
Honduras	0	67	0	0	0	0
Hungary	0	94	41	0	0	0
Iceland	6	100	22	0	0	0
India	7	97	40	0	0	3
Indonesia	4	87	52	0	0	0
Iran	8	67	50	0	0	0
Iraq	0	100	0	0	0	0
Ireland	14	100	43	5	0	24
Israel	27	96	65	19	0	0
Italy	10	100	75	0	0	20
Jamaica	25	83	25	0	8	8
Japan	0	94	72	6	6	0
Jordan	6	44	44	0	0	0
Kazakhstan	0	100	0	0	0	0
Kenya	0	33	33	0	0	0
Kiribati	0	0	100	0	0	0
Korea, North	0	100	0	0	0	0
Korea, South	8	92	60	0	0	8
Kuwait	0	50	50	0	0	0
Kyrgyzstan	0	75	25	0	0	0
Laos	0	100	50	0	0	0
Latvia	0	72	28	0	0	6
Lebanon	14	86	50	0	0	0
Lesotho	0	100	0	0	0	0
Liberia	0	67	33	0	0	0
Libya	0	100	0	0	0	0
Liechtenstein	20	0	0	0	0	0

Lithuania	7	80	60	0	0	0
Luxembourg	13	94	38	0	0	6
Macedonia	0	76	29	0	0	0
Madagascar	0	50	0	0	0	17
Malawi	0	50	100	0	0	0
Malaysia	16	84	48	0	0	0
Maldives	0	81	69	0	0	0
Mali	0	67	0	0	0	0
Malta	6	38	6	0	0	0
Marshall Islands	0	7	50	0	0	0
Mauritania	0	100	0	0	0	0
Mauritius	0	92	31	0	0	0
Mexico	0	94	78	0	0	0
Micronesia	0	50	0	0	0	0
Moldova	0	60	20	0	0	0
Monaco	0	67	33	0	0	0
Mongolia	0	87	53	0	0	0
Morocco	0	100	0	0	0	0
Mozambique	0	0	50	0	0	0
Myanmar	0	70	90	0	0	0
Namibia	0	50	25	0	0	0
Nauru	0	0	0	0	0	0
Nepal	0	83	67	0	0	0
Netherlands	7	87	40	0	0	0
New Zealand	48	100	48	8	0	0
Nicaragua	0	83	33	0	0	0
Niger	0	67	0	0	0	0

Nigeria	0	40	0	0	0	0
Niue	0	100	100	0	0	0
Norway	5	100	53	0	0	0
Oman	7	47	27	7	0	0
Pakistan	0	73	40	0	0	0
Palau	0	0	0	0	0	0
Panama	0	90	70	0	0	0
Papua New Guinea	9	45	27	0	0	0
Paraguay	0	83	67	0	0	0
Peru	7	100	67	0	0	0
Philippines	6	100	56	0	0	0
Poland	0	95	42	0	0	0
Portugal	0	38	8	0	0	0
Qatar	0	20	20	0	0	0
Romania	9	100	18	0	0	0
Russia	0	92	33	0	0	0
Rwanda	0	100	33	0	0	0
Sao Tome	0	100	0	0	0	0
St. Kitts/Nevis	0	100	100	0	0	0
St. Lucia	0	75	0	100	0	0
St. Vincent	0	29	24	88	0	0
Samoa	0	0	0	0	0	0
San Marino	14	29	14	0	0	0
Saudi Arabia	11	78	67	0	0	0
Senegal	0	67	50	0	0	0
Seychelles	40	60	60	0	0	0
Sierra Leone	0	100	0	0	0	0

Singapore	47	95	53	5	0	0
Slovakia	0	100	0	0	0	0
Slovenia	0	90	40	0	0	0
Solomon Islands	0	18	6	0	0	0
Somalia	0	0	0	0	0	0
Somaliland	0	50	50	0	0	0
South Africa	13	100	33	0	0	0
Spain	17	100	61	0	0	0
Sri Lanka	0	56	44	11	0	0
Sudan	0	63	25	0	0	0
Suriname	0	50	0	0	0	0
Swaziland	0	4	0	0	0	0
Sweden	8	75	0	0	0	0
Switzerland	15	100	23	0	0	0
Syria	0	67	33	0	0	0
Tajikistan	0	50	50	0	0	0
Tanzania	0	13	4	0	0	0
Thailand	0	100	41	6	0	0
Togo	0	50	0	0	0	0
Tonga	0	0	0	0	0	0
Trinidad	0	11	6	0	0	0
Tunisia	0	4	8	0	0	0
Turkey	9	27	59	5	0	0
Turkmenistan	0	0	0	0	0	0
Tuvalu	0	100	0	0	0	0
Uganda	0	25	19	0	0	0
Ukraine	0	71	53	0	6	0

United States	34	98	90	81	56	37
Uruguay	0	85	45	0	0	0
Uzbekistan	0	33	0	0	0	0
Vanuatu	0	100	0	0	0	0
Vatican	0	100	0	0	0	0
Venezuela	0	17	0	0	0	0
Vietnam	0	100	20	0	0	0
Yemen	0	67	50	0	0	0
Yugoslavia	0	62	23	0	0	0
Zambia	0	58	0	0	0	0
Zimbabwe	0	50	25	0	0	0