



Global Trends in Municipal E-Government: An Online Assessment of Worldwide Municipal Web Portals

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ABSTRACT

This paper is based on the results of an international survey of municipal web portals that evaluated the practice of e-governance in large municipalities. The survey was conducted in 2005 through a collaboration between the E-Governance Institute at Rutgers-Newark and the Global e-Policy e-Government Institute at Sungkyunkwan University in Seoul. This joint study ranked municipalities worldwide based on their scores in five e-governance categories of security and privacy, usability, content, services and citizen participation. In this paper, the results of that study are compared with a similar 2003 study (Melitski et. al., 2005; Holzer & Kim, 2004); trends in the development of the municipal web portal are examined over the two years. Key areas of improvement are identified and suggestions for their improvement are discussed in the conclusion.

Keywords: E-government, e-governance, web portal, survey, municipalities, citizen participation, e-democracy

1. Introduction

The dawn of the information age and the growth of Internet have led to governments computerizing their services to citizens around the globe. This phenomenon is broadly referred to as e-government. “E-government, the application of ICT within public administration to optimise its internal and external functions, provides government, the citizens and business with a set of tools that can potentially transform the way in which interactions take place, services are delivered,...and citizens participate in governance...” (UNDESA, 2003, p.1). According to Norris et al., e-government is defined as “...the delivery of services and information, electronically, to businesses and residents, 24 hours a day, seven days a week” (2001, p.5). There are three stages in introducing e-government: 1) publishing government information online; 2) interacting, where ICTs are used to encourage civic participation in government decision making; and 3) transacting, where government services are accessed online (CDT & infoDev, 2002).

Various scholars and practitioners have conducted research on the potential for e-government. This phenomenon of linking technology and government was initially dominated by the invention of radio, cable television and telephone conferencing (Arterton, 1987, 1988; Becker 1993; Christopher 1987, McLean 1989). Today, it's the turn of the Internet and Communication Technology (ICT). Unlike televisions and radios, computers enable citizens to demand and obtain desired information when online (Browning, 2002). Experts in the field are increasingly acknowledging that achieving good governance in today's networked world requires internet-based services and other technological service delivery applications which will be

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the only way governments will be able to achieve their own service delivery goals (Cloete, 2003). A Pew Internet & American Life Project study examining how Americans contact their government found that e-government is an increasingly popular tool for online users who want to get information and send messages to their public officials (Horrigan, 2004).

The internet is also a convenient mechanism for citizen-users and advocacy groups to engage their government, with the potential to decentralize decision-making. Many scholars and practitioners of e-government have expressed confidence in its potential for e-democracy and citizen participation online. According to Korac-Kakabadse and Korac-Kakabadse (1999), the Internet raises the possibility for large scale e-democracy. They define e-democracy as the capacity for ICTs to enhance the degree and quality of public participation in government. ICTs also facilitate citizen groups to “do research on the web, build links with online communities, host their own websites to post reports, and make use of email to connect with their peers” (Bridges.org, 2002b). The case of Seoul’s Online Procedures Enhancement for Civil Application (OPEN) system has demonstrated a successful practice of transparency and decreased corruption in government via the use of the Internet (Holzer & Kim, 2004).

2. The Role of Web Portals in E-Government

Research on e-government has long ignored the potential of web portals in reaching out to citizen users. Web portals have often been associated with merely providing information, advertising or attracting users to respective government agencies. “No longer can a website justify itself merely by being a website – the bottom line is merely is apparently clear: web pages must reach concrete goals and prove their investment” (Benjamin and Whitley, 2004).

Many governments across the world have built web portals; however, e-government is more than simply constructing a virtual gateway. It is about using such technologies to effectively provide government services. According to Pardo (2000), e-government initiatives through the web portal vary depending on the primary focus of respective governments. Some of the more common initiatives are 1) providing 24 x 7 access to government information and public meetings; 2) providing mechanisms to enable citizens to comply with state and federal rules regarding drivers’ licenses, business licenses, etc; 3) providing access to special benefits like welfare, pensions; 4) providing a network across various government agencies to enable collaborative approaches in serving citizens; and 5) providing various channels for digital democracy and citizen participation initiatives. Thus it is essential that the fundamentals of government service delivery are not altered simply by introducing a web portal as the new window of government (Pardo, 2000). E-government initiatives clearly extend beyond the textual listing of information to a more “intentions-based” design so that citizens can more effectively utilize web portals (Howard 2001).

The first step in e-government for a typical government agency is to create a web portal to provide its services online. In order to realize the full benefit of e-government, however, such an agency needs to be networked through a central web portal to other agencies, thereby enabling citizens to perform multiple tasks on a single web portal. In a significant study on the role of web portals in state government electronic service delivery, Gant and Gant (2002) emphasize that web portals have the potential to integrate services and enhance citizens’ access to a higher quality of service. Government decision makers should therefore “...determine the best way to transform a basic website into a high-functioning web portal” (Gant & Gant, 2002, pp.1). Initially, when portals began to appear on the scene, they were “...little more than dressed up search engines” (Gant & Gant, 2002, 2). Since then, web portals have rapidly improved with multiple functions and are today an important priority for governments investing in the digital delivery of services. In a span of five years, from 1995 to 2000, the number of both public and private web portals across the globe rose from less than 20,000 to more than 10 million. According to an ICMA Survey, over 85 % of U.S municipal governments possessed an online web portal (Moon, 2002). Essentially, the web portal is the new face of government, and steps need to be taken to ensure that the relationship between government and

citizens is maintained, if not enhanced, by the transformation to e-government. Additionally, government needs to be aware of the criteria necessary for building effective web portals. In this regard, the Rutgers-SKKU Performance Index provides the most comprehensive framework for evaluating web portals. The Performance Index in our survey uses 98 different criteria classified into the areas of privacy and security, usability, content, services, and citizen participation.

Although various researchers have conducted studies on the effects of e-government on government service delivery, much of these have been primarily focused on web portals in the United States. The Rutgers-SKKU Municipal E-Governance Survey is the first such survey to be conducted on a global scale using a comprehensive set of criteria. International studies are critical contributions to the overall literature on digital governance as they provide benchmarks and identify best practices that allow for increased performance in digital governance over time, especially for municipalities still in the early stages of development.

3. The Rutgers-SKKU Municipal E-Governance Survey

Methodology

This study focused on cities worldwide and considered their population size, the total number of online users in the nation overall, and the percentage of individuals using the internet in each country. The top 100 municipalities were selected using data from the International Telecommunication Union (ITU), an organization affiliated with the United Nations (UN). From a total of 196 countries for which telecommunications data was reported, those with an online population over 160,000 were identified as the top 100 wired nations, and the most populated cities in these nations were surveyed. The survey was conducted between August and November of 2005. Of the 100 cities, 81 were included in the overall rankings, excluding the 19 municipalities where no official web portals were obtainable.

The survey instrument was based on the Rutgers-SKKU E-Governance Performance Index. The instrument consisted of five components: 1) Security and Privacy; 2) Usability; 3) Content; 4) Services; and 5) Citizen Participation. For each of those five components, our research applied 18-20 measures, and each measure was coded on a scale of four-points (0, 1, 2, and 3) or a dichotomy of two-points (0, 3 or 0, 1). To ensure reliability, each municipal web portal was assessed in the native language by two evaluators, and in cases where significant variation (+ or – 10%) existed on the adjusted score between evaluators, web portals were analyzed for a third time. Moreover, an example for each measure indicated how to score the variable. Evaluators were given comprehensive written instructions for assessing the web portals. The performance measures and the description of their scores are provided in Table 1 and Table 2.

In this research, the main city homepage is defined as the official web portal on which the city provides information about city administration and online services. The city web portal also includes sections about the city council, mayor, and executive branch. If there were separate homepages for agencies, departments, or the city council, evaluators determined whether these portals were linked to the menu on the main city homepage. If the web portals were not linked, they were excluded from evaluation.

Overall Results

From the evaluation of 81 municipalities for which web portals were available, the top 20 cities, based on overall scores, are provided in Table 3. These overall scores reflect the combined total of each municipality's score in the five categories. Seoul with a score of 81.70 ranked the highest for the 2005 survey. Seoul's web portal was also the highest ranked in 2003 with a score of 73.48. New York City's municipal web portal ranked second overall with a score 72.71, moving up two places from its fourth place ranking in 2003. Similarly, Shanghai moved up two places since 2003, finishing with the third ranked score

of 63.93. Hong Kong and Sydney completed the top five with scores of 61.51 and 60.82, respectively. Although Hong Kong was also ranked in the top five in 2003, Sydney significantly improved its ranking from 2003 (ranked 19th with a score of 37.41). Table 3 shows the overall scores of the top 20 ranked municipalities.

Table 1: E-Governance Performance Measures

E-governance Category	Key Concepts	Raw Score	Weighted Score	Keywords
Security/ Privacy	18	25	20	Privacy policies, authentication, encryption, data management, and use of cookies
Usability	20	32	20	User-friendly design, branding, length of homepage, targeted audience links or channels, and site search capabilities
Content	20	48	20	Access to current accurate information, public documents, reports, publications, and multimedia materials
Service	20	59	20	Transactional services involving purchase or register, interaction between citizens, businesses and government
Citizen Participation	20	55	20	Online civic engagement, internet based policy deliberation, and citizen based performance measurement
Total	98	219	100	

Table 2: E-Governance Scale

Scale	Description
0	Information about a given topic does not exist on the website
1	Information about a given topic exists on the website (including links to other information and e-mail addresses)
2	Downloadable items are available on the website (forms, audio, video, and other one-way transactions, pop-up boxes)
3	Services, transactions, or interactions can take place completely online (credit card transactions, applications for permits, searchable databases, use of cookies, digital signatures, restricted access)

Table 3: Overall E-Governance Rankings (2005)

Ranking	City	Country	Score
1	Seoul	Republic of Korea	81.70
2	New York	United States	72.71
3	Shanghai	China	63.93
4	Hong Kong	Hong Kong	61.51
5	Sydney	Australia	60.82
6	Singapore	Singapore	60.22
7	Tokyo	Japan	59.24
8	Zurich	Switzerland	55.99
9	Toronto	Canada	55.10
10	Riga	Latvia	53.95
11	Warsaw	Poland	53.26
12	Reykjavik	Iceland	52.24
13	Sofia	Bulgaria	49.11
14	Prague	Czech Rep.	47.27
15	Luxembourg	Luxembourg	46.58
16	Amsterdam	Netherlands	46.44
17	Paris	France	45.49
18	Macao	Macao	45.48
19	Dublin	Ireland	44.10
20	Bratislava	Slovak Republic	43.65

In the category of Privacy and Security, Seoul, Sydney, Zurich, New York, and Hong Kong emerged as the top ranked cities internationally. Seoul scored a maximum of 17.6 points and was followed by two new entrants in the category, Sydney and Zurich. Sydney, which ranked 11th in 2003 with a score of 6.79, rose to second place with a score of 16.80 in 2005. Zurich, which had ranked 20th in 2003 with a score of 3.57, also improved to 3rd with a score of 16.40 in 2005. The average score in this category was 4.17, compared to 2.53 in 2003. However, 31 cities scored zero in this category, a decrease from the 36 that earned zero points in 2003. There is still plenty of room for improvement among certain municipalities in implementing a sound privacy and security policy, a very important factor in the development of digital governance. Table 4 shows the scores of the top 10 ranked municipalities in the category of Privacy and Security.

Table 4: Top 10 Cities in Privacy and Security (2005)

Rank	City	Country	Score
1	Seoul	Republic of Korea	17.60
2	Sydney	Australia	16.80
3	Zurich	Switzerland	16.40
4	New York	United States	16.00
5	Hong Kong	Hong Kong	15.60
6	Rome	Italy	13.20
7	Berlin	Germany	12.80
8	Shanghai	China	12.00
9	Tokyo	Japan	12.00
10	Reykjavik	Iceland	11.60

In the category of Usability, New York, Shanghai, Seoul, Sydney, and Riga ranked in the top five, significant improvements for New York, Sydney and Riga. New York ranked first with a score of 19.06, compared to its 11th ranking in 2003 with a score of 15.63. Sydney ranked 34th in 2003 with a score of 12.19, but improved to fourth ranking with a score of 17.81 in 2005. Riga ranked 51st in 2003 with a score of 10.00, but rose to fifth overall with a score of 17.50 in 2005. The average score in this category was 12.42, an increase from the average of 11.45 in 2003. Table 5 shows the scores of the top 10 ranked municipalities in the category of Usability.

Table 5: Top 10 Cities in Usability (2005)

Rank	City	Country	Score
1	New York	United States	19.06
2	Shanghai	China	18.75
3	Seoul	Republic of Korea	17.81
4	Sydney	Australia	17.81
5	Riga	Latvia	17.50
6	Oslo	Norway	17.19
7	Dublin	Ireland	16.88
8	Prague	Czech Rep.	16.88
9	Jerusalem	Israel	16.88
10	Hong Kong	Hong Kong	16.25

In the Results for Content category, the top five cities were Seoul, New York, Tallinn, Zurich, Hong Kong, and Riga. Seoul ranked first with a total of 16.04 points, compared to its fourth ranking in 2003. Similarly, New York ranked second with a score of 14.79 points while Tallinn, ranked sixth in 2003 with a score of 12.55, improved to third place with a score of 14.79 in 2005. Zurich was ranked 28th in 2003 with a score of 7.66, but rose to fourth with a score of 13.96 in 2005. Riga ranked 51st in 2003 with a score of 4.26, but finished in fifth ranking with a score of 13.75 in 2005. The average score in this category was 7.63, an

increase from the average of 6.43 in 2003. Table 6 shows the scores of the top 10 ranked municipalities in the category of Content.

Table 6: Top 10 Cities in Content (2005)

Rank	City	Country	Score
1	Seoul	Republic of Korea	16.04
2	New York	United States	14.79
3	Tallinn	Estonia	14.79
4	Zurich	Switzerland	13.96
5	Riga	Latvia	13.75
6	Hong Kong	Hong Kong	13.75
7	Warsaw	Poland	13.54
8	Reykjavik	Iceland	13.54
9	Shanghai	China	13.13
10	Macao	Macao	13.13

The results for Online Services indicate that Seoul, New York, Singapore, Hong Kong, and Warsaw are the top ranked cities in this category. New to the top five are New York and Warsaw. New York was ranked sixth in 2003 with a score of 12.28, but improved to second overall with a score of 15.76 in 2005. Warsaw was ranked 62nd in 2003 with a score of 1.93, but now finished fifth overall with a score of 11.86 in 2005. The average score in this category is 5.32, an increase from the average of 4.82 in 2003. The average score for the top five ranked cities in 2005 was 14.51, while the average score for the top five ranked cities in 2003 was 13.69. Table 7 shows the scores of the top 10 ranked municipalities in the category of Service Delivery.

Table 7: Top 10 Cities in Service Delivery (2005)

Rank	City	Country	Score
1	Seoul	Republic of Korea	16.61
2	New York	United States	15.76
3	Singapore	Singapore	14.58
4	Hong Kong	Hong Kong	13.73
5	Warsaw	Poland	11.86
6	Shanghai	China	11.69
7	Tokyo	Japan	10.34
8	Reykjavik	Iceland	10.34
9	Prague	Czech Rep.	10.00
10	Toronto	Canada	9.83

Table 8: Top 10 Cities in Citizen Participation (2005)

Rank	City	Country	Score
1	Seoul	Republic of Korea	13.64
2	Warsaw	Poland	12.55
3	Bratislava	Slovak Republic	10.91
4	London	United Kingdom	10.55
5	Prague	Czech Rep.	10.18
6	Riga	Latvia	9.45
7	Toronto	Canada	8.55
8	Sofia	Bulgaria	8.55
9	Shanghai	China	8.36
10	Tokyo	Japan	8.36

The results for Citizen Participation indicate that Seoul, Warsaw, Bratislava, London, and Prague are the

top ranked cities. All of these cities were new to the top five rankings except Seoul, which repeated as the top ranked city in this category. Warsaw ranked 74th overall in 2003, but improved to second position with a score of 12.55 in 2005. Bratislava was not ranked in 2003, but received a third ranking with a score of 10.91 in 2005. London ranked 51st in 2003 with a score of 1.54, but improved to fourth place with a score of 10.55 in 2005. Prague was not ranked in 2003 but received a fifth ranking with a score of 10.18 in 2005. Table 8 shows the scores of the top 10 ranked municipalities in the category of Citizen Participation.

The average score in the category of Citizen Participation was 3.57, an increase from the average of 3.26 in 2003; these results can be attributed, in part, to the lack of support for such online practices. Table 9 shows the average scores in the five e-governance categories.

Table 9: Average Score by E-governance Categories in 2005 and 2003

	Average	Usability	Content	Service	Privacy & Security	Citizen Participation
2005, Average Scores	33.11	12.42	7.63	5.32	4.17	3.57
2003, Average Scores	28.49	11.45	6.43	4.82	2.53	3.26
% Increase in Scores	16.21	8.47	18.66	10.37	64.82	9.5

Overall, cities in Europe ranked the highest among the continents with an average score of 4.39, while cities in South America scored only 0.69. Europe replaced Oceania as the continent with the highest average score. South America replaced Africa as the continent with lowest average score. Africa increased its score of 1.41 in 2003 to 2.68 in 2005. Table 10 represents the average scores by continent.

Table 10: Average Score by Continent for 2005 and 2003

	Oceania	Europe	Average	Asia	North America	Africa	South America
2005 Overall Averages	49.94	37.17	33.11	33.05	30.21	24.87	20.45
2003 Overall Averages	46.01	30.23	28.49	30.38	27.42	17.66	20.05

Significance of the Research Findings

The Rutgers-SKKU Municipal E-Governance Survey 2005 had significant findings regarding the overall emphasis placed by municipalities in the process of developing and maintaining their online presence through web portals. The overall average score for municipalities surveyed increased from 28.49 in 2003 to an average of 33.11 in 2005. The average scores also increased in each of the five categories, which would be expected for municipalities increasingly utilizing technology to improve their web portals. However the increases were in different proportions, depending on the category, as shown in Table 9. Among the five categories, municipalities scored highest in Usability, with an average score of 12.42 compared to 11.45 in 2003. The most significant improvement in average score was in Privacy and Security, an area that municipality have recognized as key to an effective and efficient web portal. However, considering the low scores of 4.17 in 2005, there is room for improvement. The lowest ranked category was Citizen Participation with a score of only 3.57 points, after a marginal increase from 3.26 in 2003. Many municipalities have yet to recognize that facilitating citizen participation in government is critical for online functions. Figure 1 highlights these findings.

As the survey indicates, the e-government strategies adopted by municipal governments worldwide tend to neglect the category of citizen participation. To enable the internet to foster e-democracy, government websites need to adopt various initiatives to engage the public in online decision-making. Contrary to popular belief, many proponents of wide-scale citizen participation do not automatically shun technology. Instead, many tend to view technology as a significant means to stimulate greater participation. Clearly, ICTs facilitate organisations to “.....do research on the web, build links with online communities, host their

own websites to post reports, and make use of email to connect with their peers” (Bridges.org, 2002b). The municipal web portal is, however, a technological tool that has yet not lived up to its potential to empower in citizens (Ferber et al, 2005). For e-government to significantly enhance citizen participation, web portals need to be sufficiently equipped with tools like bulletin boards, feedback forms, policy forums, and performance reporting systems. The next section of this paper examines these online features.

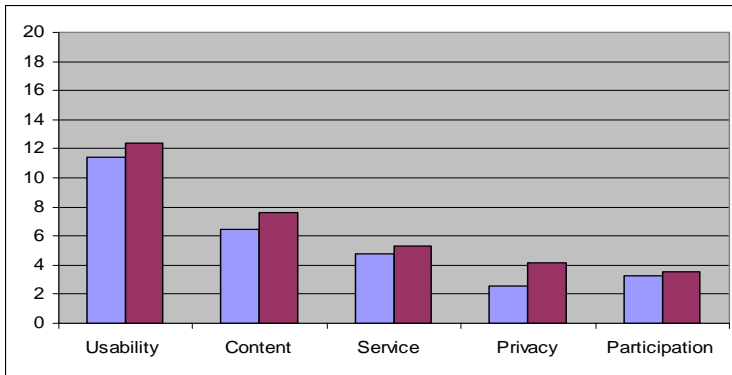


Figure 1: Average Score by E-governance Categories in 2003 and 2005

4. Strategies for Citizen-centric E-Government Web Portals:

Online Discussion Forums

Online discussion forums are important facilitators of citizen participation because they allow individuals to provide feedback about their local governments’ policies. Portals that do not provide online forums should at least post a notice that encourage citizens to send their opinions through e-mail, fax, or telephone. The concept of e-bulletin boards has enabled a wide scope of formal and informal public discussion (Garson, 2005). To effectively encourage citizen participation, government web portals need to be more interactive. A study of interactivity by Ferber et al., (2005) found that bulletin boards played a major role in enhancing the interactivity of government web portals. Portals should have online bulletin board or chat capabilities for gathering citizen input on public issues. These online bulletin boards or chat capabilities refer to that section on the portal where any citizen can post ideas, comments, or opinions without needing a specific discussion topic. The bulletin board should be user-friendly, especially for first time users, and provide search mechanisms and proper keywords. Web portals should also include ways for users to provide their comments directly to elected officials, mayor or city council. Again, the forum should be more than just a one-way channel. To be a true communication tool, it should include public participants, experts, and an active forum moderator.

E-Meetings

The online forum should follow a regular schedule for e-meetings or discussions. E-meetings refer to synchronized real-time discussions in which participants simultaneously exchange opinions. These e-meetings need to be scheduled so as to allow for in-depth discussions between citizens and public officials, and the minutes of these meetings also need to be posted on the portal. E-meetings or discussion forums should occur fairly frequently (i.e., three or more per year).

E-Petition

An e-petition is a formal request signed by a certain number of citizens online and electronically submitted to a government body. Municipal web portals should establish online petitioning systems to enable citizens to report any local problems and voice their opinion about government policies. E-petitions can be open to anyone having a stake in the development of the city and not just to those residing in the city (e.g., non-resident business owners, visitors, consumers, etc.).

Online Citizen Satisfaction Surveys

Citizen satisfaction surveys are effective means of gauging public response to administrative actions. When conducted on a regular basis, with uniform questions, these surveys can identify community problems over time (Webb & Hatry, 1973). Providing survey mechanisms online is an effective way to obtain regular citizen feedback on the state of government. These surveys should be clearly visible to users on a dedicated webpage and include clear instructions for participation. To accommodate those who prefer to complete surveys at their convenience offline, the webpage should allow users to download surveys and provide fax, email, or mail information for returning completed surveys. Survey results should be regularly posted on the webpage and previous results should be searchable through an online database. Web portals should also offer polls on specific issues affecting the city. These polls need to be accompanied by real-time results of current questionnaires as well as previous results. To produce significant, visible evidence of citizen participation, there should be a minimum of three polls per year.

Newsletters

Apart from performance reports, municipal web portals should also provide links for updates on community events via newsletters or periodic reports. Newsletters should be in a downloaded or otherwise easily accessible format and provide options for subscribing and unsubscribing. Such measures encourage effective citizen participation and engage the public in local decision-making.

Performance Reporting

Public reporting is a means by which government keeps citizens informed about its functions. According to Lee, public reporting can be defined as "...the management activity intended to cover systematically and regularly information about government operations, in order to promote an informed citizenry in a democracy and accountability to public opinion" (Lee, 2004). He further states that, ".....public reporting is characterized by being effectively communicative to citizens." In past decades, interest in public reporting dwindled. However, recent growing emphasis on citizen participation and citizen engagement has rejuvenated public reporting, especially public performance reporting (Caddy & Vergez, 2004). As citizens show greater interest in performance measures, municipalities should maximize the use of their web portals by regularly publishing the results of their performance measurement systems along with relevant explanations.

5. Concluding Remarks

The study of worldwide municipal web portals is an area that clearly requires ongoing research. Our studies in 2003 and 2005 produced findings that contribute to the e-governance literature on privacy and security, usability, content, services and citizen participation. In comparison to the 2003 study, the 2005 study shows greater attention given to privacy and security, but only a minimal increase in concerns about citizen participation via municipal web portals. Among the five categories, many cities scored low in citizen participation between 2003 and 2005. When comparing the overall scores and the citizen participation scores for the top 20 ranked cities (overall), only one municipality (Seoul) among the top five overall also figures in the top five rankings for citizen participation. This finding implies that municipalities seem to focus on specific aspects of municipal web portals when they are transitioning to e-government, and that such an approach may prevent these governments and their citizenry from realizing the full potential of web portals. Therefore, we recommend developing a comprehensive e-government strategy with equal emphasis on all five aspects of privacy and security, usability, content, services, and citizen participation. A comprehensive strategy should also emphasize providing unobstructed access for citizens and groups. With e-governance research and development emerging throughout the world, we expect municipalities to try to close the gaps within the five categories. The continued study of municipalities worldwide, with the Third Rutgers-SKKU Municipal E-Governance Survey 2007 currently being conducted, should provide further insight into the direction e-governance takes globally. The 2003 and 2005 studies of worldwide municipalities' web portals discussed in this paper have provided important initial assessments of e-

governance performance. Forthcoming studies should supply critical data to determine whether the gaps highlighted in these two studies continue to increase. Although the 2005 study emphasizes overall increases in municipal web portal performance in general throughout the world, continuous improvement should be the norm for every municipality.

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