Can IT Help Government to Restore Public Trust?: Declining Public Trust and Potential Prospects of IT in the Public Sector

M. Jae Moon
George Bush School of Government and Public Service
Texas A&M University
Email: jmoon@bushschool.tamu.edu

Abstract

During the past four decades, public trust in governments has continued to diminish due to various administrative, political, socio-cultural, economic, and mass media causes. Focusing on the administrative dimension, this study explores selected administrative factors to the declining of public trust, including public perception of administrative corruption (lack of transparency), inefficiency (wastefulness), ineffectiveness, and policy alienation. We argue that information technology (IT) can offer potentially useful tools to governments and help them to restore public trust by enhancing transparency, cost efficiency, effectiveness, and policy participation. This argument is illustrated by four selected mini cases (OPEN system in Seoul, eVA in Virginia, eFiling for IRS tax returns, and online policy forums in Seoul and Pennsylvania). Despite a generalizability problem, this study offers a cautious but positive view on the potential contribution of IT in restoring pubic trust.

1. Introduction

During the past four decades, public trust in governments has continued to diminish due to various administrative, political, socio-cultural, economic, and mass media causes. The decline of public trust offers tough political challenges to politicians, public administrators, and citizens because it draws serious questions of political processes and the legitimacy of representative government. Previous studies examined various contributing factors to the decline of public trust: the gap between public expectation and perceived governmental performance, economic performance, the role of mass media, political scandals, changes in social capital and culture, perceived policy failures, etc. Focusing on potential contribution of poor government performance to the decline of public trust in government, this study explores how information technology(IT) can enhance some of the primary administrative values (efficiency, effectiveness, transparency and responsiveness) so that improve public trust in government in direct or indirect manners.

Public perception of administrative corruption (lack of transparency), inefficiency (wastefulness), ineffectiveness, and policy alienation, independently or jointly frustrates the public, and makes them indifferent to public affairs, and consequently reduces the public confidence in governments. Considering this phenomenal issue of public trust, this study posits an *exploratory* link between these administrative causes of declining public trust and potential utilization of IT. We argue that IT can provide potentially useful tools to governments and help them to restore public trust by enhancing transparency, cost efficiency, effectiveness, and policy participation. This argument is illustrated by four selected mini cases (OPEN system in Seoul, eVA in Virginia, eFiling in IRS procedures, and online policy forums in Seoul and Pennsylvania). Despite a generalizability problem, this study offers a cautious but positive view on the potential contribution of IT in restoring pubic trust as IT is more widely employed by governments for further Web-based public services and further utilized and accessed by more citizens.

2. Public trust in government in the US

There are many scholars and journalists who argue that confidence and trust of the American public in government has been declining. In fact, the longitudinal poll results support this argument in a convincing way. Peters (1999) asserts that public trust in government declines particularly as a reaction to various scandals (e.g., Watergate, Whitewater, Lewinsky), inefficient government performances (e.g., the savings-and-loan crisis, budget deficits), and policy failures (e.g., the Vietnam War) [1]. He also points out that economic instability and recession may contribute to the declining public trust as observed in the 1980s and early 1990s, though he also sees that economic prosperity does not always seem to promote public trust in a substantial way, as observed in the late 1990s.

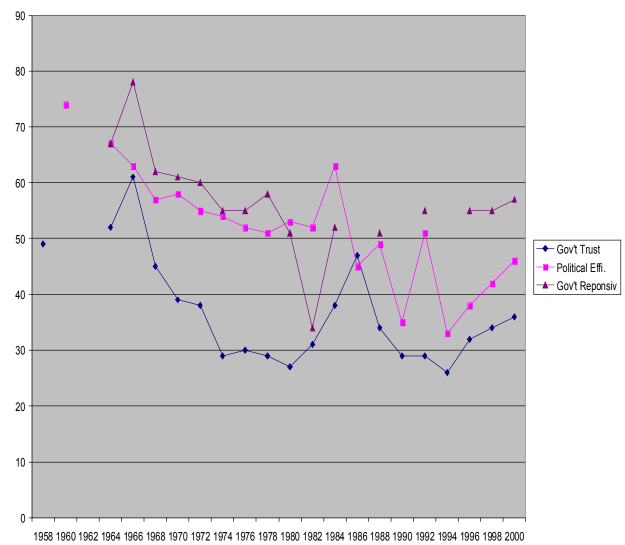
National Election Studies (NES) of the University of Michigan [2]collected longitudinal data regarding various political, social, and cultural elements of the public, including social and religious characteristics, partisanship and evaluation of political parties, ideology

0-7695-1874-5/03 $17.00 © 2002 IEEE

and self-identification, public opinion on public policy issues, support for the political system, political involvement and participation in politics, evaluation of the presidential candidates, and evaluation of congressional candidates. In the section of "support for the political system," the data includes several indices that represent various aspects of the public's attitude toward government, such as public trust in government[1], political efficacy[2], and governmental responsiveness[3]. Figure 1 shows a longitudinal trend in the changes in public trust in government, as well as the public perception of political efficiency and government responsiveness. The figure suggests that the three elements have been declining in the last three decades though there are frequent short-term exceptions observed. Based on the graphical illustration, one could argue that the American public has been losing its overall confidence and trust in government.

NES (2001) [2]offers more specific details about public trust in government by demographic groups (gender, race, education, income, vocations, religion, age, political partisanship, and political ideology). [4] The NES study shows that public trust in government reached the highest point in 1966 then started diminishing. Negative reactions to the US involvement in and excesses of the Vietnam War seem to contribute to the decline. The decline seemed to reach its low point when the Watergate scandal occurred in 1974. The legacy of the Watergate scandal remained until the end of 1970s. Entering the 1980s, public trust in government began to increase till the mid 1980s under the first term of the Reagan administration then began to drop in his second term. From the mid 1990s, public trust began to rise again possible thanks to the booming economy under the Clinton administration. Overall, however, the decline in public trust is very pervasive across different demographic groups such as gender, race, and socio-economic status [2].

Figure 1 Longitudinal Demonstration of Public Trust



Source: National Election Studies, 1958-2000, University of Michigan (2001)

3. Causes of decline of public trust

Summarizing various chapters, in his co-edited book, Nye Jr. [3] addresses four important dimensions that might be associated with the level of public trust including the governmental performance dimension, economic dimension (slow down of economy), socio-cultural dimension (i.e., decline in social capital, family crisis, strong sense of individual rights), and political dimensions. Each dimension encompasses various factors. For example, in the political dimension, Nye points out factors such as post-cold war syndrome, poor political leaders, the World War II effect, and mass media effects. The assumption is that the public tends to be more willing to sacrifice its individual benefit for public goods like national defense in the cold war era. In addition, the public has lost its confidence in government due to poor

[1] The public trust in government is calculated based on the four following questions.
a. How much of the time do you think you can trust the government in Washington to do what is right – just about always (*100*), most of the time (*67*) or only some of the time (*33*)? (*0*) for none of them (volunteered answer).
b. Would you say the government is pretty much run by a few big interests looking out for themselves (*0*) or that it is run for the benefit of all the people (*100*)?
c. Do you think that people in the government wastes a lot of money we pay in taxes (*0*), wastes some of it (*50*), or don't waste very much of it (*100*)?
d. Do you think that quite a few of the people running the government are (1958-1972: a little) crooked (*0*), not very many are (*50*), or do you think hardly any of them are crooked (1958-1972: at all) (*100)*

[2] The political efficacy index was constructed based on the two following questions.
a. People like me don't have any say about what the government does. Agree (*0*) and Disagree (*100*)
b. I don't think public officials care much what people like me think. Agree (0) and Disagree (100)

[3] The government responsiveness index is constructed based on the two following questions.
a. Over the years, how much attention do you feel the government pays to what the people think when it decides what to do—a good deal (*100*), some (*50*), and not much (*0*).
b. And how much do you feel that having elections makes the government pay attention to what the people think, a good deal (*100*), some (*50*), and not much (*0*).

[4] For more information, see National Election Studies, University of Michigan (www.umich.edu/~nex).

political leadership, reaction to the great victorious experience of World War II, and media effects (more information and the mean world effect).

Though Nye [3] suggests that the four dimensions influence directly or indirectly the public's trust in government, he acknowledges that their causal relations with the level of public trust are not necessarily clear because public trust is often perceptual rather than objective in nature. In other words, the function of public trust is very complicated and complex so that it requires a multi-dimensional approach to solving the public trust puzzle.

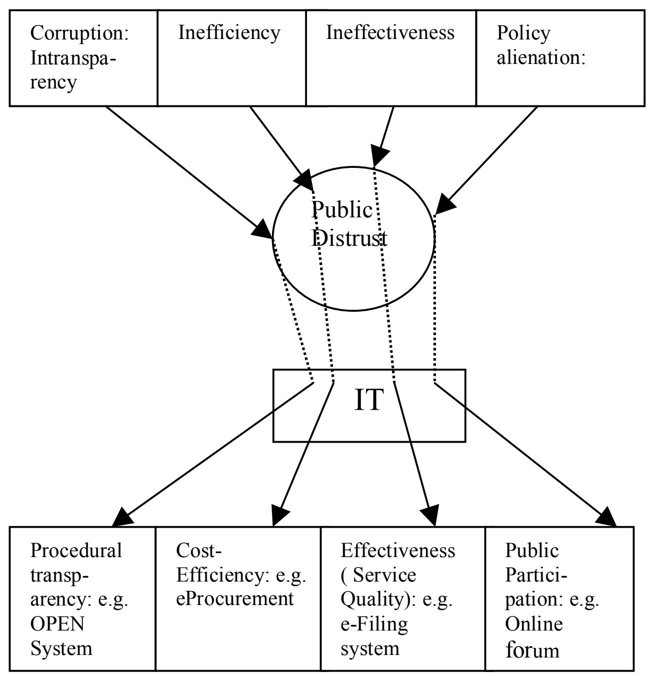
As mentioned, public trust is somehow a perceptual reaction to an attitudinal view on governmental performances. On the one hand, this perception is a cognitive reflection of the information and data obtained by the public regarding governmental performance. In other words, the level of an individual's trust mirrors actual governmental performance and they are positively correlated. On the other hand, public perception indicates the gap between the public's expectation and reality. One who is very frustrated and disappointed with governmental services is likely to have a low level of confidence in governmental services. Accordingly, it could be a highly subjective attitudinal indicator rather than an objective indicator of governmental performances. Citing Putnam's work, Orren [4] argues that public satisfaction (which is closely associated with public trust) with government is a function of both expectation and perception of the public regarding governmental performance. In other words, there is an inverse relationship between public satisfaction and public expectation, while there is a positive relationship between public satisfaction and public perception of governmental performance. Orren suggests that there are different factors involved in the perception and expectation dimensions that jointly affect the level of public satisfaction of governmental performance [4].

Rainey [5] also points out that the public often has wrong information and a biased perception of government performance. He [5] gives an example: many overestimate the administrative cost of the Social Security Administration to be 50 percent of its budget though its actual administrative cost is only about 1.3%. It seems that the link between public expectation and biased public perception of governmental performance is initially embedded in the puzzle of public trust. Often, the degree of proximity between citizens and governments affects the level of public trust [6]. Local governments tend to enjoy higher level of public trust than the federal government.

4. The effect of poor government performance on public trust and the prospects of IT

In this essay, we argue that public trust is determined by the level of public satisfaction and perception on government performance along with other various factors such as economic conditions [7], political scandal [1], social and cultural cause [8,9,10], and the mean world effect of the media [11]. In other words, overall public perception of the quality of government performance (transparency, effectiveness, efficiency, and responsiveness of public services) influences the level of public confidence and trust in government. For example, a negative public perception that the government is very wasteful and inefficient is likely to lead to a low level of public trust in government.

Figure 2 Administrative Causes of Public Distrust and Potential Prospects of Information Technology



Acknowledging that there are various political, economic, and socio-cultural causes of distrust in government, this study focuses primarily on the contribution of the perception and practical realities of corruption, inefficiency, ineffectiveness, and policy alienation/unresponsiveness of governments to the decline of public trust in government. Considering poor government performance and its public perception as a primary cause of the decline of public trust, we posit a preliminary logical link between public interest and the potential utilities of IT. The linkage between public trust and IT is related to the question of how IT can enhance public trust in government by coping with the potential administrative problems of corruption, inefficiency, ineffectiveness, and policy alienation. As Figure 2 indicates, IT can potentially present various tools to cope with proposed administrative problems and to enhance procedural transparency (decreasing corruption), efficiency (increasing procedural cost-efficiency), effectiveness (increasing quality of outcomes), and policy participation (increasing policy inputs).

IT has been considered to be a powerful tool for the improvement of internal managerial efficiency and the quality of public service delivery to citizens as well as enhancement of public participation. As part of the National Information Infrastructure (NII), the Clinton administration attempted to visualize electronic government (E-government), through which the government overcomes the barriers of time and distance in administering public services [12]. In fact, IT has brought dramatic changes in politics [13,14], bureaucracy [15], performance management [16], and reengineering [17] during the last decade.

Considering these phenomenal utilities of IT in the public sector, the following section will examine four selected cases that illustrate various ways in which government can resolve the issues of corruption, inefficiency, ineffectiveness, and policy alienation in pubic organizations.

5. Four illustrations

Four cases are selected to illustrate how IT and Web-based public services can help governments to restore public trust by coping with corruption, inefficiency, ineffectiveness, and policy alienation. The cases include Online Procedures ENhancement for Civil Applications (OPEN) system in the Seoul Metropolitan Government, the eVA system in Virginia, the eFiling system used for IRS documents, and online policy forums in Seoul and Pennsylvania. As Figure 4 indicates, the four mini-cases suggest that IT potentially offers technical tools for improving administrative transparency, cost-efficiency, effectiveness, and policy participation, which may eventually help governments restore public trust in government.

5.1. Open Procedures ENhancement for civil applications (OPEN) in the Seoul metropolitan government: fighting against corruption

Corruption has been one of the primary problems that many politicians, public administrators, citizen watch groups have observed. In fact, corruption has been viewed as a major obstacle to better governance and higher public confidence. Many countries have made national efforts to fight against corruptive administrative practices that are often pervasive and serious. Korea is not an exception to this problem. The Korean government has made tremendous efforts to fight against corruption in political, economic, as well as administrative arenas.

In particular, the Seoul metropolitan government initiated an innovative approach to fighting against administrative corruption (not political corruption) by taking advantage of the utility of IT. Seoul developed a computer system called the Online Procedures ENhancement for Civil Applications (OPEN: www.open.seoul.go.kr) which is designed to make administrative procedures more open, transparent, and accountable by avoiding potential corruptive practices that tend to occur when individual citizens physically contact governmental officials for their civic applications, such as construction permits, business permits, or other civic applications (a total of 54 applications). Basically, the OPEN system allows citizens to pursue, track (monitoring any delay), and follow up on their civic applications exclusively via online without having face-to-face contact with governmental officials.

The OPEN system was a product of Mayor Goh Kun's compelling vision for "the All-out War on Corruption" where he wanted to reinvent the administrative procedures in favor of more efficient, better, and more transparent ones. To fight against corruption, Seoul outlined four primary action items: preventive measures (deregulation, removal of vicious cycles of irregularities), punitive measures (one strike and you're out principle/zero tolerance, corruption report card), ensuring transparency in administration (OPEN, anti-corruption index for administrative units), and enhanced public-private partnership (joint inspection with citizens, citizen ombudsman, coalitions with civil society) (http://english.metro.seoul.kr/government/policies/anti/civilapplications). The OPEN system has received a high mark not only domestically but also internationally. For example, OECD, IMF, World Bank, Interpol, and UNDP, and Transparency International recognized the OPEN system as an exemplary achievement of anti-corruption practice. Transparency International recognized the OPEN system as a best practice at the 9th International Anti-Corruption Conference in 1999, in Burban, South Africa.
(http://english.metro.seoul.kr/government/policies/anti/civilapplications).

A survey indicates that the public has become very interested in this innovative program. In fact, more than 2.6 million web site visits have been made as of March 2002 since the system was initiated on April 15,

1999. A survey result shows that 84.3% (984 out of 1167 respondents) answered that the OPEN system enhances the level of administrative transparency (http://english.metro.seoul.kr/government/policies/anti/civilapplications/). The city also received very positive feedback from citizens regarding the level of kindness and city office integrity in general (http://english.metro.seoul.kr/government/policies/anti/survy/). Though the OPEN system is still in an experimental stage, the system has helped the government to build an image of transparency. It will help to restore public trust as Seoul continues to promote the system and sustain administrative and political support.

5.2. eVA for smart buying and cost saving in Virginia: fighting against cost-inefficiency[5]

There have been great deals of criticism and negative perception that public procurement management is neither efficient nor effective at present. One study shows that the government spends about 5.5 cents to administer every procurement dollar while its private counterparts spend only 1 cent to do the similar procurement task [18]. Such criticism and negative public perception force governments to find new and innovative approaches for promoting better, more efficient procurement management.

As information technology (IT) has become a possible solution for many administrative problems in the public sector and e-procurement has emerged as an innovative alternative to achieve a better, more cost-efficient system through purchase cards, reverse auctions, and automatic accounting systems among others.

Leading an e-government initiative, Virginia's governor highlighted an e-procurement program with Executive Order 65 in May 2000 to actualize the state's e-procurement system, the Department of General Services (DGS) collected information and feedback from vendors concerning the best design. The state organized a focus group to invite more specific input from vendors and then solicited various designs of e-procurement systems, finally selecting American Management Systems (AMS) Inc. as the vendor [19]. Virginia's e-procurement system, namely *eVA* (www.eva.state.va.us) was designed to facilitate the automating and streamlining of procurement [20]. In addition to automated procurement procedures, it includes electronic receiving and invoicing as well as reverse auctions. The eVA system provides various procurement information services for public use, as well as exclusive information and services for registered vendors and agencies.

Virginia charges $25 per transaction or an advance fee of $200 for various services including registration, online access, vendor catalog posting, and other services (electronic receipts and online bid submissions)[21]. Vendors also pay a one percent transaction fee per order, not to exceed $500. The *eVA* system is expected to bring various benefits to government buyers through better selection, better buying, better processes, and better decisions. It benefits participating vendors through simplified administrative procedures, more opportunities, better processes, and better support services [21]. Local governments and school districts in the state, as well as state agencies, can use the system for their procurements. Despite potential managerial, technical and legal challenges to governments, e-procurement will offer great opportunities to governments to make a more cost-efficient procurement management particularly for the purchasing items of high volume but low price.

5.3. e-Filing tax system in the Internal Revenue Service: fighting against ineffectiveness

Internal Revenue Service (IRS) is not often considered to be a favorable federal agency to many citizens due to the nature of its core task of collecting taxes. It has often been thought to be an ineffective agency due to its notorious delay in tax refunds and poor administration. To deal with this unfavorable image, IRS has attempted to implement various managerial reforms. One of its primary approaches is the introduction and utilization of IT for a better and more effective administration. In particular, IRS initiated an electronic filing system in 1995. Since then, as Table 1 indicates, there has been a substantial increase in the number of electronic tax filings every year [22]. For example, there were a little more than 40 million tax returns were filed electronically in 2001 which is a 240% increase compared to 1995.

Thanks to the eFiling system, IRS has continued to improve its customer satisfaction for the last three years in a row according to the American Customer Satisfaction Index (ACSI). The eFiling system provides the public with faster, more effective, more accurate, and safer tax filing services.

> A government-wide survey released in December 2001 demonstrated improved customer satisfaction among individual taxpayers, especially among those who file their returns electronically. The IRS posted an 11 percent increase in satisfaction since 2000 and a 20 percent increase since 1999, the largest

[5] The portion of this essay is benefited from an earlier work on e-procurement of the author.

favorable gain of the 30 federal agencies surveyed. [22, p. 15]

Table 1 Number of Individuals Income Tax Returns Filed Electronically Since 1995

	# of returns (1000)	Increase	Percentage Increase
1995	11,807		
1996	14,968	3,161	26.8
1997	19,136	4,168	27.8
1998	24,580	5,444	28.4
1999	29,349	4,769	19.4
2000	35,394	6,045	20.6
2001	40,245	4,851	13.7
Increase		28,438	240.9

Source: IRS, *Internal Revenue Service Progress Report*, December 2001. p. 13.

This IT-based tax filing system will continue to be a primary vehicle for improving the quality of tax services and restoring public satisfaction, which eventually help the government to restore public trust.

5.4. Online policy forum: fighting against policy alienation

The sense of policy alienation often causes political indifference by the public. As the public feels alienated and isolated from policy-making processes, they tend to lose their confidence and trust in government. The public often appear s to have a higher level of public trust in local governments than state or federal governments possibly because they feel closer and more connected to their local governments than other levels of government.

IT can provide the public with more opportunities for policy participation. For example, Web-based policy forum can promote public participation in policy-making processes so that the perceptual distance to and sense of policy alienation from various policy areas. Governments began to explore some online tools such as online policy forum, poll survey, etc.

The Pennsylvania Department of Environmental Protection offers an online policy forum called "People Connection On-Line Discussion Area" where the public can participate in policy discussions related to many environmental policy areas such as deep mine safety, recycling, water resources, etc. The online policy forum provides the public an opportunity to exchange policy ideas with other citizens and policy-makers.

Seoul has also formed a Web-based public policy forum to encourage citizens to discuss and exchange their ideas and views on particular environmental issues among themselves and with the city government. Citizens often raise questions about the city's environmental programs and express their opinions about particular environmental matters (i.e., environmental hormones, wildlife protection, air pollution, etc.). When the city receives questions, it responds and provides appropriate answers and explanations.

Seoul has also been conducting online environmental opinion surveys regarding major environmental policy issues. Whenever the city needs information on citizens' policy preferences and opinions, it can post survey questions easily on the Web and collect responses from citizens. For instance, the city surveyed public opinion on conservation of small hills in the city and the introduction of environmental impact assessment prior to its final policy decision. Unfortunately, the Web-based environmental policy forum and opinion survey do not seem to be very effective. Public participation in the policy forum and opinion surveys does not seem to be very active. This indicates that the effectiveness of the online policy participation remains questionable despite its great potential utility.

Civil society organizations often take a lead in forming online policy forum to mobilize citizens for various policy areas and promote pubic participation in policy decision-making processes. One example could be Minnesota's e-Democracy group (http://www.e-democracy.org). The organization provides the public with online policy discussions and allows individual citizens to play proactive and potentially significant roles in the policy agenda setting stage. These online policy participation venues will continue to offer additional opportunities to the public to participate in the policy-making process. They will help governments to be more responsive to public policy inputs and to curtail its distance from the public.

6. Conclusions

Acknowledging challenges faced by governments in coping with the decline of public trust, this essay explores potentially positive utilities of IT in enhancing and restoring public trust and confidence in governments. Though declining public trust itself is not a new phenomenon, it has becomes more difficult for governments to cope with this issue due to the complexities and chronic nature of the problem. In fact, many worry that the decline of public trust has becomes a pervasive and chronic problem and is even socially constructed due to the changes in the public's view on the public sector. It casts serious questions on the legitimacy of representative government, roles of governments, and democratic values.

Governments should pay more attention to causes of the chronic decline of public trust in governments and take more proactive actions to restore public trust. As the four illustrations suggest, IT appears to offer a useful opportunity to government to enhance public trust and citizen satisfaction by improving procedural transparency, cost-efficiency, effectiveness, and policy participation. While it is too early to judge immediate and clear contribution of IT to the restoration of pubic confidence, it is fair to state that IT provides governments with tremendous opportunities for improving administrative transparency, efficiency, and effectiveness of governmental performance. It also opens up more ways for the public to be involved and participate in the policy- making processes.

It should be also noted that IT provides positive opportunities as well as many challenges to governments and the public. Though the four selected cases point out some positive prospects of the utilization of IT in improving governmental performance and restoring public trust, we may also easily locate counterexamples where the effect of IT is not clear or even go in the opposite direction if an IT-related project fails and is perceived to be simply wasteful. It suggests that IT is not an instant panacea but a promising alternative tool offered to governments. We also note that many challenges still remain in the applications of IT in the public sector, such as privacy, equal access, security, etc. Governments should address these challenges, as they expand the scope and depth of various Web-based public services.

As mentioned earlier, this study is exploratory in nature with a preliminary framework. Without rigorous empirical tests of causal relationships between the utility of IT and the enhancement of government performance and public trust, this study provides several suggestive mini cases that only demonstrate potential contribution of IT to the improvement of public trust. To uphold the objectivity of this study, future studies should incorporate counter examples suggesting a negative effect of IT on public trust. We also need to examine a more comprehensive model that includes the effects of other factors such as economy, media, social capital, etc. In addition, the optimistic proposition raised in this study should be also empirically further examined with a large dataset and in-depth case study in the future.

7. References

[1] B. G. Peters. *American Public Policy: Promise and Performance*. 5th edition.Chatham House Publishers, New York,1999.

[2] University of Michigan, *National Election Studies (NES)*. www.umich.edu/~nes. 2001.

[3] J. Nye, Jr. "Introduction: The Decline of Confidence in Government." In *Why People Don't Trust Government*. J. Nye, Jr., P. Zelikow, and D. King (eds.). Harvard University Press, Cambridge, 1997. 1-18.

[4] G. Orren. "Fall from Grace: the Public's Loss of Faith in Government." In *Why People Don't Trust Government*. Nye, Jr. Joseph, Philip Zelikow, and David King (eds.). Harvard University Press, Cambridge, 1997. 77-108.

[5] H. Rainey. *Understanding and Managing Public Organizations*. 2nd edition. Jossey-Bass Publishers, San Francisco, 1997.

[6] D. Mutz and G. Flemming. "How Good People Make Bad Collectives: A Social-Psychological Perspective on Public Attitude." In *Congress and the Decline of Pubic Trust*. Cooper, Joseph (ed.). Westview Press, Boulder, 1999.79-100.

[7] R. Lawrence. "Is IT Really the Economy Stupid." In *Why People Don't Trust Government*. Nye, Jr. Joseph, Philip Zelikow, and David King (eds.). Harvard University Press, Cambridge, 1997. 111-132.

[8] R. Putnam. *Bowling Along: The Collapse and Revival of American Community*. Simon & Schuster, New York, 2000.

[9] J. Mansbridge. "Social and Cultural Causes of Dissatisfaction." In *Why People Don't Trust Government*. Nye, Jr. Joseph, Philip Zelikow, and David King (eds.). Harvard University Press, Cambridge, 1997. 133-154.

[10] R. Inglehart. "Postmaterialist Values and the Erosion of Institutional Authority." In *Why People Don't Trust Government*. J. Nye, Jr., P. Zelikow, and D. King (eds.). Harvard University Press, Cambridge, 1997.217-236.

[11] N. Signorielli and M. Morgan. "Cultivation Analysis: Research and Practice." In *An Integrated Approach to Communication Theory and Research*. Salwen, Michael and Don Stacks (eds.). Lawrence Urban Associates, Mahwah, 1996. 111-143.

[12] A. Gore. *Creating a Government that Works Better and Costs Less: Reengineering Through Information Technology*, Report of the National Performance Review. US Government Printing Office, Washington D.C., 1993.

[13] J. Nye, Jr. "Information Technology and Democratic Governance." In *democracy.com?: Governance in Networked Word*, edited by Elaine Ciulla Kamarck and Joseph S. Nye, Jr., Hollis Publishing Company, NH, 1999. 1-18.

[14] P. Norris. "Who Surfs?: New Technology, Old Voters, and Virtual Democracy." In *democracy.com?: Governance in Networked Word,* edited by Elaine Ciulla Kamarck and Joseph S. Nye, Jr., Hollis Publishing Company, NH, 1999. 71-94.

[15] J. Fountain. *Building the Virtual State: Information Technology and Institutional Change*. Brookings Institution Press, Washington DC , 2001.

[16] D. Brown. "Information Systems for Improved Performance Management: Development Approaches in US Public Agencies." *In Reinventing Government in the Information Age*, edited by R. Heeks, Routledge, New York, 1999. 312-330.

[17] K. Anderson. "Reengineering Public Sector Organizations Using Information Technology." In *Reinventing Government in the Information Age*, edited by R. Heeks, Routledge, New York, 1999. 312-330.

0-7695-1874-5/03 $17.00 © 2002 IEEE

[18] Joint Tesk on Information Technology of the National Association of State Purchasing Officers and the National Association of State Information Resource Executives (JTFIT). Buying Smart: State Procurement Saves Millions. White Paper. 1996. http://www.naspo.org/whitepaper/buying smart.cfm. Accessed October13, 2001.
[19] D. Sarkar. “States buy into e-buying.” *Civic.com* . April 2, 2001.
[20] K. Atwater. “Virginia Revolutionizes Virtual Sphere of Procurement.” *Government Procurement*. June 2001. 7-10.
[21] The Virginia Governor’s Task Force on Procurement Assessment. *Report of the Governor’s Task Force on Procurement Assessment: Recommendations to Improve Virginia Government’s Procurement Systems*. February 3, 2000.
[22] Internal Revenue Service (IRS). *Internal Review Service Progress Report*. Internal Revenue Service. December 2001.

Internet Information

http://www.open.seoul.kr. Accessed March 2, 2002.
http://english.metro.seoul.kr/government/policies/anti/survy. Accessed March 2, 2002.
http://www.umich.edu/~nes. Accessed March 2, 2002.
http://www.naspo.org Accessed October 2001.
http://eva.state.va.us. Accessed February 2. 2002.
http://www.e-democracry.org. Accessed March 2, 2002.

0-7695-1874-5/03 $17.00 © 2002 IEEE