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Effects of Information Technology on Policy Decision-Making Processes: Some Evidences Beyond Rhetoric

Seunghwan Myeong¹ and Younghoon Choi²

Abstract
This study examined the effects of information technology (IT) on policy decision-making processes, especially in the stages of goal setting and choosing among policy alternatives. It used survey data collected in 1998 and 2005 from the metropolitan areas of Seoul and Busan in Korea. The survey results showed that there has been a positive change in the perception of the effects of IT on policy decision-making processes among government users. These changes could be made possible by strong leadership and e-government initiatives in central and metropolitan governments, not just due to the diffusion of technology and technologically capable staff members in organizations. The empirical results also showed that barriers to information sharing had increased in 2005 because of environmental changes, including requirement of authorization for providing information, complicated data management, and negative attitudes to information sharing. It suggests that city governments need to provide policy remedies for overcoming obstacles in information sharing in the areas of protection of privacy, network security, and official authorization processes for providing individual information. This

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study may contribute to the school of e-government and IT policy research as it helps decrease the gap between theory and practice.

**Keywords**

information technologies, policy decision-making process, information sharing

**Introduction**

Government, at any level, can be viewed as an “information system in which data are collected, organized, stored, managed, analyzed, and retrieved—all ultimately for decision making purposes” (Harland, 1986; Kraemer, 1969, p. 369). The use of information technology (IT) in decision-making within city governments is increasing in order to meet the demands of result-oriented management so that governments can become more efficient by lowering administrative costs and improving service delivery (Caudle, Gorr, & Newcomer, 1991). IT can contribute to policy decision-making process by providing accurate and timely information to decision makers. City government managers are required to manage information to reduce the uncertainty and ambiguity about goals and cause–effect relationships in the process of decision making. This process however is not only limited to technical concerns of decision making but also related to the political process whereby many actors establish and enforce their priorities. The decision-making process also crosses organization boundaries and levels of government to include citizens, interest groups, the press, as well as elected officials. This suggests that applications of IT in government decision-making processes will be heavily influenced by the external environment of the organization.

Typically, decision making is viewed as a sequential process whereby a person or group is urged to make a decision, rationally evaluating the alternatives, and to arrive at a final decision. As Simon (1977) notes, however, “Each phase in making a particular decision is itself a complex decision-making process” (p. 43). Successful IT performance may not result from a simple adoption of automation but rather from accompanying changes in existing organizational processes. In other words, it is a question of the differences between what an organization needs and what it has. Thus, appropriate tools will be needed to reduce those differences. Government managers, as end users, receive data-processing services from IT and information systems. This means that users will evaluate the information services, including the reliability and responsiveness of systems, accuracy and timeliness of data, suitability of applications, and other quantitative and qualitative
benefits associated with IT. Because impacts of IT are perceived differently from user to user, it is crucial that users understand their own needs and realize how those needs can be satisfied by IT.

A question arises concerning how IT can be most effectively applied to the decision-making process in this context. Effects of IT on policy making are still uncertain and controversial (e.g., Perris, 2001, p. 6), partly because of the different constructs used and the conceptualization of relationships among these constructs (Melville, Kraemer, & Gurbaxani, 2004). IT is now widely used within government decision-making processes, but the degree to which it is used or even procured by city government managers is still unknown. One purpose of this study therefore is to create a theoretical framework and to test fundamental questions that explain how IT is perceived by city government managers in performing their tasks. This study used the survey data collected in 1998 and 2005 for metropolitan areas in Korea, including Seoul and Busan, which are among the pioneers in local computerization and informatization in Korea.

Theoretical Background

Policy Decision Making and Problem Solving: Goal Setting and Searching Alternatives

Policy decision making is seen as an “aggregate form of decision making” (Dror, 1983, p. 13). Recent decision-making theories use similar process, or “stage” models (John, 2002) and distinguish phases within each process. A decision-making process is usually divided into phases: (a) choosing issues that require attention, (b) setting goals, (c) finding or designing suitable courses of action, (d) evaluating, and (e) choosing among alternative actions. The first three of these activities—fixing agendas, setting goals, and designing actions—are usually called “problem solving”; the last, evaluating and choosing, is usually called “decision making” (Simon, Hogarth, Piott, et al., 1986). The process of problem solving is an important step for quality policy making (Bots & Lootsma, 2000; Simon et al., 1986).

Two activities of problem solving differ with respect to types and sources of information (Bystrom, 2002; Dror, 1983). Sources of information for goal setting include internal (program and policy changes) and external (people’s preferences and behavioral change), whereas searching alternatives including such information sources as legal–institutional and resource acquisition.

Two sets of external forces act on the system: external forces outside the control of the actors in the policy domain and policy changes. Both sets of
forces are developments outside the system that can affect the structure of the system (and hence the outcomes of interest to policy makers and other stakeholders). These developments involve a great deal of uncertainty. The external forces themselves are highly uncertain. They include the economic environment, technology developments, and the preferences and behavior of people. The policy changes are not uncertain, but their effects on the structure of the system are. Typically, scenarios are the analytical tools that are used to represent and deal with these uncertainties. Each scenario is a description of one possible future state of the system. Scenarios do not forecast what will happen in the future; rather, they indicate what could happen. Also, scenarios do not include complete descriptions of the future system; they only include factors that might strongly affect any interesting outcomes.

But policies are sets of forces within the control of decision makers (Walker, 2000, p. 13). In most real-world policy situations, there are many possible alternatives, uncertainties, stakeholders, and consequences of interest. Also, there is usually no single decision maker and little chance of obtaining agreement on a single set of preferences among the consequences. As a result, there is no way to identify an optimal solution. Instead, policy analysis uses a variety of tools to develop relevant information and present it to the parties involved in the policy decision-making process in a manner that helps them come to a decision. It is a problem-oriented approach that does not presume a model structure for assessing the consequences of a policy or ranking the alternatives. Its purpose is to assist policy makers in choosing preferred courses of action by clarifying the problem, outlining the alternative solutions, and displaying tradeoffs among their consequences. The field of data mining, for instance, aims to improve decision making by focusing on discovering valid, comprehensible, and potentially useful knowledge from large data sets.

**Information Technology and Problem Solving**

Regarding problem solving, Simon (1965) states that “problem solving proceeds by erecting goals, detecting differences between present situation and goal, finding in memory or by search tools or processes that are relevant to reducing differences of these particular kinds, and applying these tools or processes” (p. 83). Although none of these three quality aspects are sufficiently operational to establish the quality of a given decision-making process, they provide a vocabulary suited for assessing the merit of decision-support research and practice. If goal attainment remains equivocal in multistakeholder situations, decision support can be seen as effective if it
helps decision makers to explicate and perhaps even agree on objectives: Structuring a problem is an important step toward solving it (Bots & Lootsma, 2000, p. 2). Simon (1977) also points out that sophisticated IT can be the appropriate tool for reducing those differences between organizational situations and goals, but analysis of the decision-making system and its data requirements must come first.

Policy decision-making processes in local government are also influenced by highly charged political bargaining, fiscal austerity, equity, and efficiency demands (Stevens & LaPlante, 1986). There are also immense top–down pressures to decrease expenditures and at the same time increase levels of service (Rubin, 1990). Therefore, such tasks need information, which reduces the uncertainty about objectives and cause–effect relationships in evaluating policy alternatives. Therefore, identifying information about and responding to the legislature, to the higher level governments, and to the public, are important in the stage of setting policy goals. Simon (1977) predicted that continued progress in using decision-making tools will improve the heuristic problem solving of organizations. Thus, it was necessary to emphasize human decision makers and constructing heuristic computer programs. Huber (1990) also proposed that the use of computer-assisted communication and decision-support technologies can provide accurate information, speed up the decision-making process, and reduce management levels in organizations, leading to higher quality decisions.

**IT and Decision Making**

The basic assumption underlying the contingency perspective is that “organizations whose internal features best match the demands of their environments will achieve the best adaptation” (Scott, 1992, p. 89). In the context of IT management in the decision-making process, therefore, IT cannot be evaluated by solely rational or political thinking about effective practices but can be evaluated by contingencies.

Melville et al. (2004) found in their IT business study that IT itself has values, and those are dependent on internal and external organizational factors, including the existence of reciprocal resources between organizations and related institutions, an environment of competition, and the macro environment. Van Bruggen, Smidts, and Wierenga (1998) also point out that although IT (e.g., Decision Support System) can increase the quality of decisions by enabling managers to identify core variables in the decision-making process, it is particularly helpful for those decision makers who possess lesser analytical ability or those not time constrained.
Contingencies around decision making demand organizations for more active environmental scanning search (Maier, Rainer, & Snyder, 1997). Environmental scanning supported by computer systems has particularly contributed to the decision-making process in the private sector. Business managers however have needed to be more careful when using IT in decision making because the business environment has become more technologically demanding, information seeking, complex, and competitive (Turban & Meredith, 1994). Previously, environmental scanning has been regarded as requisite for nonstructured and unofficial decision making, which Simon (1965) classified as the domain of decision making by top management. Nowadays, information-searching activities in organizational environments are also indispensable for employees in the lower echelons, which have become more structured and official in organizations (Ahituv et al., 1998; Choudhury & Sampler, 1997). Choudhury and Sampler (1997) particularly insist that under these circumstances, IT needs to match the purposes of information seeking by emphasizing the time and specificity in the use of IT. This is more critical when environmental scanning with information systems is related to seeking external sources of information, because external demands stimulate organizations to link their strategic goals with the operational level of resource management (Vandenbosch & Huff, 1997). For this reason, Cyr, Gehling, and Gibson (1997) insist that environmental scanning by lower level managers is becoming more important because organizations will lose their competitive advantage if they fail to identify environmental information. The role of consumer or public surveys is also becoming more crucial, although their level of utility varies, because they provide comprehensive information for decision makers to reduce gaps between organizational goals and external demands (Hastak, Mazis, & Morris, 2001).

As Bots and Lootsma (2000, p. 2) point out while explaining images of public decision making, decisions are not made but happen as a result of a complex interaction between national, regional, and local administrators; trade unions; pressure groups, etc. Decisions involve many and often divergent interests of a society, and aggregation into such notions as “general welfare” only hide conflict. Therefore, the set of evaluation criteria is large and has a wide variety of both quantitative and qualitative criteria, whose values are difficult to establish (e.g., quality of life, safety) and/or aggregate.

The use of information and information sources also vary depending on the complexity of the situation of the decision making, in that information needs for different tasks vary according to internal and external
environments (Bystrom, 2002). For instance, internal and official documents can be major information resources for more automatic and routine tasks, whereas human resources, including related personnel and experts, are more critical for unstructured tasks. In the management of internal sources of information, Limone and Bastias (2006) emphasize the role of knowledge management, not technology itself. They insist that organizations are auto-poietic because organization itself is a cognitive system. For this reason, knowledge (know-how to do something) is an indispensable element for organizations in maintaining functions and sustainability to meet with changing environments.

The choice of IT also varies depending on the strategic design for data collection (Mostaghimi, 2001). He points out that decision makers strategically select the decision-making system, responding quickly and on time to their specific information needs. Integrated data mining through DSS, for instance, can enhance the quality of decision making (Rupnik, Kukar, & Krisper, 2007).

As discussed above, decision-making processes are mainly associated with goal setting and seeking out alternatives that are contingent on internal and external environments. If goal attainment remains equivocal in multi-stakeholder situations, decision support can be seen as effective if it helps decision makers to explicate and perhaps even agree on objectives: Structuring a problem is an important step toward solving it.

In decision-making processes, information sharing among organizations is also important to reduce the gap between organizational goals and expectations from outside organizations. Some studies report type of obstacles in information sharing with other organizations. Schitekatte (1996) found in small decision-making groups research that there are conditions in facilitating information exchange among groups, especially the exchange of unshared information: (a) under a low information load; (b) when each member is aware of the unique information he or she can contribute; (c) when the unshared information is shared with other group members before discussion. In addition, in a laboratory experiment that evaluated the influence of computer cost and access on the selection of information for a public management decision, Bots and Lootsma (2000, p. 2) found that increased cost substantially diminished the choice of computer-based information, but increased difficulty of access had only a modest effect. Other types of obstacles in information sharing include technical, organizational, institutional, political, and economic barriers (Landsbergen & Wolken, 2001, pp. 208-210; Snellen, 2005, pp. 413-416).
### Table 1. Theories of Information Technology and Decision Making

<table>
<thead>
<tr>
<th>Issues</th>
<th>Factors</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contingency theories</td>
<td>Environmental determinism</td>
<td>Glaser, Torrance, &amp; Schwartz, 1983</td>
</tr>
<tr>
<td></td>
<td>Management action</td>
<td>Kraemer et al., 1989</td>
</tr>
<tr>
<td></td>
<td>Reciprocal resources</td>
<td>Melville, Kraemer, &amp; Gurbaxani, 2004</td>
</tr>
<tr>
<td></td>
<td>Information needs</td>
<td>Scott, 1992; Van Bruggen, Smidts, &amp; Wierenga, 1998</td>
</tr>
<tr>
<td>Environmental scanning</td>
<td>Level of position (lower level)</td>
<td>Ahituv, Jehiel, &amp; Machlin, 1998; Cyr, Gehling, &amp; Gibson, 1997</td>
</tr>
<tr>
<td>and goal setting</td>
<td>Scanning divergent interests</td>
<td>Bots &amp; Lootsma, 2002</td>
</tr>
<tr>
<td></td>
<td>External sources of information</td>
<td>Choudhury &amp; Sampler, 1997</td>
</tr>
<tr>
<td></td>
<td>Consumer and public survey</td>
<td>Hastak, Mazis, &amp; Morris, 2001</td>
</tr>
<tr>
<td></td>
<td>More active in the private sector</td>
<td>Maier, Rainer, &amp; Snyder, 1997; Turban &amp; Meredith, 1994</td>
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<td></td>
<td>Unstructured tasks</td>
<td>Simon, 1965</td>
</tr>
<tr>
<td></td>
<td>Strategic goals</td>
<td>Vandenbosch &amp; Huff, 1997</td>
</tr>
<tr>
<td>Searching alternatives</td>
<td>Information needs for different tasks</td>
<td>Bystrom, 2002</td>
</tr>
<tr>
<td></td>
<td>Role of middle-level managers</td>
<td>Huber, 1990</td>
</tr>
<tr>
<td></td>
<td>Knowledge management</td>
<td>Limone &amp; Bastias, 2006</td>
</tr>
<tr>
<td></td>
<td>Strategic design for system</td>
<td>Mostaghimi, 2001</td>
</tr>
<tr>
<td></td>
<td>Integrated data mining</td>
<td>Rupnik, Kukar, &amp; Krisper, 2007</td>
</tr>
<tr>
<td>Barriers of information sharing</td>
<td>Computer and access cost</td>
<td>Bots &amp; Lootsma, 2000</td>
</tr>
<tr>
<td></td>
<td>Political, organizational, institutional, and</td>
<td>Landsbergen &amp; Wolken, 2001; Snellen, 2005</td>
</tr>
<tr>
<td></td>
<td>technical barriers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Authorization, behavior/attitude</td>
<td>Schitekatte, 1996</td>
</tr>
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</table>
**Building Korea’s Local E-Government**

Computerization of regional and local governments can be traced back to the 1970s when a pilot project of establishing a computerized local tax system was undertaken by Seoul and Busan, the two largest metropolitan cities in Korea. Even from the outset, policy designers were concerned with the computerization of functions of regional and local governments, in that they were mainly the geographical extensions of national government. More than 70% of the functions of regional and local governments are still those that have been delegated from the central/national government or national functions.

Currently the local e-government program in Korea consists of two parts: Regional Administrative Informatization (the *Si-Do* System) and Local Administrative Informatization (the *Si-Gun-Gun* System, which is the city–county–local district integrated system developed by the Ministry of Government and Home Affairs [MOGAHA]). The program of Local Administrative Informatization aimed at innovating civil affairs services with the government and contacted citizens directly, striving to get things done more efficiently and speedily by joint use of government information. The program was also considered to be an effective avenue for bridging informatization divides between local governments. Originally the program began in 1998 and has been progressing through three phases. Its first phase (September 1998 to December 2000) concentrated on 10 functional areas such as land registers, health, and farming, which are closely related to the everyday life of citizens. The second phase (November 2000 to September 2003) focused on the remaining 11 functional areas of the local governments, including road traffic, forestry, and so forth. The third phase (December 2005 to December 2006) targeted the integration and linking of information resources, providing citizen-centered information services, and facilitating citizens’ utilization of e-government services.

Regional Administrative Informatization is a two-phased priority program designed for embracing local e-government in accordance with the E-Government Roadmap—the master plan for e-government in the Rho Administration (2003-2007). This program made it possible to link local governments, regional governments, national government ministries, and related public entities both vertically and horizontally, thereby ensuring adequate infrastructure for e-government. For this purpose, the first phase of the program (January 2004 to May 2005) was to develop service portals and 18 administrative functions, such as local administration, women’s welfare, local assembly, and so forth. In the second phase (February 2006 to June 2009), its main concern was creating backup systems and taking care of other maintenance-related informatization needs.
The primary goal of the 11 e-government initiatives was to build a citizen-centered government service by creating the Single-Window E-Government, which could allow citizens to file online applications for government services and access other information services through a simple and accessible format. Under the Single-Window e-Government, public offices and the government could share information across their networks and eliminate redundant processes such as the need to submit numerous documents for a single government service.

At the level of metropolitan governments, the OPEN System (Online Procedures ENhancement for Civil Application) of Seoul from Year 1999 is a good example of this effort. This system made the decision-making process in city governments open to the public online, thus increasing transparency while avoiding unnecessary burdens or pressure from political groups and the higher level governments.

Data and Method

This study used the data collected by a joint project team from Inha and Kwangwoon universities that conducted the survey in 1998 and in 2005 for metropolitan governments in Korea including Seoul and Busan. The sampling frame for this study includes general, IT, and program managers in two metropolitan city governments. The survey in 1998 consisted of 580 individuals from two similar cities. The overall response rate for the mail survey was 69.1 (364 of 580 individuals). The survey in 2005 consisted of 308 city government mangers in the two cities. The overall response rate for the survey (web survey) was 87.3% (269 of 308 individuals). The measurement tools and scales used in measuring variables in the 1998 survey data were replicated in the 2005 survey questionnaire and measurements.

The metropolitan governments of Seoul and Busan were assessed as having top-quality IS systems and programs (Seoul: first; Busan: second) in the 1998 and 2005 Local Informatization Evaluation Reports (Korean Association for Local Informatization, 1999, 2005). The organizational size is reported by many studies as the critical factor influencing the process of decision making or implementing the electronic government projects in U.S. cities (Brudney & Selden, 1995; Holden, Norris, & Fletcher, 2003; Moon, 2002; Norris & Demeter, 1999; Norris & Kraemer, 1996; Norris & Moon, 2005). They maintain that higher degrees of horizontal and vertical differentiation in larger organizations often bring an increased need for control and coordination within an organization. Therefore, metropolitan city governments might need IT that could provide faster methods of information...
processing within hierarchical levels and between subunits. Also, the impact of IT on policy decision-making process could be perceived more diversely by the city managers.

In this analysis, we look at the changes in city managers’ perception of the impacts of IT on two decision-making stages, including perceptual barriers in information sharing between 1998 and 2005. To investigate the continuing evolution or changes of IT adoption in decision-making processes, we take advantage of the unique longitudinal surveys conducted by a joint project team from the Inha and Kwangwoon universities in 1998 and 2005. City government managers were asked to indicate whether and to what extent the use of IT had supported problem-solving activities in each stage (1 = not helpful at all, 5 = greatly helpful), each respondent answered a set of questions regarding the impacts of IT on the problem-solving process. City government managers were also asked to indicate their level of agreement with the statement describing the obstacles in information sharing with other organizations (1 = strongly disagree, 5 = strongly agree).

To measure the impacts of IT on policy decision-making processes, the following were included: the OPEN System, the Government for Citizen (G4C) portal system, and the Si-Gun-Gun System (MOGAHA, 2002) of the Seoul and Busan metropolitan governments.

Findings and Discussion
The results in Table 2 indicate that as perceived by city managers, the impacts of IT on the policy decision-making process had led to positive changes from 1998 to 2005. As we explained in the background of city governments’ e-governments, it could have been possible due to strong leadership and e-government initiatives in central and metropolitan governments, not just due to diffusion of technology and technologically capable staff. In contrast, city governments in 2005 have encountered more severe barriers of information-sharing by city government managers compared to 1998, which include issues around privacy and security, data management, and uncooperative attitudes between organizations. This result suggests that city governments need to provide more specific policy remedies for overcoming obstacles in information-sharing under the government-wide network environment be provided.

First, the impacts of IT on the stage of goal setting are related to such issues as whether IT is helpful for city government managers in locating information and in responding to the legislature, the higher level governments, and the public. The overall indicators in the stage of goal setting confirm findings of earlier studies that advanced IT can be an appropriate tool for
detecting differences between organizational situations, with goals and expected organizational roles from external groups and environments (Gorry & Scott, 1971; Huber, 1990; Kraemer & Dedrick, 1994; Kraemer, Gurbaxani, & King, 1992; Martin, 1994; Norris, 2003; Norris & Moon, 2005; Rupnik et al. 2007; Simon, 1970; Van Bruggen et al., 1998). In particular, the success of the OPEN System of Seoul may be attributed to the strong leadership skills and clear vision of Mayor Goh along with support from the citizens’ anticorruption movement. As Bozeman and Straussman argue (1991), the effective use of IT requires a senior manager’s vision of the system as a useful tool for the improvement of local government capacity. Thus, this finding also supports Dutton and Kraemer’s reinforcement politics theory (1977, 1978) that computing policies are greatly controlled by the dominant local political system and its specific configuration of dominance of values, interests, and actors.

Second, increase of means of indicators in 2005 in identifying public opinion, projects in the private sector, stakeholders’ interests, and people’s demands and feedbacks also suggest that IT is a powerful tool to locate information for people and other organizations, which enables a city government to make clearer strategic goals in response to citizens’ demands. As noted above, the online mutual communication systems, including the OPEN System, were more widely adopted in Korean local governments in 2005. Indeed, real-time communication systems between citizens and city governments played a critical role in identifying citizens’ demands, especially during Rho Mu-hyun’s government (2003-2007). The emphasis was on personnel and citizen participation through various levels of government portals.

Third, the impacts of IT while searching alternatives are related to such issues as whether IT is helpful to city government managers for screening the information from the operational unit, relaying it to the decision unit, and linking relevant activities in different operational areas and thus ensuring that resources are obtained and distributed. The overall indicators also support our expectation that IT is helpful for tasks in searching policy alternatives requiring city government managers to merge, summarize, manipulate, and even interpret quantifiable data and information.

Fourth, the empirical results also show that barriers to information sharing were higher in 2005 because of the environmental changes, including authorization for providing information, complicated data management, and negative attitudes for information sharing. As IT has become more sophisticated, with a widely connected government portal system, unwillingness to share information among organizations may become a severe hindrance to those actively seeking information and resources to make policy goals searching
**Table 2.** Perceptual Changes of City Government Managers for Impacts of Information Technology on Decision-Making Processes Between 1998 and 2005

<table>
<thead>
<tr>
<th>Indicators</th>
<th>1998</th>
<th>2005</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Goal settings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To identify higher level governments’ policy and plans</td>
<td>3.527</td>
<td>1.087</td>
<td>3.637</td>
<td>0.845</td>
</tr>
<tr>
<td>To identify related organizations’ policy and plans</td>
<td>3.473</td>
<td>1.042</td>
<td>3.664</td>
<td>0.800</td>
</tr>
<tr>
<td>To identify the background of selected policy</td>
<td>3.200</td>
<td>1.048</td>
<td>3.504</td>
<td>0.823</td>
</tr>
<tr>
<td>To identify budget allocation priority of related projects</td>
<td>3.017</td>
<td>1.054</td>
<td>3.506</td>
<td>0.833</td>
</tr>
<tr>
<td>To identify public opinion</td>
<td>3.214</td>
<td>1.115</td>
<td>3.542</td>
<td>0.835</td>
</tr>
<tr>
<td>To identify projects and plans in the private sector</td>
<td>2.793</td>
<td>1.115</td>
<td>3.450</td>
<td>0.784</td>
</tr>
<tr>
<td>To identify stakeholders’ interests</td>
<td>2.634</td>
<td>1.023</td>
<td>3.153</td>
<td>0.826</td>
</tr>
<tr>
<td>To identify people’s demands and feedbacks</td>
<td>3.096</td>
<td>1.123</td>
<td>3.550</td>
<td>0.912</td>
</tr>
<tr>
<td>Searching alternatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To identify social indicators and resources</td>
<td>3.746</td>
<td>1.002</td>
<td>3.575</td>
<td>0.784</td>
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<td>To identify legal and institutional background</td>
<td>3.507</td>
<td>1.064</td>
<td>3.614</td>
<td>0.812</td>
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<tr>
<td>To identify funds and financial resources</td>
<td>3.158</td>
<td>1.023</td>
<td>3.504</td>
<td>0.793</td>
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<td>To identify human resources in organizations</td>
<td>3.121</td>
<td>1.043</td>
<td>3.361</td>
<td>0.785</td>
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<tr>
<td>To identify cooperation with related organizations</td>
<td>3.118</td>
<td>1.055</td>
<td>3.556</td>
<td>0.694</td>
</tr>
<tr>
<td>To identify benchmarking with related organizations</td>
<td>3.337</td>
<td>1.051</td>
<td>3.826</td>
<td>0.744</td>
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<tr>
<td>Information-sharing obstacles</td>
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<tr>
<td>Cost of providing information</td>
<td>2.471</td>
<td>1.053</td>
<td>2.448</td>
<td>0.896</td>
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<tr>
<td>No authority to provide information</td>
<td>2.683</td>
<td>1.099</td>
<td>3.086</td>
<td>0.914</td>
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<tr>
<td>Private information</td>
<td>2.529</td>
<td>1.162</td>
<td>2.884</td>
<td>0.970</td>
</tr>
<tr>
<td>Complicated data management</td>
<td>2.350</td>
<td>1.014</td>
<td>2.672</td>
<td>0.850</td>
</tr>
<tr>
<td>Technical difficulties</td>
<td>2.739</td>
<td>1.108</td>
<td>2.667</td>
<td>0.826</td>
</tr>
<tr>
<td>Negative behavior/attitude</td>
<td>3.261</td>
<td>1.081</td>
<td>3.373</td>
<td>0.917</td>
</tr>
<tr>
<td>Lack of higher level manager’s interest</td>
<td>2.744</td>
<td>0.993</td>
<td>2.836</td>
<td>0.841</td>
</tr>
<tr>
<td>Lack of people’s support</td>
<td>3.049</td>
<td>1.038</td>
<td>3.067</td>
<td>0.856</td>
</tr>
<tr>
<td>Overall lack of interest in IT adoption</td>
<td>3.277</td>
<td>1.071</td>
<td>2.868</td>
<td>0.861</td>
</tr>
</tbody>
</table>
alternatives. It suggests that obstacles originating from issues of privacy protection, complicated data management including network security, and a negative attitude toward information sharing will be more critical barriers beyond the level of technical issues. For this reason, the Special Committee for Public Information-Sharing was established in Korea in 2006. The Korean e-Government Act of 2001 also promulgates the provision that government departments should share governmental information among themselves (Korean Planning and Budgeting Board, 2007). It suggests that policy remedies be provided for overcoming obstacles in information sharing under the government-wide network environment. Issues of protection of privacy and official authorization for providing information on individuals have now become a major agenda before the adoption of a new system in the public sector. For example, the MOGAHA in 2006 has initiated the revision of the Individual Information Protection Act of 1995 through public hearings, which was more focused on the protection of individuals used in the government portal sites and related systems (MOGAHA, 2006).

Conclusion

This study seeks to determine the effects of IT on policy decision-making processes, focusing especially on goal setting and search for policy alternatives. The advent of modern IT has already relieved officials of the many tedious and routine managerial tasks. Yet the question remains as to what degree the use of modern IT can simplify unstructured tasks such as decision making and communications, which are greatly interactive with environments and related to human problems. In this research, the interests, conceptual relationships among policy decision making, problem solving, and IT were discussed. This study used the survey data collected from the metropolitan city governments of Seoul and Busan. The survey results showed that city government managers positively perceived the effects of IT on the policy decision-making processes. It could have been possible because of strong leadership and e-government initiatives in central and metropolitan governments, not just because of the diffusion of technology and technologically capable staff. It also suggests that city governments need to provide policy remedies for overcoming obstacles in information sharing surrounding issues of privacy protection, network security, and official authorization processes for providing information on individuals. This study may contribute to e-government and IT policy research as the present empirical results are based on the same measurement indicators applied at different times.
Nevertheless, this study did not provide a theoretical model and analytic tools to more rigorously examine the relationship between decision-making processes and IT management. As Orlikowski (1992) argues, the ongoing interaction of technology with organizations needs to be viewed dialectically for recognizing reciprocal causation, where the use of IT is readjusted over time to adjust to emergent changes. Empirical results under the model for the impacts of IT on the decision-making process need to be developed for the sake of generalizability.

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