



An institutional analysis of an e-government system for anti-corruption: The case of OPEN

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ABSTRACT

E-government is increasingly being used to improve transparency in the government sector and to combat corruption. Using institutional theory as an analytical perspective, this study documents and evaluates the development of an anti-corruption system called OPEN (Online Procedures ENhancement for civil application) in the Seoul Metropolitan Government. Incorporating three distinctive (yet interrelated) dimensions of institutionalization (regulatory/coercive, cognitive/mimetic, and normative), and four anti-corruption strategies embedded in the system, this study investigates how an e-government system for anti-corruption in a local government has evolved and become a prototype of a national system to be used for the same purpose. The findings show that in implementing OPEN, a system for anti-corruption, the regulatory dimension was most effective, and (as in many IS implementations) strong leadership was crucial to its success.

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1. Introduction

E-government is being implemented in more areas of government administration at both the local and national levels worldwide. While it was initially promoted as a means of improving internal management efficiency in public administration, e-government is increasingly considered an important measure for enhancing citizen access to government services and expediting the delivery of services to citizens. E-government's potential to increase transparency and combat corruption in government administration is gaining popularity in communities of e-government practitioners and researchers (Wescott, 2003; APDIP, 2006). Such transparency can be achieved by providing citizens with more and direct access to information regarding the businesses of the citizens concerned. It is often said that increased transparency leads to decreased corruption.

This paper examines the OPEN (Online Procedures ENhancement for civil applications) system of the Seoul Metropolitan Government (SMG), an e-government system developed to reduce corruption. The OPEN system has been recognized (not only by Korean citizens and government, but also by international organizations such as the UN, OECD, and the World Bank) as enhancing administrative transparency and reducing corruption (APDIP, 2006). The success of the OPEN system led to the Korean central government's adoption of the OPEN principles in its nation-wide e-government system, called "Saeol."

This paper investigates how the OPEN system was developed and what made the system a success to the extent that the central government adopted a similar method. The key research questions are:

- 1) What mechanisms are involved in the evolution of an e-government system for anti-corruption?
- 2) What factors are effective in implementing an anti-corruption system?
- 3) Is such an anti-corruption system, in fact, reducing corruption?
- 4) What are the requirements for designing such an anti-corruption system? In other words, what strategies does the OPEN system employ?

To answer these questions, we take the perspective of institutional theory, which helps to elucidate how a system or innovation is maintained and reproduced (that is, institutionalized). While there have been several studies about e-government success factors (Kawalek & Wastell, 2005; Kim et al., 2007; Shi, 2002), there has been little research about the processes by which an e-government system is developed, enforced, and modified from a theoretical perspective. This paper contributes to the theory and practice of e-government by highlighting how an e-government is institutionalized, particularly in the area of anti-corruption, where reforms for transparency can be more strongly resisted and challenged by parties with vested interests than in other areas of e-government.

This paper is organized as follows. Section 2 reviews studies of e-government, focusing on transparency and anti-corruption, and introduces the institutional perspective. Section 3 outlines the methodology used, while Section 4 describes the OPEN system.

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Section 5 discusses key issues to the development of OPEN, and Section 6 presents this study's conclusions.

2. Literature review

2.1. E-government, transparency, and anti-corruption

The focus of e-government is shifting gradually from internal efficiency to value-added services for customers and other stakeholders (Melitski, 2003; Pollitt & Bouckaert, 2000; Stratford & Stratford, 2000). E-government means the use of technology to enhance access to and delivery of government services in order to benefit citizens, business partners, and employees (Silcock, 2001). E-government has the power to create new modes of public service whereby all public organizations deliver modernized, integrated, and seamless services for citizens.

In this shift towards external services, transparency has been increasingly emphasized as a fundamental driver for e-government. E-government initiatives are regarded as a powerful schema for enhancing public transparency (along with internal efficiency and quality service delivery) to the public (Fountain, 2001; Brown, 1999). Northrup and Thorson (2003) cite increased efficiency, increased transparency, and transformation as important reasons for e-government initiatives. In addition, Mulgan (2000) points out e-government transparency efforts in relation to accountability, which has extended its meaning to include transparency initiatives within the work procedures adopted by the government. Compared with earlier forms of e-government infrastructures (Chadwick & May, 2001), most current e-government websites and systems encompass more interactive features and services in order to restore public trust by providing necessary information and regulations, in addition to quick responses to individual queries (Moon, 2003).

By incorporating the agent-principal theory, Smith and Bertozzi (1998) explain the relationship between governments (as agents who work for citizens) and citizens (as principals). Because the government has more control than citizens over the flow of information, members of the government are prone to corruption. In order to narrow the distance between citizens and government, it is necessary to monitor the government's work and provide citizens with information about administrative processes and outcomes regarding, for example, permits or applications. Vishwanath and Kaufmann (1999) share this view and argue that more openness and information sharing enable the public to make informed political decisions, which can improve the accountability of governments.

More information delivered to citizens in a more timely fashion is expected to increase the transparency of government and empower citizens to monitor government performance more closely. Florini (2000) points out that transparency enables citizens to understand a government's accomplishments because the government provides them the necessary information. E-government is, therefore, viewed as a positive channel for enhancing trust in government through government accountability and the empowerment of its citizens (Kauvar, 1998; Demchak et al., 2000).

The reality, however, is not so simple. By examining five cases of IT and public section corruption, Heeks (1998) reports that while IT often helps detect and remove corruption, it sometimes has no effect, or creates new opportunities for corruption. IT can lead to an 'upskilling' of corruption and reduced competition for upskilled, corrupt civil servants (Wescott, 2001). Since corruption is deeply "rooted in cultural, political, and economic circumstances" (Wescott, 2001), Heeks (1998) suggests 'a more holistic vision,' that includes an information system design and other organizational and environmental factors when implementing a system for corruption control.

These concerns about corruption and e-government are translated into practical strategies by some international organizations. UNDP (2004) defines corruption as "the misuse of public power, office, or

authority for private benefit." UNDP suggests four strategies to fight corruption: prevention, enforcement, access to information and empowerment, and capacity building (APDIP, 2006). Prevention refers to "reform[ing] administrative procedures, accounting, and procurement practices," enforcement of "institut[ing] proper record-keeping and put[ting] in place effective systems of surveillance and enforcement," access to information and empowerment in order to "promote access to information and enable public and media oversight," and capacity building in order to "strengthen governance systems and processes and provide training." When e-government applications are used to fight corruption, these four strategies need to be integrated in the design and implementation process.

2.2. Institutional theory

While there have been many studies that identified success factors of e-government projects from various viewpoints including IS factors, organizational factors, and project management factors (e.g. Kawalek & Wastell, 2005; Kim et al., 2007; Shi, 2002), few studies have been conducted on the processes of how an e-government system is developed, enforced, and evolved. To address this relatively unexplored aspect of e-government, we use institutional theory because we view e-government as institutions that are "multifaceted, durable social structures, made up of symbolic elements, social activities, and material resources" (Scott, 2001). Institutionalization is the process by which those structures are maintained and reproduced. Structures and activities are modified towards isomorphism not only for economic motivations, but often for social, cultural, or political ends.

At the center of institutional theory are three mechanisms (or forces) that engender the isomorphism or consistencies within or across organizations over time. These are: regulatory/coercive, cognitive/mimetic, and normative (DiMaggio & Powell, 1983; Scott, 2001). The three "institutional pillars" are viewed as independent and alternative sources of organizational structuring.

A regulatory or coercive mechanism is based on political and legislative influences. The regulatory factors are affected by politics and legislations and influenced by firms' decisions to adopt a specific organizational practice. Hoffman and Ventresca (2002) describe how organizations emphasize legitimation processes and have the tendency to institutionalize organizational structures and procedures following legislations.

A mimetic mechanism refers to copying other systems' practices (DiMaggio & Powell, 1983; Scott, 2001). It works when uncertainty is prevalent, at which point organizations are likely to model themselves on other organizations or refer to culturally presumed meanings and ideologies.

A normative mechanism is motivated by norms that are prevalent and observed in the domain to which the organizations belong. Institutions are made up of many elements with processes through which structures are maintained and modified towards consistencies within or across organizations over time (Scott, 2001). The consistency often means upholding norms. For example, organizations often take actions, not because of economic considerations, but because they are expected to follow industry norms.

Institutional theory has multiple roots and variants and has been applied in many areas of study (Scott, 1987; DiMaggio & Powell, 1991). In the study of technology, it aims to explore the creation, design, and use of advanced technologies that are bound up with the forms and direction of social order. The theory requires the study of technology, including e-government systems, to focus on interaction between people and the system, and to capture historical processes as social practices evolve. These social practices and processes are executed by the interactions among actors or stakeholders such as unions, investors, shareholders, financial institutions, customers, intermediaries, suppliers, academic institutions, business associations, and social activists (Hoffman, 2001; Silva & Figueroa, 2002).

When applied in the context of e-government, institutional theory can help identify challenges surrounding the implementation of e-government systems. By examining the three mechanisms of institutionalization, the theory elucidates how an innovation or new system developed in an organization is diffused, adopted, or copied by others. This paper investigates how a new e-government system, the OPEN system, is institutionalized. For this, we examine the development, implementation, and evolution of the OPEN system through the lens of the three institutional pillars.

3. Methodology

This study is based on a single case study. Because e-government projects (particularly those designed to combat corruption) are influenced by multiple factors and stakeholders, such as citizens as users, civil society groups (e.g., related NGOs), civil servants, internal management, and vendors (of hardware and software) among others, this case study is an appropriate approach in that it allows researchers to deal with those factors in a comprehensive manner (Lee, 1989).

A single case study design is justified when the case under study “represents an extreme case or a unique case” (Yin, 2003), and when the case serves a revelatory purpose (Yin, 2003). The OPEN case is unique in that, according to our literature review, there are currently only a few e-government systems for anti-corruption that have been reported on (Heeks, 1998; Wescott, 2003; APDIP, 2006). Among them, the OPEN system is almost unique in that it is widely recognized as a success, inasmuch as international organizations recommend its use to developing countries. Moreover, domestically it has become part of the national system for anti-corruption developed by the central Korean government. The case also serves a revelatory purpose. Corruption is a phenomenon that is very difficult to investigate because it involves secrecy and deceit, and because there is the possibility of informants being punished when exposed. Anti-corruption projects always meet with resistance; hence, studies on them are performed reluctantly. We were able to overcome some of these difficulties because one of the authors had participated in the implementation of OPEN (see the following) and was able to reveal some aspects that would otherwise remain unknown.

A first round of interviews was conducted in January 2006 with civil officials in district offices, staff members in the Audit and Inspection Bureau and the Information System Bureau, and one of the two former Information System Directors (Table 1). The initial interviews focused on the interviewees' reflections on the use of the OPEN system. A second round of interviews was conducted from September to October 2007 with the interviewees listed in Table 1, including the other former Information System Director. The breaks between the two rounds of interviews permitted the researchers to focus on areas that needed further development based on the previous interviews.

Semi-structured interviews were used to collect the data. Although the interviews proceeded on the basis of a pre-set interview schedule (see the Appendix), the interview schedule was flexible. A semi-structured approach was more likely to encourage people to disclose information than a structured interview format (Brown, 1995), particularly when corruption and anti-corruption are involved. The

interviews were intended to create a narrative of the changes directly and indirectly related to the OPEN system.

Participant observation was used because one of the authors of this paper had worked for the SMG as an information systems director. He had been in charge of operating and upgrading the OPEN system. His experiences with and recollections of the project provided the basis for this study, as the researcher acquired firsthand and insightful information over an extended period. This has allowed the authors to draw on personal knowledge during the formal interpretation stage of analysis.

Additional data was collected through secondary sources. These secondary sources include office memos, internal documentations, letters, and published reports, all of which provide useful insights into the development and implementation of the system. Archival documentation offers not only the insights that such documentation reveals, but also a useful method for triangulation in corroborating what we learned from the interviews (Yin, 2003).

The way in which this research analyzes various sources of evidence is characterized by an interpretive tradition of IS research which emphasizes the processes, actions, and meanings collectively constructed and commonly shared by organizational members (Klein & Myers, 1999; Walsham, 1993, 1995). In order to achieve a high standard of data analysis, a framework based on three institutional pillars (regulatory/coercive, normative, and cognitive/mimetic forces) is employed. This framework helps to portray the various elements associated in the development of the OPEN system. Two reasons support the use of this framework and the incorporation of this theoretical perspective. First, the framework helps to focus the research effort. This is reflected in the words of Klein and Myers (1999), who stated that a theoretical framework can be used “as a sensitizing device to view the world in a certain way.” Second, the framework helps to capture relevant details and simultaneously facilitates the analysis of complex interactions among a variety of organizational elements interlinked with the implementation of the OPEN system and the dynamics of an e-government transformation.

4. Case: the OPEN system

Before presenting the case,¹ it is necessary to understand the national (Korean) environment in which the OPEN system is operated. Later, we describe the OPEN system in detail by focusing on its development and impacts.

4.1. ICT infrastructure of Korea

The growth and penetration of broadband services in Korea have been widely reported (ITU, 2003). The high rate of broadband diffusion in Korea has contributed to the growth of electronic commerce and e-government (Lee et al., 2003, 2005). Based on this growth, Korean government and businesses are rapidly developing a next-generation infrastructure, services, and applications such as WiBro (mobile broadband) and DMB (digital multimedia broadcasting) (Nam et al., 2008; Shin, 2006). In summary, Korea is one of the most advanced countries with regard to broadband, mobile, and sophisticated services. In 2007, more than 90% of Korean households were able to use broadband internet at home, and about 90% of the entire population was using mobile phones (NIA, 2008).

One of the benefits from this infrastructure is that Korea is a leader in e-government initiatives. According to the UN (2008), Korea ranked

Table 1
Interviews

	First round (January, 2006)	Second round (September–October, 2007)
District offices of SMG	3	1
Audit and Inspection Bureau	2	1
Information System Bureau	4	2
Former Information System Directors	1	1
Total	10	5

¹ There are two studies on OPEN. Cho and Choi (2004) examine the effects of OPEN based on several user (citizens and civil servants) surveys commissioned by the SMG. Kim and Cho (2005) report on the success factors and issues for further development. Both studies are based on early stages of the OPEN system and rely on official reports commissioned by SMG. It is time to revisit the case and examine how this system is institutionalized to fight corruption.

sixth among 189 countries in the e-government readiness index. The e-government initiative in Korea encompasses four major components: on-line service government, paperless government, knowledge-based government, and clean government (NIA, 2007). Among them, the fourth one is directly related to our case study. Clean government aims to improve public trust by providing information regarding procedures and the current state of government work, and by answering queries more efficiently. In order to provide efficient services to citizens and enhance the competitiveness of the nation as a whole, the Korean government has engaged the strategic direction of future government development. Various government bodies have participated in the e-government initiative, including the SMG's OPEN system.

4.2. E-government in Seoul and OPEN

The capital of South Korea, Seoul, has a population of more than 10 million (around 20% of the nation's population) even though this region constitutes only 0.6% of the total area of South Korea. As the center of the economy and polity, the SMG took an initiative for e-government transformation in Korea. Under Mayor Kun Koh's powerful leadership, the SMG proposed a vision of e-Seoul as a digital city. After he was elected as Mayor in 1998, Kun Koh reorganized the existing computing and information department and launched the Information System Planning Bureau. It consisted of three departments and one affiliated data center. In particular, he introduced a CIO (chief information officer) position, which was a first in the Korean government, and appointed a professional from the private sector to the post. In 2003 and 2005, Seoul was ranked first among 100 metropolitan cities in an e-government evaluation conducted by Rutgers University and Sungkyunkwan University (SMG, 2006).

The OPEN system played a key role for e-Seoul initiatives. It is an online system used to disclose administrative procedures (likely to be related to corruption) to citizens in various public service areas (such as housing and construction, sanitation, and urban planning, among others). The OPEN system was originally suggested by Mayor Koh who wanted to fight corruption within the SMG. It was developed by the SMG and launched on April 15, 1999 with the purpose of achieving transparency in the civil administration by preventing unnecessary delays or the unfair handling of civil affairs on the part of civil servants.

Table 2
The time-line of the OPEN system

Time	Activities
1998	Idea suggested by Mayor Koh
January 26, 1999–March 15, 1999	System development
April 15, 1999	Official launch (26 tasks in 10 fields)
March 2, 2000	15 tasks were added
July 1, 2000	13 tasks were added
April 1, 2002	Connected to the groupware system in SMG
September 8, 2003	The OPEN system started to provide administrative services for 35 civil affairs committees such as the local tax council and local investment council
December 15, 2003	17 tasks were added
October 1, 2004	5 civil affair committees were added
January 10, 2005	System was upgraded and 1 task was added
January 16, 2006	12 tasks were added
March 2006–June 2006	Statistical reporting functions were developed
August 1, 2007	17 tasks were removed due to duplication with some functions in the 'Saeol System', which became a standard local e-government system distributed by the central government
September 1, 2007	1 task was removed
September 8, 2007	1 task was removed
As of October 2007	Supporting 64 tasks and 40 committee procedures

Source: An internal report on OPEN system, Seoul Metropolitan Government (2007, October).

Table 3
OPEN system operation statistics

Year	Number of registrations	Input delay		Visitors Yearly (daily average)
		Cases	Delay percentage (%)	
1999	46,377	6774	15	318,000 (1218)
2000	270,625	31,059	11	942,000 (2574)
2001	359,683	40,067	11	1,146,000 (3140)
2002	372,334	58,944	16	971,228 (2661)
2003	338,738	34,894	10	846,452 (2319)
2004	413,117	25,144	6	663,748 (1814)
2005	375,673	18,205	5	586,483 (1607)
2006	451,040	18,692	4	721,361 (1976)
2007 (~September)	351,532	8289	2	571,155 (2092)
Total	2,919,119	242,068		6,766,427 (2117)

Source: An internal report on OPEN system operation statistics, Seoul Metropolitan Government (2007, October).

Citizens can check the status of their civil affairs on the internet in real time at each step of the administration procedure.

For example, when a citizen applies for a construction permit, the citizen does not have to meet or call the officer in charge after submitting the application and required documents. Instead, the officer posts all of the details regarding the status of the received application on the OPEN site. Using any computer connected to the internet, the citizen can see in real-time whether the application has been received properly, who is currently handling and reviewing the case, when the permit is expected to be granted, whether it has been rejected, and, if so, for what reasons. By moving the processing of civil affairs online, the creators of OPEN intended to achieve, not only efficiency, but also transparency in some areas of civil administration, where unfair treatment and corruption were often cited as the cause of citizen complaints. Table 2 outlines a time-line of the OPEN system.

Since its introduction in April 1999, more than 6.7 million citizens had visited the site (as of September 2007), and more than 2.9 million documents registrations were recorded (Table 3). The number of daily visitors to the site almost doubled (to about 2000), showing growing public interest. The percentage of delayed data input has decreased from 15% to 2% during eight years, and the services have been extended to 64 tasks and 40 committee procedures².

4.3. Impacts of OPEN on corruption

In the past, citizens were accustomed to long waits in a city office while conducting their civil affairs. After the introduction of the OPEN system, however, the public can browse all the details online at home. Furthermore, the OPEN system notifies them of the current status of their applications through short message services (SMS) and emails, so that they can check the necessary information with ease without visiting or calling the relevant office. In addition, many procedures are displayed in standardized forms in the OPEN system. This guarantees the equity and objectivity of the administrative officer in charge. The OPEN system opens every detailed procedure of all the services, thereby helping to increase trust between civil officers and citizens.

When the OPEN system was introduced in 1999, the anti-corruption index of the SMG was 64.0. It increased to 84.9 in 2006 (Table 4), indicating a steady improvement in transparency. An Integrity Assessment performed by the Korea Independent Commission against

² Table 2 shows that some of the tasks were removed from OPEN to Saeol, a national system. The decreasing number of registrations and visitors from 2002 and 2003 in Table 3 may reflect this removal. This decline should not be read as an indication of a failure of OPEN, but rather as a positive indication that the model of OPEN was adopted by the central government and has been employed at the national level.

Table 4
Anti-corruption index

Year/index	1999	2000	2001	2002	2003	2004	2005	2006
Anti-corruption Index (SMG)	64.0	68.3	70.4	71.5	77.1	82.9		84.9
Integrity assessment (KICAC)				6.43	7.71	8.38	8.68	8.77
Corruption Perceptions Index ^a (Transparency International)	3.8 (50/99)	4.0 (48/90)	4.2 (42/91)	4.5 (40/102)	4.3 (50/133)	4.5 (47/146)	5.0 (40/159)	5.1 (42/163)

Source: Korea Independent Commission against Corruption. 2007. The Integrity Assessment Report. The anti-corruption index, available at www.seoul.go.kr.

^a Below 3: corrupted, above 7: transparent, () indicates international ranking.

Corruption (KICAC) confirmed this trend. In the meantime, there are two reasons it may prove problematic to say that the OPEN system has had a direct effect on lowering the corruption level of civil affairs. First, the anti-corruption index was announced by the SMG itself, and thus there may be a kind of reliability problem. Second, the Corruption Perceptions Index, announced by Transparency International, shows that the corruption level of the Korean government is still much below the satisfactory level of 7.0. In addition, because the SMG has executed various anti-corruption strategies, the improvement in the anti-corruption index cannot be completely attributed entirely to the OPEN system.

Despite these concerns, there are good reasons for why OPEN deserves to be examined with academic scrutiny; foremost is that it widely considered a success. Citizens, public administration specialists, and government employees voted the OPEN system as the Most Valuable Policy of Seoul in 1999 and 2000. The OPEN system was also recognized by international organizations. In 2000, Kofi Annan, the then U.N. Secretary-General, and Koh, Mayor of Seoul, agreed to offer the OPEN system to 180 member nations of the U.N. The Seoul government prepared the operation manual of the OPEN system in six languages, and jointly with the U.N., held an anti-corruption symposium in Seoul in 2001. By the invitation of the OECD Secretary-General,³ this was introduced at the OECD High-Level Policy Seminar as a successful example of an innovative approach to increasing transparency, deterring corruption, and bringing services closer to citizens in public administration. In addition, media outlets including *Business Week* (June 25th 2001) and *Time* (August 20th 2001) featured the OPEN system as a way to use the internet to clean up city government. International organizations such as Transparency International and the World Bank encouraged related countries to use the OPEN system, and several countries, including Vietnam, Indonesia, Bulgaria, Japan, China, Egypt, and Nepal, have benchmarked the OPEN case. Most important of all, according to an SMG report (2001b) titled "Clean and Transparent," after the introduction of the OPEN system, the number of reprimands within the SMG related to corruption considerably decreased from 114 in 1999 to 65 in 2001.

The OPEN system was recognized as a success by the central government of Korea. The OPEN system inspired the central government (the Ministry of Government Administration and Home Affairs) to develop and include a similar system within the 'Saeol' system, which has been implemented and is being used across the country, hence reinforcing the functions of the OPEN system. In August 2007, 17 tasks were removed from the OPEN system because they were duplicates of some functions in the 'Saeol System.'

5. Discussion

We have so far described the development of the OPEN system in the context of Korea's ICT growth and Seoul's e-government endeavor and their impacts. Now, we examine (first) through what mechanisms the OPEN system has developed, (second) what factors played a key role in implementing OPEN, and (third) what strategies were used in designing and implementing the system.

5.1. Three institutional mechanisms and OPEN

5.1.1. Normative mechanism

The normative mechanism is concerned with the norms that are prevalent in the domain concerned. As public sector organizations are moving gradually from an administrative focus to the customer service perspective, governments emphasize and promise to deliver easy access to services on-line (Melitski, 2003; Pollitt & Bouckaert, 2000; Stratford & Stratford, 2000). At the same time, the use of ICT has become indispensable for this transformation, and the benefits of advanced ICT have triggered anticipation toward transparent public organizations. That is, the use of ICT for enhanced government services is perceived as a norm.

We may say that this perception of ICT use for enhanced public services was stronger in Korea than in other countries because of its advanced ICT infrastructure, as described above. Since the late 1990s, the increase in internet users and the development of the ICT infrastructure have led Korean citizens to expect their government to provide faster services and more information through more transparent administrative procedures. This normative expectation was one of the factors that motivated the SMG to implement the OPEN system to prevent corruption.

In addition to this general background, the SMG had another, more direct, normative motivation for developing OPEN. When Mr. Kun Koh was elected as Mayor of the SMG in 1998, the city was facing a dire crisis because of a series of corruption scandals (SMG, 2001a). In order to resolve this crisis, Mayor Koh took resolute steps to fight corruption. He launched a variety of reform programs which culminated in the declaration of a 'War against Corruption' (SMG, 2001b). One of the Information System Directors in charge of this project observed that, "Mayor Koh's ambition to fight corruption bore a huge impact on the SMG. We (the information system bureau) were involved right from the beginning of the project as a project manager. In fact, we thought to some extent that it was about time to clean up this chaos." Under the mayor's powerful leadership, and with his support for e-Seoul initiatives, the SMG proposed the introduction of the OPEN system and set forth its development.

In summary, with the advanced ICT infrastructure, public expectations and demands for greater and open information became a normative pressure for providing efficient and transparent e-government services. After the SMG suffered from a series of corruption scandals, the mayor's determined declaration of 'War against Corruption' worked for the development of OPEN as a norm that no one could refuse to accept.

5.1.2. Regulatory mechanism

The regulatory mechanism is influenced by politics and legislation. In this stage, the mechanism worked to avoid resistance from civil officials. In the beginning, officials in the SMG were reluctant to use OPEN because of the increased workload. For example, they were required to enter details of an application into the system within a given period of time from its receipt (for example: within four hours). The almost real-time update and display throughout the administrative processes was an important feature of the OPEN system, which imposed a heavy load on the civil officials and decreased their discretion. Complaints were expressed, though not explicitly. One of the civil officials interviewed said, "Although some employees liked

³ <http://www.oecd.org/dataoecd/45/32/2409225.pdf>

the OPEN system, most of us had concerns with the increased workload. Our understanding of information systems is that they are something to reduce workload. The idea of working with real-time operations gave us some problems.” Another recalled, “We felt that someone or something is placing a watchful eye on us to check our work. In addition, having to reply almost immediately to the public’s questions gave us a big burden.”

The civil officials’ complaints and concerns might have arisen from the reduced possibility of benefiting from corruption. Another interviewee mentioned this with caution in a follow-up interview. “I think, apart from resistance due to the increased workload, some employees might not like the OPEN system because of the fact that unclear practices could not be conducted anymore with the use of the system. The work process and responsible civil officer’s name will be identified on the system as well as on the internet homepage.”

To address the problems of reluctance and delayed progress of system implementation, the SMG issued a new regulation which made the use of the OPEN system mandatory. However, this was not sufficient for putting the system into operation. The SMG then engaged the Audit and Inspection Bureau in implementing the system. Initially, the Information System Bureau was in charge of the development and implementation of OPEN. It became clear, however, that the development of the OPEN system would not be possible without the regulatory or coercive support from an entity with authority. Accordingly, the SMG empowered the Audit and Inspection Bureau, already armored with strong directing and planning power, and let the Information System Bureau cooperate with, and support, the Audit Bureau. Under this system, the Audit Bureau assumed the main responsibility for managing the OPEN system, and the Information System Bureau was required to provide technical support.

According to an official from the Audit Bureau, “The OPEN system would not have been used properly unless some regulative measure had been taken. That is why we were asked to take over the management of the OPEN system. There is no better way than emphasizing the role of the Audit Bureau to overcome the resistance.”

5.1.3. *Mimetic mechanism*

The mimetic mechanism refers to copying other systems’ practices (DiMaggio & Powell, 1983; Scott, 2001). Initial motivation for the OPEN system was derived from e-government transparency. By considering practices in private organizations, SMG believed that public organizations could be reformulated with the help of information technology. Although OPEN does not provide specific mimetic mechanisms that they have followed or benchmarked, the case presents an important aspect beyond the initial mimetic mechanism. In this case, rather than OPEN following mimetic mechanisms, the system was the subject of mimetic mechanisms by other e-government practices.

As mentioned, the OPEN system became one of the best e-government methods in Korea. Its achievement was recognized both domestically and internationally. The Korean central government, in particular the Ministry of Government Administration and Home Affairs, decided to develop a similar system by copying OPEN. The standard local e-government system called ‘Saeol,’ developed by that Ministry, included most of the OPEN functions. In this manner, the use of the OPEN system spread to local government offices across the country. According to an officer in the Information Systems Bureau: The ‘Saeol’ system is used by 230 administrative bodies around the country. We cannot insist on using the OPEN system in Seoul to administer all internal processes and public services; therefore, we are in the process of reorganizing overlapping functions between OPEN and Saeol. We do not anticipate that OPEN will be removed and replaced by Saeol. Rather, we think it will be part of the Saeol system. Influenced by all three mechanisms, the OPEN system became widely used, that is, routinized and institutionalized, and became a prototype of the Saeol system. Among the three mechanisms, the regulatory one played a key role in establishing OPEN.

5.2. *Strategies to fight corruption and the three institutional mechanisms*

As mentioned in the literature review, there are four strategies (prevention, enforcement, access to information and empowerment, and capacity building) to fight corruption (APDIP, 2006). Here we identify the four strategies in the implementation of OPEN and demonstrate how they are linked to the three mechanisms of institutionalization.

In the previous section, we have seen that the *normative mechanism* operated as citizens expected more transparent administrative procedures due to the common use of advanced ICT infrastructures. This triggered the strategy of *access to information and empowerment*. Measures for anti-corruption cannot be executed without the citizens having access to information and thereby being empowered through the information they obtain. In addition to viewing details of their application in real-time, citizens are informed of rules regarding their application and how to proceed with their grievances. In this way, citizens were empowered.

The *regulatory mechanism* needed the implementation of two strategies: prevention and enforcement. Prevention refers to reforming administrative procedures and practices. Mayor Koh’s declaration of ‘War against Corruption’ expedited this reform. The prevention strategy is realized in e-government applications by clarifying the procedures and designing systems that “simplify, standardize, and de-personalize the delivery of services” (APDIP, 2006). With the introduction of the OPEN system, the detailed procedures and documents of civil affairs were standardized. Furthermore, a standard format was applied across a series of similar tasks. The delivery of services was also ‘de-personalised’ in OPEN because citizens processed and checked necessary information via the internet or SMS without having to meet in person with the officers in charge of their application.

Enforcement is realized in e-government by ensuring accountability and transparency through functionalities such as action/decision tracking and mechanisms for feedback or complaints. In OPEN, the enforcement was strengthened by the involvement of the Audit and Inspection Bureau. Through the OPEN system, an applicant can monitor the status of the application in real-time, who is in charge of it, and by when an action should be taken or a decision made. This mechanism enhances accountability and makes all the processes involved transparent. Furthermore, when any delay or possibility of misconduct is observed, citizens can submit a complaint through a function in the system to the audit department (they may even contact the Mayor through an e-mail or online bulletin board). All these procedures were monitored by the Audit and Inspection Bureau.

For the *mimetic mechanism* to work, organizations need resources and learning. In the context of e-government, capacity-building includes

Table 5
Three institutionalization mechanisms and four anti-corruption strategies in the OPEN system

Institutionalization mechanisms	Implementation processes of OPEN	Four strategies to fight corruption
Normative mechanism	Citizens expected more transparent and open administrative procedures due to the common use of advanced ICT infrastructures. Mayor Koh declared a ‘War against Corruption’ after the SMG suffered from a series of corruption scandals.	Access to information and empowerment
Regulatory/coercive mechanism	A new regulation for the mandate use of OPEN was issued. The Audit and Inspection Bureau played the main role in managing OPEN and training civil officials to accept it.	Prevention Enforcement
Mimetic mechanism	The Mayor gave full support for the OPEN and thereby sufficient resources. OPEN was copied by the central government into Saeol, a standard local e-government system, used across the country by the central government.	Capacity building

an adequate telecommunications infrastructure and training provisions. The OPEN system had strong support from the Mayor, and thereby had sufficient resources for training people to employ the system. In addition, as early as the late 1990s and early 2000s, Korea was well-equipped with broadband internet, and the general public had a sufficient level of internet literacy to use such a system. All these conditions helped the OPEN system to be established within a relatively short period of time, and to become an essential part of the new nationwide system, Saeol.

Table 5 summarizes the institutionalization of OPEN by linking the three mechanisms and the four strategies for anti-corruption.

5.3. Strong and determined leadership

In addition to the combined operation of the three institutionalization mechanisms on the one hand, and the four strategies to fight corruption on the other, we highlight the leadership role played by Mayor Koh in the institutionalization of OPEN. Shi (2002) suggests leadership and strategic planning as the major influences on the implementation of e-government. According to the author, the existence of a leader for e-government transformation is crucial where risks and resistance are present. In addition to the importance of leadership, strategic planning (Shi, 2002; Venkatraman & Henderson, 1994) has also been stressed. Shi (2002) argues that strategic planning is vitally important for e-government because it provides insights and future directions for the government.

In this case, the strong and determined leadership and organizational support shown by Mayor Koh to break undesirable customary practices was a driving force of OPEN. To overcome the crisis from corruption scandals, Koh declared a 'War against Corruption,' and by doing this, set values such 'clean' and 'transparent' as norms that no one could deny. In addition, he set forth a vision of e-Seoul as a digital city, launched the Information System Planning Bureau, and appointed the CIO (Chief Information Officer). The OPEN system was designed and developed in this supportive environment. When resistance from civil officials against OPEN arose, by making the use of the OPEN system mandatory and replacing the Information Systems Bureau with the Audit and Inspection Bureau for the project owner (that is, by exerting regulatory power), Mayor Koh was able to counter resistance and complaints.

One member from the Audit Bureau said, "Without the strong leadership of Mayor Koh, OPEN could not have been implemented. Since it was quite unusual that the Audit Bureau was put in charge of an IT project, even if in conjunction with the Information Systems Bureau, we felt strong leadership and power; this contributed to the success of the OPEN system."

Mayor Koh also presented a strategic vision of clean government. This vision was considered a prerequisite for attracting foreign investment, which was sought by the Korean government and businesses in the aftermath of the financial crisis in 1997.

The discussion thus far can be summarized as in Fig. 1. We found that the normative mechanism was the driving force in the first stage of the development of OPEN because the war against corruption as a social norm and obligation was prominent. Since the influences in the Audit and Inspection Bureau were so far-reaching, the regulatory mechanism became the main driving force in the second stage. In the third stage of the implementation of the OPEN system, the phenomenon of emulating OPEN occurred continuously, which made OPEN a prototype of the national system. Throughout the institutionalization process, Mayor Koh's leadership was a common platform for these three mechanisms, and the four strategies to fight corruption were embedded into the system design and organizational practices.

6. Conclusion

This paper has examined how an e-government system for anti-corruption, the OPEN system, was developed and adapted from the perspective of institutional theory. We drew the following conclusions:

- 1) OPEN made a positive impact on the reduction of corruption in the SMG.
- 2) Among the three institutional mechanisms, the regulatory one is the most effective in implementing anti-corruption systems.
- 3) As in many studies of IS implementation, strong leadership played a key role in the implementation of OPEN.
- 4) The four strategies to fight corruption need to be embedded into the design of the system.

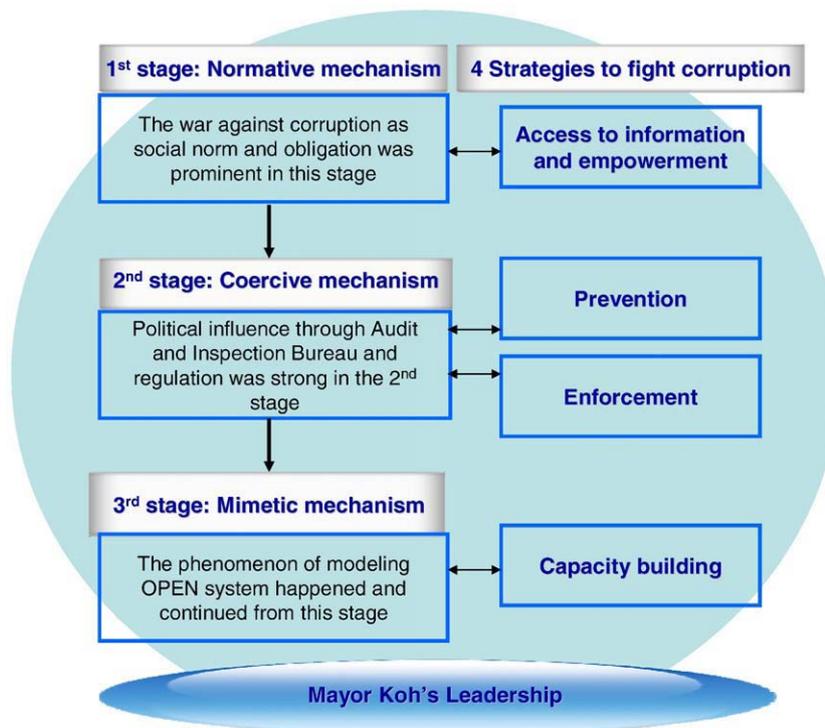


Fig. 1. Institutionalization process in the OPEN system.

This paper contributes to the theory and practice of e-government by highlighting how an e-government is institutionalized, particularly in the area of anti-corruption. In theory, we have demonstrated that the normative, regulatory, and mimetic dimensions of institutionalization are a useful framework through which we can view the process of e-government implementation. The three mechanisms provide a basis for an organization to initiate (normative), influence (coercive), and provide a model (mimetic) when introducing a new system or innovation.

For practitioners of e-government, the paper can offer guidelines for how to implement an e-government system. They first need to form an environment in which the need for a planned system is considered the norm. If the norm is widely accepted and internalized among the stakeholders, it will help in initiating development. Usually, however, acceptance of the norm alone does not suffice. Thus, we must consider the use of regulatory or coercive measures when they are available. The use of regulatory or coercive measures needs to be carefully planned. It is inevitable to use them to some extent. Unless this is accompanied by normative measures, however, they may create serious resistance. Once the system operates successfully, we need to consider how to deliver it to a wider audience. When a positive message is sent to the relevant parties, the system is more likely to be copied and adopted by a wider scope of users.

The authors recognize the limitations of the present study and suggest that these limitations can be viewed as opportunities for future research and reflections. First, this research was limited to a single case study. Future studies should attempt to replicate this research in different settings and countries. The empirical findings in this research are influenced by the Korean context, particularly the impact of e-government initiatives.

The second limitation concerns a detailed account of OPEN from the public's point of view. In this study, the public's point of view was not addressed systematically. This is not an easy task, since many transformation projects do not integrate the public directly and properly into the implementation of the project. Future studies would provide more insight if a survey of the public could be conducted.

Appendix A. Interview questions

Initiation	Your organization embarked on an OPEN project. How did it all start? What, how, and by whom have the projects been processed and implemented? How was the scope (extent) of the project determined? (why? by whom?) Can you describe the major challenges and issues faced during the project?
Processes	How did the project progress and how was it communicated to various affected or interested parties?
– normative	Were there any managerial challenges and difficulties during the project?
– coercive	What were the general reactions from organizational members and members of the public on the OPEN project? Did any reactions affect the progress and outcome of the project?
– mimetic	How have organizational members' attitudes towards the project changed over time? (Why? What caused these changes?)
Challenges and results	To what extent was the project successful in meeting its objectives? What are the challenges faced now and in the future? What were the main lessons you learned from your involvement in the project?

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