

E-Government in South Korea: Lessons Learned

Mohammad Nabil Almunawar^{#1}, Patrick Low Kim Cheng^{#2} Mohammad Habiburrahman^{#3} Fadzliwati Mohiddin^{*4}

*#Faculty of Business, Economic & Policy Studies
Universiti Brunei Darussalam
Brunei Darussalam*

¹nabil.almunawar@ubd.edu.bn

²patrick.low@ubd.edu.bn

³mohammad.rahman@ubd.edu.bn

**Faculty of Business and Management Sciences
Universiti Islam Sultan Sharif Ali
Brunei Darussalam*

⁴fazliwati@unissa.edu.bn

Abstract— South Korea's e-government is a success story. Within few years South Korea has advanced to the final stage of e-government evolution, while many countries that started their e-government projects at about the same time are still wandering around in early stages of the United Nation's Department of Economics and Social Affairs (UNDES) evolution model. The development of e-government in South Korea can be divided into two phases. The first phase started in 2001 during the Kim Dae-Jung's administration where a special committee for e-government (SCEG) was formed and the second phase start in 2003 during the Roh Moo-Hyun's administration. Several key success factors are identified, although perhaps the most significant one is the strong political will of the top leaders in making e-government one of the most important agenda for the government innovation and national development in South Korea.

Keywords— e-government, South Korea's e-government, e-government evolution, e-government success factors

I. INTRODUCTION

The South Korea's advancement in Information and communication technology (ICT), particularly in e-government, is stunning. In 1990s the ICT development in this country was far behind compared to countries such as US, UK and Japan. However, nowadays South Korea's ICT industry and e-government is on par if not better than these countries. Why does such a stunning development happen, especially in South Korea which suffered from the 1997/1998 economic crisis? The answer is strong will, good leadership, hardworking, consistency and carefully planned future for Korea.

South Korea started its computerization project for its government in early 80s. For Korea, e-government is basically an evolution of computerization in the government. E-government projects in South Korea have generated many benefits for the government as well as for the public such as

providing more efficient administrative processes; improvement in government services and it also saves money. E-government is the concept of using ICT as ways to not only organize and manage but also to facilitate the government's administrative processes, especially the interactive processes between the government and the public. UNDESA provides an evolution framework for assessing e-government development, the 5 stage model. Korea has gone through these stages, and now is reaching a maturity and moving to the final stage: seamless online service and integrated back-office infrastructure

The success of e-government in South Korea is highly related to the fulfillment of all key success factors. There are 5 key success factors identified by the South Korean's government namely, *strong government leadership, IT Governance, Customer-oriented e-government services, performance-based program management and technology support*. We conducted an analysis on success factors based on the *Factor Model of Heeks [1]* and the result that Korea's e-government has fulfilled all success factors identified.

The rest of this paper is structured as follows. In Section 2 we briefly review the evolution of e-government in Korea followed by Section 3 which discusses more detail on e-government development strategy. Section 4 studies the success factors of e-government in South Korea. In Section 5, we reveal e-government institutional development during Kim Dae-Jung's and Roh Moo-Hyun's administrations. This is concluded in Section 6.

II. FROM COMPUTERIZATION TO E-GOVERNANCE

E-government in South Korea is among the best in the world. Many of Korea's e-government applications are considered as the world's leading applications and have been awarded by various world organizations as best practices in e-government.

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Among recent awards are 1st rank 3 years consecutively (2006, 2007, 2008) by Brooking Institution, rank 6th in 2008 by United Nation, rank 5th in 2006 and rank 4th in 2007 and 2008 by Waseda University [6]. In 2010, South Korea's e-government was the best (rank 1st) in the world according to The United Nation.

Like many other developed countries in the world, South Korea started its e-government initiatives in 2001-2002. However, e-government initiatives were part of the evolution of ICT's applications by the South Korean's government since 1980s. During 80s until mid-90s the government of South Korea utilized computers to store government and related information in digital format. Various administrative databases and infrastructure (such as National Basic Information System computer networks) were constructed to provide basic government service to public and private sectors. The Act on Expansion of Dissemination and Promotion of Utilization of Information System was established and a foundation for computerization of major government functions in administration, finance, and national security were laid down.

Further significant development was laid down in the late 1990s until the year 2000. This period South Korea built a comprehensive and high-speed information and communication network. This information and communication network had made South Korea's information and communication infrastructure to rise among the top of information and communication network (including broadband Internet) in the world. This network has provided the significant infrastructure for e-government initiatives laid in a few years later. During this period, a Framework Act on Informed Promotion, e-Commerce Act, e-Signature Act, Electronic Promotion Act on Administration Processes for the Establishment of an e-government and other laws were enacted.

Subsequently, the South Korean government made implementation of e-government a major agenda. A special national committee for e-government was established in 2001 chaired by Prof Ahn Moon Suk (A Professor of Korea University). The committee decided on three major objectives: upgrading government-wide service for citizens and private business, improving the effectiveness of administration, and establishing an infrastructure of e-government). Based on these three objectives, the committee selected 11 initiatives to be implemented in 2001. In 2003, the initiatives were expanded into 31 major tasks for the e-government Roadmap 2003-2007 based on the feedback from the public and experts from each sector.

E-government projects in South Korea have generated many benefits for the government as well as for the public such as providing more efficient administrative process, improving government services and saving money. For example, shortening the export custom process; previously, it took more than a day for such a process, now it takes less than 2 minutes.

For custom clearance, previously it took more than two days for import custom clearance, but now it takes less than 2 minutes with the e-custom system. With this significant efficiency improvement, more than USD 400 million per year was saved. Another example is the e-procurement system. Using this system document processing is much faster and the online processing enhanced productivity and transparency in government procurements [7].

Further advancing e-government in South Korea has been laid down for 2008-2012, the period of the current administration. According to the South Korea e-government Headquarter, Ministry of Government Administration and Home Affairs (currently MOPAS), and the vision of the Next Generation e-government is to accomplish the highest levels of 'Digital Government inside the People'.

III. SOUTH KOREAN'S E-GOVERNMENT DEVELOPMENT STRATEGY

As a guideline for e-government development, the e-government stages model from The Department of Economic and Social Affairs, United Nations (UNDESA) was used to identify the development stage. The UNDESA e-government evolution model is divided into 5 stages as follows [11].

- Stage 1 (Emerging): Limited web presence.
- Stage 2 (Enhanced): Easily accessible information on policy.
- Stage 3 (Interactive): Online services and interactive portal sites.
- Stage 4 (Transactional): Two-way interactions and online transactions.
- Stage 5 (Connected): Seamless online service and integrated back-office infrastructure.

In the previous section, we briefly mentioned the e-government development in South Korea. In this section we will further elaborate this development based on administration periods. We consider the development on e-government in the Roh's administration period is the key development, since it absorbed the previous foundation and then made a very significant advancement that makes South Korea as one of the world leaders in e-government. This period laid a very strong foundation for the next period to flourish to the most advanced development in the e-government evolution model. As such, we are going to focus how e-government was implemented during this period. We will also briefly mention the development of each period.

The South Korea e-government development can be divided into 4 periods. Each period was incrementally developed from the previous period.

Period 1 (during Kim Young-Sam Administration, 1993 -1997) is the infrastructure development. The main goal of this period is government-wide digitalization/establishment of legal framework. Some examples of works done in this period are system automation, establishment of informatization

framework and establishment of legal framework for national informatization.

Period 2 (during Kim Dae-Jung Administration, 1998-2002) is the advancement of infrastructure. The main goal of this period is the creation of ICT broadband network and internet proliferation. The information structure developed from the previous period was enhanced and further developed. Examples of work done during this period are establishment of cutting-edge ICT infrastructure, including high speed internet services, overcoming the 1997 financial crisis through advancement of ICT industry and digitations of major government services.

Period 3 (during Roh Moo-Hyun Administration, 2003 – 2007) is the full-fledge implementation. The main goal of this period is expansion of e-government services through digitalization of overall government business processes. During this period the e-government projects were expanded from 11 initiatives that were laid down in the previous administration to 31 initiatives. During his period of administration, President Roh Moo-Hyun launched reformation and innovation programs and made e-government as one of the key vehicle for the reformation and innovation. Some other works during this period are informatization of education, welfare and distribution, promotion of ubiquitous society.

At this period the e-government in South Korea has reached stage 4 and has been moving towards stage 5 of the UNDESA evolution model.

Period 4 (current, Lim Myung-Bak Administration, 2008 – 2012) is the further advancement of e-government. The main goal of this period is the integration of e-government systems for seamless delivery of public. E-government in South Korea has matured and is advancing toward seamless delivery with fully connected infrastructure and organizations. In this period some important actions to fulfill the goal are customer-centric citizen services and enhanced public participation, intelligent administrative services through digital government network, real-time public safety information network and strengthened e-government infrastructure through enhanced privacy and security.

As mentioned previously, we consider the third period (Roh’s administration) as the key development period of e-government development. Table 1 shows steps of e-government projects development yearly.

TABLE I
STEPS OF E-GOVERNMENT IMPLEMENTATION

2003	Establishment of goals & selection of projects
2004	Business Process Reengineering (BPR)/Information System Planning (ISP)
2005	Construction of system and infrastructure
2006	Integration of existing system
2007	Full-scale implementation and services

Source: http://www.korea.go.kr/eng/about/about_01.jsp

Based on the foundation laid in the previous period, the e-government in period 3 started with revisit, redraw and expanding previous goals and initiatives. The result was 31 e-government initiatives or projects to be implemented in 2003. In the same year the e-government roadmap containing the 31 initiatives was established and launched [9].

Business Process Reengineering (BPR) or Information System Planning (ISP) on each projects were conducted to improve processes as well as to identify similar or common process/services. Related laws and regulations were reviewed and improved to support new processes. A BPR/ISP basically creates a master plan for a project implementation.

Based on BRP/ISP, a project was constructed (analysis, design and implementation) and necessary infrastructure to support the operation of the project was built. Once a project was considered ready to use, it would be integrated into the existing system, tested and improved.

By 2007, the roadmap was completed and most projects were operated and entered the penetration, diffusion or integration service [9]. It is important to note that the e-government system is now an integrated system, a networked various systems from central as well as local governments and agencies (including ministers and state-owned organizations). With the integrated and networked e-government system, various services and applications are provided such as electronic payment, procurement, finance, integrated management of resources, online processing of variety request from citizens and many others.

Many public services have become available online, enabling the citizens to access and take out copies of their records anywhere anytime. For instance, currently citizens can find service they need by searching through 5,300 services available and get detailed information online, requesting up to 720 civil services online without visiting administrative offices and get results via mail. Citizen can issue 28 civil affairs service document online by themselves. The Korean tax authorities now provide a potpourri of tax services over the Internet. All patent services are provided online. A single online window for business support is available [6].

IV. THE KEY SUCCESS FACTORS

E-government in South Korea is a success story. Within few years South Korea has advanced to the final stage of e-government evolution, while many countries that started their e-government projects at about the same time are still wandering around in stage 1, 2 or 3, few have reached stage 4.

In the 80s and 90s, South Korean ICT development was far behind from other developed countries such as the US, UK, France and Japan. In the 2000s South Korea has been advancing quickly. By 2007, when e-government fully implemented and reached its maturity, the South Korea’s e-government has surpassed the developed countries mentioned above and is among the top ones. One wonders what is the

formula that made South Korea capable to develop the ICT competency and capacity so that it went to a leapfrog and then eventually surpasses developed nations in ICT development and e-government in particular within a relatively short time? Specially, what are the key success factors that led South Korea to achieve maturity in e-government and advancing to the final stage of the e-government evolution?

Several success factors of e-Government in South Korea have been identified and published in the Korea e-government website¹. Some other discussions on success factors are also available in [13] and [14]. A framework called *Factor Model* to measure the success and failure of e-government projects was proposed by Heeks [1]. In this paper we use this framework to discuss of success factors of e-government in South Korea. For this purpose, we use information from our interview during our visit to Korea in October 2009, NIA's documents related to e-government and e-government resources in Korea, especially the Korean's e-Government website (http://www.korea.go.kr/eng/index_eng.jsp) will also be used.

The Factor Model uses 6 factors to assess whether an e-government project is successful or not. These factors are *drivers (external and/or internal pressure), overall vision and strategy, effective project and change management, effective design, requisite competencies and adequate technological infrastructure*. Although this model is used to assess a project, however, we can use the model as a guideline to reveal the key success factors of overall e-government in South Korea.

A. Main Drivers

In general there are two main drivers that led to the fast development of e-government in South Korea: in response to globalization during 90s followed by the economic crisis in 1997/1998 and the political will and full support from the top leaders.

During the Kim Young-Sam's administration (1993-1997), South Korea participated in various world bodies such as the Uruguay Round, WTO and OECD and South Korea was far behind in economy and technology compared to developed nations such US, Japan and EU. Leading in informatization was coined and the idea was promoted with theme "We may be behind in industrialization but let's lead in informatization." [14].

Towards the end of 90s, the South Korean's economy was severely hit by the Asian economic crisis in 1997/1978. This crisis was interpreted as a result of failure in manufacturing industry. At the beginning of the Kim Dae-Jung's administration (1998-2002), a reformation/restructuring program on manufacturing industry as well as boosting the use of information technology was conducted. It was understood that to support the program, the government administration

must be effective and efficient. Thus, the innovation of administrative process through e-government was selected as the government's new reform strategy [12,14].

From the beginning, e-government in South Korea has been highly supported by the top leaders. President Kim Dae-Jung (1998-2002) had a deep understanding and highly interested in information society agenda and initiated the first phase of e-government [13].

President Roh Moo-Hyun was deeply interested in computers and e-government. In fact at the first agenda meeting of his administration (2003-2007), e-government was considered as a strategic tool for administrative reform and civil service innovation [8]. In fact, e-government appeared in the first national agenda meeting in April 2003, "*It is now necessary to improve the way the government works, and to innovate its business processes... to lead smooth transformation of government functions and organizations. ...Moreover, we must put our utmost efforts into achieving clear and transparent administration through e-Government.*" (First National Agenda meeting, April 17, 2003, as in [4].)

President Roh Moo-Hyun was directly involved in e-government development. He initiated Easy-One (E-Chiwon), one of the 31 e-government projects on the Road Map that promotes transparency and accountability in administration, and directly led the project himself [13].

It is obvious that the personal interest and ICT knowledge of top leaders highly influenced the success of e-government in South Korea. Based on our interview with pivotal individuals in Seoul, besides direct involvement of top leaders, South Koreans are hard workers and they are more than ready to sacrifice their time (working overtime) for the success of their country, in this case e-government projects. They are always reminded that if they do not work hard for success, they will return to the struggling era, in which difficulties and hardship were their friends.

B. Overall Vision and Strategy

E-government initiatives in South Korea were highly linked with the national development strategy. In fact, During Roh Moo-Hyun's administration, e-government was viewed as a vehicle to achieve national visions and goals: (1) the realization of a participatory democracy, (2) establishing balanced social development, (3) promoting the era of Northeast Asia, and (4) achieving a per capita income of USD 20,000 [4].

The vision of South Korea's e-government in the first phase is "Leapfrog to the global leader in 21C" and in the second phase the vision was enhanced to "World best open e-government." Given the capability and capacity of ICT knowledge and skills of South Koreans, these visions were realistic and have attracted many citizens to participate [13].

¹ http://www.korea.go.kr/eng/about/about_03.jsp

ICT industry is one of the leading economic sectors in South Korea, where shares of ICT in national economic growth and the shares of ICT industry in GDP in 2008 was estimated 22.7% and 9.9 % respectively.

It is obvious that South Korea has developed not only necessary skills and knowledge in ICT to support the e-government roadmap, but South Korea also has expertise in advancing e-government further. This is the reason as to why South Korea is advancing to the final stage of e-government evolution. Recently, South Korea declared to achieve ubiquitous government (u-government). According to the Economist Intelligence Unit³ (EIU)'s new study in July 2007, Korea ranked third in providing strongest environment for IT competitiveness, following top ranked US and second ranked UK. Note that IT industry competitiveness index measures IT infrastructure, human capital, legal environment, R&D environment, and support for IT industry development.

F. Infrastructure

ICT Infrastructure was developed at an early stage, before e-government projects were formally started. During 1993-1997 (Period 1) ICT infrastructure was developed and further enhanced in 1998-2002. As a result, South Korea has one of the best networks infrastructure in the world and consequently e-government projects fully utilized the best infrastructure previously developed.

G. Institutional Development

Institutional development is important to make sure that e-government initiatives can be implemented and operated as planned. In the first phase of e-government, a Special Committee for E-Government (SCEG) chaired by Ahn Moon Suk, a professor of Korea University, was formed on 30th January 2001 [15]. It is interesting to note that a university professor was highly respected to chair such a high profile committee. This is quite normal in South Korea, where people highly respect professors.

SCEG was formed under Presidential Commission on Government Innovation, an executive branch of the president and where reports are given to the president directly as an independent body. Members of SCEG were composed of 9 vice ministers from ministries involved in e-government initiatives) and 6 experts from non-government bodies (universities and industries).

The main job of SCEG is to select e-government initiatives and to coordinate inter agency collaboration for information sharing across agencies and to complete the infrastructure to support the initiatives. SCEG selected 11 e-government initiatives to be implemented and expected to within a specified time frame.

³http://www.eiu.com/site_info.asp?info_name=eiu_Business_Software_Alliance_means_to_compete

Directly under SCED is a working-level committee which composed of non-government and government (director level) members. Various related task force teams were formed to coordinate and solve various issues related to the initiatives such as system integrated team, legislative team and system testing team. Figure 1 depicts the overall structure of SCEG.

In the second phase of e-government, the structure of e-Government committee was changed. The Presidential Committee on Government Innovation and Decentralization (PCGID) was formed in 2003. PCGID was similar to SCEG, however, the main tasks were focused on establishing visions, selecting, monitoring and evaluating the selected initiatives (Roadmap). PCGID selected 31 initiatives based on four main goals of e-government.

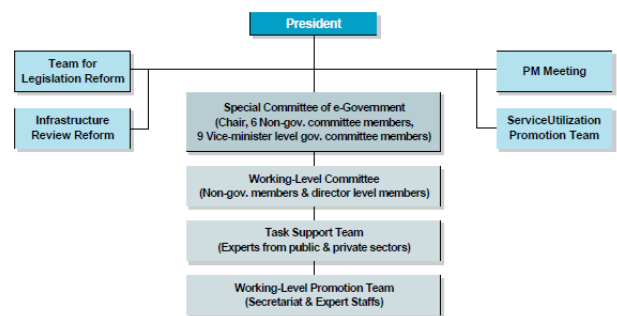


Fig. 1 Structure of Special Committee for E-Government [15]

The Ministry of Government Administration and Home Affairs (MOGAHA) was the project leader for implementation of e-governments initiatives. Its main responsibility is to manage and monitor e-government projects carried out by agencies from the central government. In addition, it is also responsible to develop security systems, common standard and legal frame work e-government projects. The implementation of each e-government project was done by the respective government agency.

The Chief Information Officer (CIO) of each respective ministry conducted consultation and coordination of multi-agency issues on e-government projects, such as setting e Government related policy, sharing the use of administrative information, and resource management.

The National Information Society Agency (NIA) is responsible for providing overall technical assistance and policy consultation for carrying out e-government projects. Fig. 2 shows the structure of e-government institutional agency during the 2nd phase of e-government.

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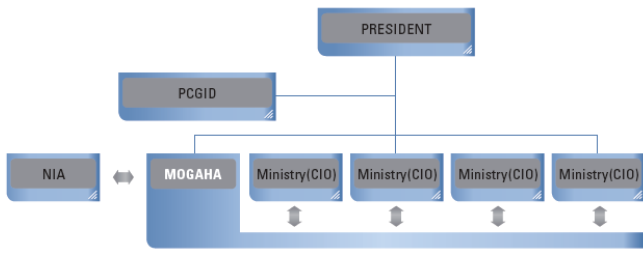


Fig. 2 The structure of e-government institutional agency.
Source: [5]

The structure of e-government institutions in the 2nd phase is more complex than the structure of e-government institutions in the 1st phase. The 2nd phase is an expansion of the 1st phase and the number of e-government projects increased 3 folds. However, the most important to note is that e-government committees both in the first and second phases were high profile committees, independent bodies that directly reported to the president.

V. CONCLUSION

E-government in South Korea is part of national informatization and further development of digitization of government records and services, although officially e-government initiatives were formally declared in 2001, during Kim Dae-Jung's administration.

The development of e-government in South Korea can be divided into two phases. The first phase started in 2001 where Special Committee for E-Government (SCEG) was formed and directly reported to the president. SCEG laid the vision of e-government and subsequently established 11 initiatives of e-government. The second phase started in 2003. Phase 2 was basically a further development of phase 1, with much more initiatives to fulfill the vision and goals. During this phase, e-government in South Korea made significant progress. By the end of Roh Moo-Hyun's administration (2007), South Korea has already reached the fourth stage and is marching to stage 5 of e-government evolution model of UNDESA. South Korea's e-government is considered one of the best in the world from various ranking organizations.

E-government in South Korea is a success story. The success factors can be viewed from different angles. The government of South Korea revealed 5 success factors. In general all success factors of the Heeks's Factor Model are fulfilled by e-government in South Korea.

Perhaps the most significant success factor of South Korea e-government is the strong political will of the top leaders and their personal interest and involvement in e-Government. Nonetheless, it is the public support and the members hard work and unending loyalty which puts everything together hence triggering e-government's success.

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