

Article

A Comparative Study of Digital Government Policies, Focusing on E-Government Acts in Korea and the United States

Choong-Sik Chung ^{1,*}  and Sung-Bou Kim ² 

¹ Department of Public Administration, KyungSung University, Busan 48434, Korea

² Office of Development Research & International Cooperation, KDI School of Public Policy and Management, Sejong-si 30149, Korea; sungbou.kim@gmail.com

* Correspondence: cschung@ks.ac.kr; Tel.: +82-51-663-4528

Received: 20 August 2019; Accepted: 14 November 2019; Published: 17 November 2019



Abstract: The first enactment of a single national e-government act took place in Korea in 2001. Subsequently, the United States enacted its electronic government act in November 2002. Unified e-government acts in Korea and the United States have since been established and enforced for nearly two decades, and provide interesting case studies for examining the long-term influences of the e-government act on national e-government and digital government policies. The e-government act of the United States is much more comprehensive than the e-government act of Korea. The US e-government act focuses on strengthening the federal government's ability to regulate the Office of Management and Budget (OMB)'s role in e-government implementation. The OMB has overall jurisdiction over the e-government promotion process and will continue to consult with ministries on appropriate budget support for each project. In contrast, the e-government law in Korea is based on electronic document processing as the basic viewpoint and has been downgraded to a level that supports document reduction and electronic processing of documents, rather than a comprehensive law that can support e-government projects. The comparative case study of e-government acts in Korea and the United States revealed that, from the standpoint of digital government transformation using information technology, it is most important to promote digital government policy directly from the ministry that manages the budget, or to establish a dedicated organization under the ministry to secure strong coordination while linking it with the budget.

Keywords: electronic government; digital government; e-government act; digital transformation; government reform; digital governance

1. Introduction

Today, Korea is recognized as a leading country in the field of digital government. It is well known that Korea ranked first in the United Nations (UN) electronic government (e-government) evaluation three consecutive times in 2010, 2012, and 2014 [1–3]. Korea is now a global leader in the field of digital government and has led development experiences in information and communications technology (ICT) for many countries. There are many factors behind Korea's dominant position in the field of digital government, but the most important factor that may be overlooked is the enactment of the e-government act. In 2001, Korea established the first e-government act in the world to reduce paper documents and provide electronic administrative services to the public [4].

The term “e-government” was first used in 1993 in the United States (US), which has been pursuing e-government and digital government strategies for the past two decades, regardless of changes in the administration. In the United States, the Office of Management and Budget (OMB) in the Presidential

Office has a strong promotion structure and has been efficiently implementing digital government promotion strategies. The OMB is able to exercise its strong influence and drive in promoting digital government policies not only because it has budget authority, but also due to the legal support of the e-government act.

As such, the e-government act is behind the United States and South Korea's digital government promotion policies. It is also interesting to note that the first enactment of a single national e-government act took place in Korea in 2001. Subsequently, the United States enacted its e-government act in November 2002 [5]. Unified e-government acts in Korea and the United States have thus been established and enforced for nearly two decades, and provide interesting case studies for examining the long-term influences of the e-government act on national e-government and digital government policies. Moreover, we also examined how these policies have been affected by the change in administration and whether different administrations pursued different digital government strategies.

While different studies in various contexts have suggested a wide variety of definitions for the terms "e-government" and "digital government", we refer to the definitions recommended by the OECD Council on Digital Government Strategies [6]. According to the OECD (2014), "e-government" refers to the "use by the governments of information and communication technologies (ICTs), and particularly the Internet, as a tool to achieve better government" while "digital government" is defined as the "use of digital technologies, as an integrated part of governments' modernization strategies, to create public value." Although the term digital government is relatively new, the idea has been around for some time. Silcock (2001) described e-government as the "use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees", but also added that it encompasses all areas of technology, business processes, and human resources combined [7]. Nevertheless, e-government is often narrowly defined to emphasize its focus on the internet and website functions [8].

Hence, abundant research exists on the adoption and effect of e-government strategies. Earlier theoretical work and case-based empirical studies have proposed various stage models for e-government adoption. More recent works have examined government portals and websites for quantitative evaluation. Other studies have also examined the architecture frameworks for adopting e-government and how e-government enables government-citizen interaction and facilitates civic engagement [8–10]. In particular, Eom (2013) examined e-government development during the Bush administration in the United States and the Roh Moo-Hyun administration in Korea [11]. The study found that despite similar e-government initiatives, different legal frameworks and managerial tools led to different outcomes between the administrations in the two countries examined.

Similarly, we also adopted the institutionalist case study approach to examine how different legal frameworks have led to different outcomes in the long-term. Specifically, we examined how digital government strategies are differently pursued between different administrations and countries, using the cases of Korea and the United States. We examined and compared how administrations in Korea and the United States have promoted their digital government policies since the establishment of the e-government acts in these countries. We also compared the legislation process and contents of the E-Government Act in both countries, and have argued that the difference in the e-government act has indeed differently affected how administrations in Korea and the United States have promoted their digital government policies. While the Korean E-Government Act was mainly motivated by a need to reduce documents and has led to the absence of a strong dedicated organization with budget authority for digital government implementation, the E-Government Act in the United States is comprehensive and has provided legal basis for a strong dedicated organization under the OMB that has resulted in consistent digital government promotion strategies across administrations.

This research contributes to the literature by examining the long-term influences of the legal framework on government policies in the context of e-government and digital government. Despite using a case study approach based on various sources of information (e.g., examination of legal documents, engagement in the legislative drafting process, interviews with stakeholders), this study

was not without its limitations; similar future studies that examine and compare text documents should employ content analysis or comparative document analysis methods to allow statistical analyses and the use of validation techniques.

The next section examines the changes in policies for digital government implementation in Korea and the United States over the past two decades. After describing the legislation process and content of the e-government acts in Korea and the United States in the third section, we compared the e-government acts in Korea and the United States and identified three important features of the e-government acts that have influenced the implementation of digital government in Korea and the United States. We conclude with a discussion on the lessons learned and the policy implications for implementing a strong governance structure.

2. Digital Government Policy Status of Korea and the United States

This section examines the changes in policies regarding digital government implementation in Korea and the United States over the past two decades. Certain patterns were observed across administrations within each country; while administrations in Korea have promoted digital government policies by establishing ad hoc special committees or presidential committees that can be reversed with changes of administration, the administrations in the United States have displayed consistent digital government policies that have been firmly based on the E-Government Act.

2.1. Korea's Digital Government Policies by Administration

2.1.1. Kim Dae-Jung Administration (1998–2003)

The Kim Dae-Jung administration established the Special Committee of E-Government (SCEG) on January 30, 2001 to promote collaboration across government bodies for promoting e-government policies. As an independent body reporting directly to the president, the committee proposed an e-government vision and strategy in May 2001 and highlighted three main goals [12]. The three goals were: (1) creation of a simple and accessible “single-window e-government” to provide advanced government-wide and citizen-centered services to the public, (2) integration of government procurement and other internet-based market-oriented services to the single window to support private sector and business activities, and (3) integration of major internal processes into the online network so that the government can interact with the public in a more effective, transparent, and democratic manner. The committee declared 11 key strategic tasks towards the establishment of a fully functioning e-government by 2002.

On November 13, the president held a “Report on the Completion of E-Government Infrastructure” meeting with participating ministers and announced the successful implementation of the 11 key tasks, as well as the launch of the e-government services. The e-government policies of the Kim Dae-Jung administration did indeed positively affect government operations as well as those of citizens and private businesses. Redundant and inefficient procedures and functions were eliminated, leading to an increase in the productivity and competitiveness of the government. After fulfilling its role, the committee was dissolved on January 31, 2003.

2.1.2. Roh Moo-Hyun Administration (2003–2008)

President Roh established the Presidential Committee on Government Innovation and Decentralization (PCGID) when he was inaugurated in 2003. The committee aimed to promote comprehensive and systematic government innovation that would make the Korean government more transparent, open, accountable, and connected with the public. The PCGID was made up of the main committee and five executive committees, of which one was the e-government committee [13].

In 2003, the government announced the “Roh Administration E-Government Vision and Principles” and the “E-Government Roadmap”. The E-Government Roadmap included 4 areas of innovation, 10 agendas, and 31 projects intended to accomplish the goals of realizing participatory democracy,

establishing balanced social development, promoting the era of Northeast Asia, and exceeding the per capita income level of \$20,000. More importantly, the administration set the goals of becoming the world's best open e-government by achieving service delivery innovation, enhanced efficiency and transparency of the government, and the promotion of participatory democracy [13].

2.1.3. Lee Myung-Bak Administration (2008–2013)

The Lee Myung-Bak administration established the Presidential Council for Future and Vision in 2009 and announced five strategies for promoting ICT Korea, which included ICT convergence, software, development, stable ICT devices, broadcasting and communication services, and the internet. The administration sought continuous economic growth by promoting ICT (e.g., the world's leading broadband internet services), technological innovation, and private business activities. More importantly, the Lee administration also viewed e-government as a crucial means to enhance government competitiveness.

Additionally, the administration announced the Smart E-Government Plan in 2011 to transition from PC-based e-government to mobile-based e-government services. According to the plan, smart government was defined as an "advanced form of government that combines latest information technology and public services to grant citizens access to government services regardless of time and location" and a "government that continues to evolve through the participation of and communication with citizens" [14].

2.1.4. Park Geun-Hye Administration (2013–2017)

In February 2013, the launch of the Park Geun-Hye government did not involve a replacement of the administration, but the inauguration of the president from the same political party. However, despite coming from the same political party, there were substantial changes in the field of information policy. This was due to the backwardness of Korean politics. In other words, although the presidency was succeeded by the same party, many national policies, including information policy, were replaced upon the president's personal choice and not based upon the consensus of the political party members or their policies. Thus, the Park Geun-Hye government changed the information policy framework that was established in the former Lee Myung-Bak government [15].

The Park administration reorganized the central government ministries and established the ICT Convergence Policy Bureau and the IT Strategy Bureau to the Ministry of Science, ICT, and Future Planning (MSIP), thus adding ICT, telecommunications, broadcasting, and science policy functions to the ministry. The administration also embraced "Government 3.0" as new policy rhetoric for the e-government framework and public sector innovation. Government 3.0 was promoted in pursuit of the happiness of citizens, and sought two goals of providing customized and tailored needs-based services to citizens, and creating new jobs and revamping the economic growth engine.

2.1.5. Moon Jae-In Administration (2017–Present)

Moon Jae-in, who took office in May 2017, was the 19th President of the Republic of Korea. Moon Jae-in was elected by the presidential election to end the presidential vacuum that resulted from the former president's impeachment. Thus, due to a lack of time, the Moon Jae-in administration was unable to form the presidential transition committee that other previous presidents had all established. Instead, on 16 May 2017, the National Planning and Advisory Committee was established and began its operation. On 19 July 2017, the National Planning and Advisory Committee selected 20 national strategies and 100 national agendas and announced a five-year plan for national vision and state administration. The presidential decree on the creation and management of the Presidential Committee on the Fourth Industrial Revolution (PCFIR) was promulgated and came into effect on 22 August 2017. The PCFIR was established in response to the rapid changes in technology in the face of the fourth industrial revolution to address issues and policies related to new and advanced science and technology (e.g., artificial intelligence, big data).

More importantly, the Korean government announced a basic plan for the intelligent government in March 2017 [16]. This was because the administrative environment for implementing the digital government had been largely affected by intelligent information technology. Specifically, the combination of digital data and artificial intelligence technology made it possible to improve the rationality of the administration, scientific quality, and customized services according to area, class, and situation. In particular, Korea had great potential because of the accumulation and use of large amounts of digital data in administrative areas through continuous e-government promotion. However, since the Moon Jae-in administration is ongoing, it is premature to evaluate the Moon Jae-in government's information policy.

2.2. *The United States' Digital Government Policies by Administration*

2.2.1. Digital Government Strategy of the Bush Administration (2001–2008)

The Bush administration, which was launched in 2001, reversed almost all the policies of the previous Clinton administration. Particularly in the field of foreign policy, the degree of change was extreme. The main approach of the Bush administration could be called "ABC: anything but Clinton", as exemplified by the rejection of all existing foreign policy positions. However, the Bush administration faithfully followed the Clinton administration in the field of e-government. This meant that e-government was promoted as a major means of government innovation in the United States at that time.

Thus, the Bush administration actively promoted the early implementation of e-government in order to further accelerate the public sector reform that began with the Clinton administration. These efforts included establishing a portal site (firstgov.gov) to provide government services online, establishing an E-Government Fund, establishing and operating an E-Government Task Force (July 2001), and enactment of the e-government law in 2002. The E-Government Task Force worked closely with OMB and the President's Management Council to come up with projects that could substantially boost the productivity and performance of the government, and also to identify the challenges of e-government implementation [17].

2.2.2. Open Government Strategy of the Obama Administration (2009–2016)

President Obama, who took office in January 2009, after the Great Recession hit the national and global economy, acknowledged US economic growth and national development as the top priority of the government. He also emphasized the importance of national innovation and economic growth. President Obama announced "A Strategy for American Innovation" in 2009, convinced that the creative activities of people and corporations through national innovation create competitive jobs and sustain economic growth. Consequently, President Obama emphasized open innovation as a strategy for government innovation. Hence, the Obama government's e-government initiatives can be summarized as an "open government" policy for innovation of the state administration system.

On 8 December 2009, the Obama administration issued the Open Government Directive to make the government more transparent, efficient, and accessible [18]. The Open Government Directive required federal agencies to take immediate and specific measures to enhance transparency, participation, and collaboration. The directive also provided details of specific projects and important shifts in governance to encourage fundamental change and improvement within the government. The directive also required all agencies to open their data to the public by registering their data on the data.gov website. In 2011, President Obama launched the Open Government Partnership at the UN General Assembly meeting, which further enhanced support for the open government effort.

2.2.3. Digital Strategy of the Trump Administration (2017–Present)

With the inauguration of President Trump in January 2017, the administration transitioned from a Democratic government to a Republican government. However, there has been no major change

in relation to e-government so far. President Trump has shown strong opposition to the policies of the former administration, as exemplified by the preparation of an administrative order to abolish Obamacare on the first day of his inauguration, but he succeeded the policies of the previous government in the field of e-government. The United States has continued to pursue e-government policies in the E-Government Office of the OMB based on the E-Government Act. The Trump government has also inherited and maintained the previous Obama government's digital government policy strategies.

3. Legislation Process and Contents of the E-Government Acts in Korea and the United States

3.1. Korean E-Government Act Enactment Process

Discussions surrounding the enactment of e-government laws in Korea began to be publicized in the second half of 1998. At that time, the ruling party argued that the "Special Act on the Implementation of E-Government" should be enacted in order to enhance the competitiveness of the government based on information technology and to contribute to the development of the national economy. However, the ruling party's bill did not reach a wide consensus within the National Assembly, the Party, and the government at the time. Therefore, although the formal policy was formulated, it failed due to a substantial lack of the power needed to navigate the dynamic legislative processes involving conflicts, comprehension, and compromise among ministries around the legislation.

In the end, this bill, which was proposed by the political circles, prompted the Ministry of Information and Communication and the Ministry of Government Administration and Home Affairs to hurry to enact legislation related to the work of an alternative law and their ministry. All of these alternatives were focused on maximizing their own interests in the promotion of e-government.

Under these circumstances, the Ministry of Government Administration and Home Affairs actively prepared for the enactment of the E-Government Act from the beginning of 2000. As a result, the enactment of e-government legislation was included in the detailed work plan for major works in 2000 [19]. In particular, the Ministry of Government Administration and Home Affairs attempted to enact a comprehensive statute for the 21st-century information environment. Accordingly, the content included in the draft law included the establishment of an e-government promotion system, the reduction of paper documents, the revitalization of public information utilization, and the protection of the public's right to know more.

During this process, on 22 March 2000, the Minister of Government Administration and Home Affairs reported to the President on the work of the millennium and identified the enactment of e-government law as a central task of the ministry.

In March 2000, the Ministry of Government Administration and Home Affairs obtained the authority to enact the E-Government Act in the Millennium Report on the President. Accordingly, the Ministry of Government Administration and Home Affairs commissioned external academic and professional organizations to provide services for drafting the e-government law, and based on these results, prepared the E-Government Implementation Bill in September. However, this law underwent many changes in the legislative process after it was first submitted to the National Assembly and finally passed the National Assembly on 28 February 2001.

The Korean government has enacted the E-Government Act since it was passed at the National Assembly on 1 July 2001. However, there are still voices for revision of the bill due to its lack of governance.

3.2. Main Content of the E-Government Act in Korea

The E-Government Act of Korea, which was the first established in the world, not only involved the introduction and utilization of electronic documents but also caused substantial changes in administration via electronic civil service. Therefore, this section examines the content of the e-government law and changes in administrative behavior from the viewpoint of productivity, transparency, and democratization of government administration processes.

The E-Government Act stipulates the purpose of this law as follows.

Article 1 (Purpose)

The purpose of this Act is to facilitate the efficient realization of electronic government, enhance productivity, transparency and democracy in the public administration, and improve the quality of life of citizens by providing for fundamental principles, procedures, methods of promotion, and other relevant matters for the electronic processing of administrative affairs.

In this way, the E-Government Act did not merely aim to reduce the cost of government operation (enhancing the internal productivity of the government) or to make it easier for the public to receive better government services at a lower cost. These were only the basics and the act had a more fundamental implementation purpose, which was the implementation of e-government to make it easier for the public to look at what is happening in the government in a convenient way (to improve transparency), to display the will of the people more conveniently and more effectively to the government, and to promote the power of the people as a sovereign to the government (to enhance democracy). Most importantly, the purpose of implementing e-government was ultimately to improve the quality of life of the people and promote national welfare in a knowledge- and information-based society. We have discussed the three aspects of e-government implementation mentioned in the act in more detail below.

3.2.1. Democratic Aspect of Administration

As the use of information and communication has spread rapidly in our society, the dysfunction of informatization such as hacking, infringement of privacy by leakage of personal information, and computer crime has expanded. In addition, Korea has had the experience of adopting the e-resident card policy in the face of two acutely opposing arguments on the efficiency of administration and the possible invasion of privacy. Therefore, in order to cope with this problem, the e-government principle centering on the citizens' convenience was formulated more specifically in Article 4. Furthermore, in order to prepare for the provision of citizen-centered services as well as the dysfunctions, the principle of protection of personal information and privacy was also specified.

Article 4 (Principles of Electronic Government)

(1) Each administrative agency, etc. shall consider, among other things, the following matters in materializing, operating, and developing electronic government, and take measures necessary therefor:

1. *Digitizing public services and improving citizens' convenience;*
2. *Innovating administrative affairs and improving their productivity and efficiency;*
3. *Ensuring the security and reliability of information systems;*
4. *Protecting personal information and privacy;*
5. *Expanding disclosure and sharing of administrative information;*
6. *Preventing duplicative investment and improving interoperability.*

Until the early 2000s, most administrative services in Korea were only available through civil servants and by visiting the relevant government agencies. However, in many countries—including the United States, the United Kingdom (UK), Australia, Singapore, and Hong Kong—services regarding taxes, birth notification, marriage reports, and death reports have been made available via the Internet. In accordance with this trend, and as a concrete means of implementation, Korea also stipulated the processing of non-visiting service delivery and the establishment and operation of the electronic petition service counter through virtual institutions in Article 9.

Article 9 (Processing of Civil Petitions without Appearance)

(1) In order for civil petitioners to have their civil petitions, etc. processed without necessarily appearing in person at the relevant agency, the head of each administrative agency, etc. shall take measures, such as

the improvement of relevant Acts and subordinate statutes and the establishment of facilities and systems as necessary.

3.2.2. Business Transparency Aspects

Prior to the act, various existing laws and regulations related to government affairs generally adhered to conventional methods. Of course, electronic procurement methods were prescribed for some tasks, such as government procurement and document management. However, they existed in the form of mixed traditional processing methods and electronic methods, or were prescribed in the subordinate statute and not in the upper statute. Thus, the principles of electronic processing of the main tasks of administrative agencies became specified in the E-Government Act.

Based on the principle of electronic processing, electronic civil complaint handling methods were introduced not only for administrative internal affairs but also in the public administrative services (Article 7). Specifically, citizens were able to apply for and report or submit electronic documents through ICT means, and the administrative institutions were also able to respond with electronic documents; application, notification, submission, and response processes were all conducted in compliance with the procedure set forth in the relevant laws and regulations. As a result, the basis for electronic civil service was firmly established.

Article 7 (Application, etc. for Electronic Processing of Civil Petitions)

(1) The head of an administrative agency, etc., (including any person to whom administrative authority has been entrusted: hereafter, the same shall apply in this section) may allow citizens to file, report, or submit a civil application or petition (hereinafter referred to as "application, etc.") in electronic form. even where relevant Acts and subordinate statutes (including ordinances and municipal rules of a local government; hereinafter the same shall apply) require application, etc. for a civil petition, etc. subject to processing of the said agency in paper form, such as a written document, statement, or form.

The Korean government established the principle that e-government law can enforce the disclosure of information held on the Internet. At that time, there was an information disclosure law, but the method of disclosure of information was limited to the reading, copying, and duplication of the information and the applicant was confirmed at the time of information disclosure. Therefore, electronic information disclosure was formulated as a specific means of implementing complete information disclosure (Article 12).

Article 12 (Electronic Provision of Administrative Information)

(1) The head of each administrative agency, etc., shall separately provide citizens with information related to civil petitions, such as Acts relevant to civil petitions and subordinate statutes thereof, manuals related to the processing of civil petitions, and the guidelines for processing civil petitions, and other administrative information specified by the National Assembly Regulations, the Supreme Court Regulations, the Constitutional Court Regulations, the National Election Commission Regulations, or by Presidential Decree as administrative information related to citizens' lives, by posting them on the Internet.

3.2.3. E-Government Productivity

The Korean government revised the Office Administration Regulations and electronic documents were defined as the default form of document in the business process from 1 September 1999. However, electronic documents were not activated in actual administrative processing. Accordingly, the Korean government enacted a number of provisions in the Administrative Management Regulations (Article 26: Formation, Effects, etc. of Electronic Documents, etc.; Article 27: Transmission and Receipt of Electronic Documents; Article 28: Timing of Delivery or Arrival of Electronic Documents). The document office of the public institution declared that the electronic document should be the standard.

Article 25 (Preparation, etc., of Electronic Documents)

(1) Documents of each administrative agency, etc., shall be prepared, dispatched, received, stored, preserved, and utilized fundamentally in electronic form, provided, that the same shall not apply where the nature of specific work requires any other format, or under exceptional circumstances.

(2) Each administrative agency, etc., shall make the forms of documents sent or received by such agency appropriate for electronic documents.

Article 33 also stipulated the obligation not only to utilize electronic documents but also to minimize the number of paper documents generated in the process of public institutions' operations:

Article 33 (Reduction of Paper Documents)

(1) The head of each administrative agency, etc., shall minimize the formulation, receipt, circulation, and storage of paper documents by digitizing administrative affairs and civil petitions, sharing administrative information with other agencies, or by other means, and shall formulate plans to continuously reduce paper documents in the relevant agency.

(2) The head of each administrative agency, etc., shall revise its methods of working, etc., in the relevant agency in a manner that minimizes unnecessary printing of paper documents in the process of formulating and reporting documents.

(3) With the aim of reducing paper documents, the head of each administrative agency, etc., shall amend or supplement Acts and subordinate statutes, directives, etc. that stipulate application, reports, submission, notice, or notification in paper form to allow such application, etc., by electronic means as well, except under exceptional circumstances.

(4) The head of a central agency responsible for administrative affairs may, if necessary, formulate and implement directives to reduce paper documents or investigate the actual use, etc., of paper documents.

Until the early 2000s, while promoting informatization of the administration, Korea was unable to promote joint and shared use of administrative information across administrative institutions. Therefore, the E-Government Act clarified the obligation of joint use of administrative information among public institutions and the goal of preventing duplicate information collection (Article 36) as well as the establishment of an administrative information-sharing center (Article 37).

Article 36 (Efficient Management and Use of Administrative Information)

(1) The head of each administrative agency, etc., shall share administrative information collected and held by such agency with other administrative agencies, etc., that need such information, and shall not endeavor to separately gather identical information where he/she can be provided with reliable administrative information from other administrative agencies, etc.

Article 37 (Administrative Information-Sharing Center)

(1) In order to ensure the effective sharing of administrative information, the Minister of the Interior and Safety may establish an Administrative Information-Sharing Center (hereinafter referred to as the "Sharing Center") under his/her jurisdiction to implement policies necessary to share administrative information, as prescribed by Presidential Decree.

3.3. US E-Government Act Legislation Process

One of the most prominent players in the US e-government legislation process was Joe Lieberman, a Connecticut senator from 1989 to 2013. In May 2000, Senator Lieberman opened an "experiment in interactive legislation" website in conjunction with Senator Thompson for e-government legislation, seeking feedback on 44 themes. Topics ranged from centralized leadership, fund innovation, e-democracy, and government portals to interoperability. By collecting nearly 1000 comments on this site, Lieberman embodied the E-Government Act. Subsequently, on May 1, 2001, Lieberman initiated the E-Government Act with fellow lawmakers.

Liebermann initiated the "E-Government Act of 2001" to allow citizens to conveniently access various civil services through the internet and to secure national credibility and innovation

through information technology. He emphasized the necessity of legislation and the law to reform the macro-system.

The draft bill initiated by Lieberman contained two central points. The first was to increase the role of the OMB in e-government implementation. The second was to define the roles of other ministries besides the OMB. One of the most important of these was the creation of a Federal Chief Information Officer (CIO) within the OMB. It also involved using internet-based information technology to enhance citizen-centered services and provision of government information.

The bill passed the Senate Committee on 1 March 2002. Later, however, the OMB and the Congress continued negotiations on the bill. In particular, Congress heard opinions from various stakeholders on the content of the legislation. Accordingly, the US Senate passed the E-Government Act of 2002 on 1 July 2002, aiming to create the Office of Electronic Government (OEG). The E-Government Act of 2002 was finalized by Congress on 15 November 2002 and entered into force upon the signature of the President on 17 December 2002.

3.4. Main Content of the E-Government Act in the United States

Although information technology has dramatically transformed society, as acknowledged in Section 2 of the act, its application to government processes was inadequate. In order to successfully introduce information technology to the government, new leadership, better organization, and improved ministry cooperation were required. Thus, the act sought to support the more effective federal leadership in implementing e-government by placing the OEG within the OMB. Next, we briefly examine relevant details in Titles I, II, and III of the E-Government Act.

3.4.1. Title I—Office of Management and Budget E-Government Services

Title I mainly focused on the role of OMB in implementing e-government by adding Chapter 36 to Title 44, United States Code. Within Chapter 36, Section 3601 defined the concept of e-government and explained information technology, Section 3602 specified the establishment of an e-government office within OMB, Subsection 3602 (d) outlined the existing information-related laws, and Subsection 3602 (f) defined the role of the administrator at the head of the office. The administrator's role is as quoted and listed below:

- ① To advise the Director on the resources required to develop and effectively administer electronic Government initiatives;
- ② To recommend to the Director changes relating to Governmentwide strategies and priorities for electronic government;
- ③ To provide overall leadership and direction to the executive branch on electronic government;
- ④ To promote innovative uses of information technology by agencies, particularly initiatives involving multiagency collaboration, through support of pilot projects, research, experimentation, and the use of innovative technologies;
- ⑤ To oversee the distribution of funds from, and ensure appropriate administration and coordination of, the E-Government Fund established under Section 3604;
- ⑥ To coordinate with the Administrator of General Services regarding programs undertaken by the General Services Administration to promote electronic government and the efficient use of information technologies by agencies;
- ⑦ To lead the activities of the Chief Information Officers Council established under Section 3603 on behalf of the Deputy Director for Management, who shall chair the council;
- ⑧ To assist the Director in establishing policies which shall set the framework for information technology standards for the Federal Government developed by the National Institute of Standards and Technology;

- ⑨ To sponsor ongoing dialogue that—“(A) shall be conducted among Federal, State, local, and tribal government leaders on electronic government in the executive, legislative, and judicial branches, as well as leaders in the private and nonprofit sectors;
- ⑩ To sponsor activities to engage the general public in the development and implementation of policies and programs, particularly activities aimed at fulfilling the goal of using the most effective citizen-centered strategies. (Rest of the list omitted.)

In Section 3603, the CIO Council was established to co-ordinate the establishment of the Secretariat. In particular, the director of the E-Government Office led the council and broadly defined responsibilities for the CIO council and the OMB to work together in the following ways. The role of the council is as quoted and listed below:

- ① To develop recommendations for the Director on Government information resources management policies and requirements;
- ② To share experiences, ideas, best practices, and innovative approaches related to information resources management;
- ③ To assist the Administrator in the identification, development, and coordination of multiagency projects and other innovative initiatives to improve Government performance through the use of information technology;
- ④ To promote the development and use of common performance measures for agency information resources management under this chapter and title II of the E-Government Act of 2002;
- ⑤ To work as appropriate with the National Institute of Standards and Technology and the Administrator to develop recommendations on information technology standards developed under section 20 of the National Institute of Standards and Technology Act;
- ⑥ To work with the Office of Personnel Management to assess and address the hiring, training, classification, and professional development needs of the Government related to information resources management;
- ⑦ To work with the Archivist of the United States to assess how the Federal Records Act can be addressed effectively by Federal information resources management activities.

Under Section 3604, e-government funds were established to support multi-agency e-government projects. The management of the fund was handled by the General Services Administration (GSA), but the director of the E-Government Office was responsible for everything from the examination of the proposal to the execution.

The fund was specifically \$45 million in 2003, \$50 million in 2004, \$100 million in 2005, and \$150 million in 2006, based on the fiscal year, which was kept until the expense. Thus, the US government was able to support the implementation of e-government by allocating \$345 million in funds over the four years following the enactment.

3.4.2. Title II—Federal Management and Promotion of E-Government Services

Title II focused on the implementation of information technology within the government to provide citizen-centered services to the public. Each section dealt with specific technology applications or topics. We have briefly described Sections 202 to 209 below.

For successful e-government implementation, Section 202 (federal agency responsibilities) emphasized the need for organizations to cooperate with OMB to align themselves with the objectives of the agency from a strategic point of view, rather than simply automating tasks. Specifically, Subsection 202 (a) clarified the responsibilities of the Director-General in implementing e-government, Subsection 202 (b) required agencies to measure the performance of e-government implementations in terms of advancement of the organization’s strategic goals, and Subsection 202 (c) required the Chief Engineer to think in terms of universal service to solve the Internet divide. Additionally, Subsection 202 (f) described the role of the CIO of each institution, while Subsection 202 (g) required all agencies to submit an annual report on the state of the agency’s e-government initiatives to OMB.

Section 203 (compatibility of methods for use and acceptance of electronic signatures) provided a means to securely implement e-government through the spread of digital signatures within institutions. Specifically, Subsection 203 (b) showed that the use of digital signatures proposed in the GPEA was consistent with the policy of the OMB. In Subsection 203 (c), the General Services Administration (GSA), in the use of digital signatures, was mandated to support the director of OMB to allow effective interoperability. Lastly, Subsection 203 (d) authorized the use of \$8 million by the GSA for electronic signature compatibility between federal agencies in the fiscal year 2003.

Section 204 (federal internet portal) documented the development of an integrated government portal site based on the Internet. In particular, with regard to firstgov.gov, which was managed by the General Services Administration, the future directors of the E-Government Office were given authority over the GSA's work. For example, in the fiscal year 2003, the government approved the use of \$15 million for the maintenance of portal sites. It was authorized that they could spend as much as necessary in each subsequent fiscal year.

As stated in Section 205 on federal courts, the Chief Justice of the United States also formulated a plan to participate in the implementation of e-government. In particular, all courts were to have a website accessible to the public within two years, and all the materials were converted to digital format and posted online.

Under Section 206 (regulatory agencies), several regulatory agencies were also required to use information technology to gather opinions from the public and suggest ways to ensure accountability and transparency in the regulatory sector.

Section 207 (accessibility, usability, and preservation of government information) contained an enormous amount of information about the management, access, use, and preservation of information that is created, possessed, and disseminated by the government.

Section 208 on privacy provisions shows how privacy and security are paramount to providing reliability in e-government services. Thus, in e-government services, organizations were to ensure that privacy and personal information is protected. Privacy protection was described from two aspects: (1) If the government has an interest in privacy from the early stages of system design, personalization of government services to individuals does not violate individual privacy; (2) Privacy notification, one of the most fundamental elements of privacy protection, needs to be clear, concise and accurate. This article also requires federal agencies to enact privacy impact assessments (PIAs).

Section 209 (federal information technology workforce development) covers skills development of the federal workforce in using information technology for government services. A workforce with excellent IT skills is one of the most important factors in the success of e-government. Especially in the federal government, managers should be able to use new information technologies to innovate their work and oversee IT sector developments. Therefore, in this section, the government required the establishment of the Federal Information Technology Training Center to improve the IT capabilities of federal officials.

3.4.3. Title III—Government Information Security Reform

Lastly, Title III covered issues related to information security by incorporating subchapters in Chapter 35 of Title 44, United States Code. In 2000, the US Congress enacted the Government Information Security Reform Act (GISRA), which required government agencies to implement a security system for their security systems annually. This law was originally a sunset law that was in effect for a limited period of time until November 29, 2002, but it was amended to be permanent in this article.

4. Comparative Analysis of the E-Government Acts in Korea and the United States

The examination of the legislative process and contents of the e-government acts in Korea and the United States clearly shows that the E-Government Act of the United States is much more comprehensive than the E-Government Act of Korea. The reason for this is as follows. First of all,

the e-government law in Korea is based on electronic document processing and employs this as its starting point to in order to promote the provision of existing administrative regulations to the statute. The US E-Government Act is comprehensive since it focuses on strengthening the federal government's ability to regulate OMB's role in e-government implementation.

A number of success factors have been proposed in relation to the successful implementation of digital government policies [20–23]. The most important of these success factors is the leadership of top leaders and the utilization of advanced information and communication technologies [24]. However, these factors cannot be prescribed by law. Moreover, there are other factors that are written into law that are equally important but often overlooked in the literature. The content of an e-government act that is related to the implementation of digital government can be broadly divided into three categories: (1) support of the budget through the fund, (2) CIO-centered ICT human resources, and (3) establishment of governance with strong coordination for digital government implementation.

4.1. E-Government Fund

As mentioned earlier, the United States has been operating e-government funds since 2001 as one of its e-government implementation strategies. These e-government funds are designed to support e-government projects related to ministries rather than single-agency projects. In particular, the General Services Administration (GSA) is responsible for the management of the fund, but the E-Government Office has secured control over e-government projects since the OMB's E-Government Office is in practice responsible for all processes of the e-government project, ranging from proposal review to enforcement.

In contrast, there is no separate e-government business fund under the E-Government Act of Korea. Previous e-government laws provided support through the Information Promotion Fund; however, this provision was removed in the recent amendment and it no longer exists. Currently, in Korea, the fund is formulated in Article 41 (Establishment of Information and Communications Promotion Fund) of the Information and Communications Technology Industry Promotion Act as follows:

Information and Communications Technology Industry Promotion Act.

Article 41 (Establishment of Fund for Promotion of Information and Communications)

The Government shall establish a fund for the promotion of information and communications (hereinafter referred to as "Fund") in order to support the promotion of information and communications.

In the case of Korea, a number of remarkable projects in the field of information and communications have been promoted within a short period of time due to stable financing through the Information and Communications Promotion Fund. In order to accelerate the pace of technological development and to successfully implement long-term e-government projects, stable procurement of resources as well as flexible management and operations are essential. Therefore, it would be efficient to procure funds in the form of funds rather than in the form of an annual budget.

Today, digital government implementation projects are expanding rapidly and demand for information project budgets is also increasing. Therefore, it is necessary to realize a large amount of funding by reallocating funds from the information promotion fund to a new e-government fund.

4.2. ICT Human Resources (CIO-Based System)

The US Federal Government CIO was officially introduced in August 1996, when the Information Technology Management Reform Act (ITMRA) came into effect. The ITMRA's mandatory enforcement of the CIO system in federal agencies in the United States was intended to establish clear responsibility for federal government information resource management activities, promote information sharing among federal agencies, and promote the visibility of information activities within agencies.

Therefore, in the United States, the ITMRA in 1996, the Presidential Order 13011 on Federal Information Technology in 1996, and other laws have reduced government documents, efficiently managed information resources, organized information technology and organizational performance,

and established the CIO system, which can be evaluated as a continuous effort to build e-government. As a follow-up to this, the E-Government Office was authorized by the E-Government Act to coordinate with the CIO Council as a federal CIO Council secretariat.

In Korea, the CIO system was introduced in 1998 but currently is of little practical use. On 21 May 1998, the Ministry of Government Administration and Home Affairs informed the President of the necessity of introducing an information accountability system, and the President instructed the government to introduce the CIO system to the public sector. As a result, the Presidential Directive No. 73 was enacted in September 1998 to implement the CIO system. However, the CIO system was not related to the E-Government Act and is currently stipulated in Articles 11 and 12 of the Framework Act (see Appendix A).

As such, the CIO system is currently malfunctioning in Korea. A major limitation of the CIO system is the lack of fully committed human resources; only 30% of council members work full-time and can fully commit to their duties and responsibilities, while the remaining 70% hold adjunct positions [25]. While the CIO council's mission is to coordinate among ministries and share information to implement ICT projects and serve as a ground for government officials to meet and work on informatization across ministries, it has failed to function properly and cannot coordinate among ministries regarding related businesses. As a result, all former administrations in Korea have established special committees for information technology and several governments have promoted digital government projects through the presidential ICT committee.

4.3. Governance (ICT Control Tower)

Currently, e-government in the United States has a three-tier e-governance structure, namely the President's Management Council (PMC), OMB, and steering committee. The United States recognizes that the biggest obstacle to e-government is organizational resistance to change, and has placed the Presidential Management Council at the forefront, maintaining the active and lasting interest of the top executive. In addition to determining the final budget support for e-government projects, the Presidential Management Council actively intervenes in such projects as a manager.

Furthermore, the OMB has overall jurisdiction over the e-government promotion process and will continue to consult with ministries on appropriate budget support for each project. To this end, the OMB has created an E-Government Office, and the E-Government Office has now been legislated to oversee the process of the e-government projects in the United States. As a result, the E-Government Office has a Portfolio Manager for each of the four areas of e-government projects and manages the projects in each area. In short, the E-Government Act of the United States established and authorized the E-Government Office in the OMB, which works closely with the presidential office.

In addition, the Trump administration recently created the American Technology Council (ATC) in April 2017 to accelerate digital transformation in the public sector. In June 2017, the ATC founding general meeting was held with 20 CEOs in the field of digital technology. As such, the ATC coordinates the federal government's vision and strategy for digital technology use and service provision through digital technology and provides presidential consulting on policy decisions.

In contrast, Korea's E-Government Act constituted a document reduction committee in the early stage. Consequently, Korea's E-Government Act has been downgraded to a level that supports document reduction and electronic processing of documents, rather than a comprehensive law that can support e-government projects. In addition, these document reduction committees have not been formed, but have actually been discarded. The E-Government Act of 2001 described a Committee on Reduction of Documents but it was never organized, and the relevant text was deleted in 2010 when the law was amended.

In light of these circumstances, the Korean government is attempting to cultivate an e-government promotion committee within the current E-Government Act to secure leadership in promoting e-government while strengthening the status of e-government in the Ministry of Public Administration and Security. The E-Government Bill amendment to the E-Government Act was initiated in the fall of

2018 and sent to the National Assembly, but the revised bill has not yet been discussed at all in the National Assembly as of late 2019.

In short, Korea's digital and e-government policies rarely involve law-based governance structures and are often executed by ad hoc committees that operate only temporarily during certain presidential terms.

5. Discussion

5.1. Lessons Learned: The Need for a Strong Governance Structure

Today, many countries in the world are strongly advocating digital government policies and are pursuing government-wide implementation systems in tandem at the national level, in the hope of establishing governance in relation to digital government policies. However, due to the recent development of the fourth industrial revolution and intelligent information technologies, it is extremely challenging to form a single overarching national governance structure. In particular, it is difficult to enforce policies under a single governance structure while implementing projects that involve various digital technologies such as big data, artificial intelligence, and the Internet [26,27]. The implementation of electronic governance involves the introduction and regulation of a variety of information and communication technologies that involve the construction and use of technologies such as the internet, big data, and cloud computing. Furthermore, if we pursue government innovation by promoting digital transformation within the government, the scope and complexity will be further expanded and will result in added difficulty.

Nonetheless, the lesson that can be learned through an examination of the US and Korean E-Government Acts is that governments should enact legislation to form a strong driving governance structure accompanied by sufficient budget for e-government implementation. In the United States, the US Digital Service (USDS) was established in August 2014 as part of OMB's E-Government Office. The organization was founded at the time by benchmarking the Government Digital Service (GDS) in the United Kingdom and was responsible for the core public service innovation of the US government and for improving its services to become more simple, effective, and efficient. Despite the establishment of the ATC and the strengthening of the National Science and Technology Council (NSTC) and the Office of American Innovation after the transition to the Trump administration, the US digital government policies are still dominated by OMB. Digital innovation policies have been implemented successfully as a result of strongly promoting e-government policies that were based on the E-Government Act.

Although this study examined and compared two cases involving e-government implementation in the United States and Korea, similar patterns can also be observed in other successful e-government examples. For example, similar lessons can be drawn from the case of Denmark, which ranked first in the UN e-government evaluation in 2018 [28]. While the Danish Business Authority (DBA) is responsible for the innovation and regulation of information and communications, the Agency for Digitization is responsible for e-government and large-scale ICT projects. The Agency for Digitization was established in 2011 by merging the National IT Communications Agency and the Government Administration Office. In 2016, the Agency for Digitization established and announced Digital Strategy 2016–2020 [29]. This was a national strategy for the implementation of a more robust and secure digital Denmark from 2016 onwards. The plan established a governance structure led by the Agency for Digitization and facilitates cooperation not only among government agencies but also among municipalities and public institutions. The Agency for Digitization can demonstrate strong leadership since it is an agency under the Treasury Department.

Another example is the UK. The UK has also been pursuing digital government implementation policies since its announcement of the Digital Government Strategy in February 2012. In 2011, the UK established the GDS within the Cabinet Office, and since then, the GDS has focused on digital government policies. With the latest Government Transformation Strategy announced in February 2017, the government is changing the government service into a digital organization by focusing on changing

the way the government works, as well as the organizational tendency and the culture, through digital transformation [30]. The UK digital government innovation efforts, under the leadership of the GDS, focused on reestablishing government–citizen relations so that the digital government can react more swiftly to the surrounding environment to provide citizens with greater authority. GDS, which is leading the UK digital government innovation, can also strongly promote its policy as a Cabinet Office organization.

As for Korea, the government should revise the E-Government Act and cultivate a strong governance structure within the E-Government Act. The e-government promotion policies are now evolving into digital government policies that not only transform the administrative process of government agencies but also fundamentally change civil services and further assure citizens' active participation in the government. In other words, it is necessary to institutionalize strong governance that can lead government transformation by utilizing information technology.

Currently, the committees in the ICT sector in Korea have too many problems. Under current conditions, many committees' and related ministries' roles and functions overlap, and there are increasing concerns and fear that the speed of implementation may be affected by intensified relations, policy disruptions, and enforcement disagreements among ministries that will prevent the adoption of desirable policies.

5.2. Policy Recommendations: Implementing a Strong Governance Structure

Establishing digital governance is not limited to the functions or the works of a single department. Implementing digital government requires nothing less than creating a new framework for the government. In order to create a new framework of government transformation, it is necessary to first set the direction and blueprint of the whole government, and then adjust the subsectors that make up the government accordingly. In other words, to create a new government framework by realizing digital governance, the implementation of the digital government should be approached and promoted from a holistic government perspective [31].

The essence of realizing the digital government is to redesign the process of administration using information technology and to change administrative processes to promote the transformation of the whole government. The anticipated major challenge in establishing digital governance is linking local and central governments with information technology, as well as managing the shared area among local and central governments. On the one hand, the networking of individual central administrative departments through the national computer network project will be essential to link this shared area of government. On the other hand, it involves the design and management of the shared area in terms of public service.

In terms of the size of financial resources and the efficiency of their use, the implementation of the digital government requires enormous resources to be managed by government-level administrative agencies. The implementation of digital governments by individual ministries will reduce the efficiency of resource utilization due to overlapping and redundant investment. Until now, digital government projects in many countries that pursued comprehensive administrative reform have failed to use information technology to achieve administrative innovation, and only departmental projects have been promoted because of the inefficiency of the governance structure.

As discussed above, government-level organization for the digital government promotion should (1) improve the laws and systems related to the digital government, (2) provide common guidelines for promoting each government, (3) open and operate a single-service delivery window, (4) evaluate the degree of promotion of the digital government, and (5) resolve the digital divide of the people so that the benefits of the digital government can be enjoyed evenly by the people.

Therefore, from the standpoint of using information technology for digital government transformation, it is most important to promote digital government policies directly via the ministry that manages the budget or to establish a dedicated organization under the ministry to secure strong coordination while linking it with the budget [32].

Author Contributions: Conceptualization, C.-S.C.; methodology, C.-S.C. and S.-B.K.; formal analysis, C.-S.C. and S.-B.K.; writing—original draft preparation, C.-S.C.; writing—review and editing, C.-S.C. and S.-B.K.; supervision, C.-S.C.; project administration, C.-S.C.; funding acquisition, C.-S.C.

Funding: This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government (NRF-2017S1A3A2066084).

Acknowledgments: We thank the anonymous reviewers whose comments helped improve and clarify this manuscript.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

Appendix A Framework Act on National Informatization

Article 11 (Official Responsible for Informatization)

(1) The head of a national agency or a local government shall appoint an official responsible for exercising overall control over the efficient formulation and implementation of national informatization policies and coordination, etc. of national informatization projects for the relevant agency (hereinafter referred to as "official responsible for informatization"). <Amended by Act No. 13340, Jun. 22, 2015>

(2) Any official responsible for informatization shall take charge of the following in respect to the affairs of the relevant agency: <Amended by Act No. 10012, Feb. 4, 2010; Act No. 11764, May 22, 2013; Act No. 13340, Jun. 22, 2015>

1. Overall coordination of, support for, and evaluation of national informatization policies and projects;
2. Integration and coordination of national informatization polices with any other policies, plans, etc. of the agency;
3. Support for administrative work using information technology;
4. Overall coordination in the collection, distribution, use, etc. of information resources, systematic management thereof, and formulation of plans for joint utilization of information;
5. Advancement of information culture and narrowing of digital divide;
- 5-2 Establishment of sound information communications ethics;
6. Introduction and utilization of an information technology architecture pursuant to subparagraph 12 of Article 2 of the Electronic Government Act (hereinafter referred to as "information technology architecture");
7. Education on informatization;
8. Other matters prescribed as the duties of an official responsible for informatization in other statutes.

(3) Where the head of a national agency or a local government appoints an official responsible for informatization pursuant to paragraph (1), he/she shall notify it to the chairperson of the Consultative Council under Article 12 (3). The same shall apply to the cases where an official responsible for informatization is replaced. <Newly Inserted by Act No. 13340, Jun. 22, 2015>

Article 12 (Consultative Council of Officials Responsible for Informatization)

(1) A central administrative agency and a local government may organize and operate a Consultative Council of Officials Responsible for Informatization (hereafter referred to as "Consultative Council" in this Article) comprised of officials responsible for informatization appointed under Article 11 for the efficient promotion of informatization, exchange of necessary information, and consultation, etc. over relevant policies.

(2) The Consultative Council shall consult on the following: <Amended by Act No. 11764, May 22, 2013; Act No. 13340, Jun. 22, 2015>

1. Matters pertaining to the establishment and implementation of policies on electronic government;
2. Matters pertaining to the common use of administrative information;
3. Matters pertaining to an information technology architecture;
4. Matters pertaining to the systematic management and standardization of information resources;
5. Matters pertaining to the promotion of electronic government projects and community informatization projects, which involve various national agencies, local governments and public institutions (hereinafter referred to as "national agencies, etc.");
6. Matters pertaining to the advancement of information culture, narrowing of the digital divide, and prevention and elimination of Internet addiction;
7. Matters pertaining to the use of the Internet address resources under subparagraph 2 of Article 2 of the Internet Address Resources Act;
8. Other matters deemed necessary by the chairperson.

References

1. United Nations. *United Nations E-Government Survey 2010: Leveraging E-government at a Time of Financial and Economic Crisis*; United Nations: New York, NY, USA, 2010.
2. United Nations. *United Nations E-Government Survey 2012: E-Government for the People*; United Nations: New York, NY, USA, 2012.
3. United Nations. *United Nations E-Government Survey 2014: E-Government for the Future We Want*; United Nations: New York, NY, USA, 2014.
4. *Electronic Government Act*, Act No. 6439; Korea, 2001. Available online: https://elaw.klri.re.kr/kor_service/lawView.do?hseq=45844&lang=ENG (accessed on 9 February 2019).
5. *E-Government Act of 2002*, Public Law No. 107-347, 116 Stat 2899; USA, 2002. Available online: <https://www.govinfo.gov/content/pkg/PLAW-107publ347/pdf/PLAW-107publ347.pdf> (accessed on 9 February 2019).
6. Organisation for Economic Co-operation and Development. *Recommendation of the Council on Digital Government Strategies*; OECD: Paris, France, 2014.
7. Silcock, R. What is E-government. *Parliam. Aff.* **2001**, *54*, 88–101. [[CrossRef](#)]
8. Ebrahim, Z.; Irani, Z. E-government Adoption: Architecture and Barriers. *Bus. Process Manag. J.* **2005**, *11*, 589–611. [[CrossRef](#)]
9. Lim, J.H. Empowering Citizens' Voices in the Era of E-government: Implications from South Korean Cases. *Theor. Empir. Res. Urban Manag.* **2010**, *7*, 19–31.
10. Seifert, J.W.; Chung, J. Using E-government to Reinforce Government-Citizen Relationships: Comparing Government Reform in the United States and China. *Soc. Sci. Comput. Rev.* **2009**, *27*, 3–23. [[CrossRef](#)]
11. Eom, S.-J. Institutional Dimensions of E-government Development: Implementing the Business Reference Model in the United States and Korea. *Adm. Soc.* **2013**, *45*, 875–907. [[CrossRef](#)]
12. Special Committee for e-Government. *Korea's E-Government: Completion of E-Government Framework*; Special Committee for e-Government: Seoul, Korea, 2003.
13. Presidential Committee on Government Innovation and Decentralization. *Participatory Government's Vision and Direction of E-Government*; Presidential Committee on Government Innovation and Decentralization: Seoul, Korea, 2003.
14. Ministry of Public Administration and Security. *Smart Government Plan*; Ministry of Public Administration and Security: Seoul, Korea, 2011.

15. Chung, C.-S. Lesson of Government 3.0 Project Failure in Korea. *J. Adv. Res. Dyn. Control Syst.* **2018**, *10*, 402–414.
16. Ministry of the Interior and Safety. *Master Plan of Intelligent Government*; Ministry of the Interior and Safety: Seoul, Korea, 2017.
17. Executive Office of the President. *E-Government Strategy: Simplified Delivery of Services to Citizens*; Office of Management and Budget: Washington, DC, USA, 2002.
18. White House. *Open Government: A Progress Report to the American People*; White House: Washington, DC, USA, 2009.
19. Ministry of Government Administration and Home Affairs. *2000 Work Plan Report*; Ministry of Government Administration and Home Affairs: Seoul, Korea, 2000.
20. Accenture. *E-Government Leadership: Rhetoric vs Reality—Closing the Gap*; Accenture: Arlington, VA, USA, 2001.
21. Chang, D.L.; Sabatini-Marques, J.; Da Costa, E.M.; Selig, P.M.; Yigitcanlar, T. Knowledge-based, Smart and Sustainable Cities: A Provocation for a Conceptual Framework. *J. Open Innov. Technol. Mark. Complex.* **2018**, *4*, 1–17. [[CrossRef](#)]
22. Eggers, W.D.; Bellman, J. *The Journey to Government's Digital Transformation*; Deloitte University Press: New York, NY, USA, 2015.
23. Lee, K.; Choi, S.O.; Kim, J.; Jung, M. A Study on the Factors Affecting Decrease in the Government Corruption and Mediating Effects of the Development of ICT and E-Government—A Cross-Country Analysis. *J. Open Innov. Technol. Mark. Complex.* **2018**, *4*, 41. [[CrossRef](#)]
24. Di Maio, A. *Digital Government Is Both Different From E-Government and More of the Same*; Gartner: Stamford, CT, USA, 2013.
25. Ministry of the Interior and Safety. *50-Year Footprints of Korean E-Government 1967-2017: The Greatest Leap in Korean History*; Ministry of the Interior and Safety: Seoul, Korea, 2017.
26. Jun, M. Blockchain Government - A Next Form of Infrastructure for the Twenty-first Century. *J. Open Innov. Technol. Mark. Complex.* **2018**, *4*, 1–12. [[CrossRef](#)]
27. Park, H.S. Technology Convergence, Open Innovation, and Dynamic Economy. *J. Open Innov. Technol. Mark. Complex.* **2017**, *3*, 1–13. [[CrossRef](#)]
28. United Nations. *United Nations E-Government Survey 2018: Gearing E-Government to Support Transformation towards Sustainable and Resilient Societies*; United Nations: New York, NY, USA, 2018.
29. Agency for Digitisation. *A Stronger and More Secure Digital Denmark: The Digital Strategy 2016–2020*; Danish Ministry of Finance: Copenhagen, Denmark, 2016.
30. Cabinet Office; Government Digital Service; The Rt Hon Ben Gummer. *Government Transformation Strategy 2017 to 2020*; Cabinet Office: London, UK, 2017.
31. Chung, C.-S. *Jun-Ja-Jung-Bu-Ron [The Theory of Electronic Government]*, 5th ed.; Seoul Economy and Business: Seoul, Korea, 2018.
32. Chung, C.-S. ICT Governance Restructure Plan in the Era of 4th Industrial Revolution. *J. Platf. Technol.* **2017**, *5*, 33–40.



© 2019 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).