

## RESEARCH NOTE

# E-Government Strategies in Developed and Developing Countries: An Implementation Framework and Case Study

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### ABSTRACT

*Given the fact that more and more governments invest heavily in e-government design and implementation, e-government has become an evolving and important research area in the IS field. Most, if not all, currently published e-government strategies are based on successful experiences from developed countries, which may not be directly applicable to developing countries. Based on a literature review, this study summarizes differences between developed/developing countries. It identifies key factors for a successful e-government implementation and proposes an implementation framework. As a demonstration, we follow the guidance of the proposed framework in conducting a case study to analyze the implementation strategies of e-government in developed and developing countries.*

*Keywords: e-government; e-government implementation framework; e-government strategy*

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### INTRODUCTION

With the Internet surging, governments at all levels are utilizing it to reinvent their structure and efficiency, coining the term "e-government" to describe this

initiative. Bill Gates of Microsoft claims that e-government is one of the most exciting fields in electronic commerce in the near future. E-government is a cost-effective solution that improves communication

between government agencies and their constituents by providing access to information and services online. *The Economist* magazine estimates that the potential savings of implementing e-government could be as much as \$110 billion and 144 billion English Pounds in the U.S. and Europe, respectively (Symonds, 2000). Though a new subject, e-government has attracted more and more research interest and focus from industries, national governments, and universities (Carter & Belanger, 2005; Chircu & Lee, 2003; Huang, Siau, & Wei, 2004; Jain & Patnayakuni, 2003; Moon & Norris, 2005; Navarra & Cornford, 2003), such as IBM's Institute for Electronic Government and various "E-Government Task Forces" in different countries (Huang, D'Ambra, & Bhalla, 2002).

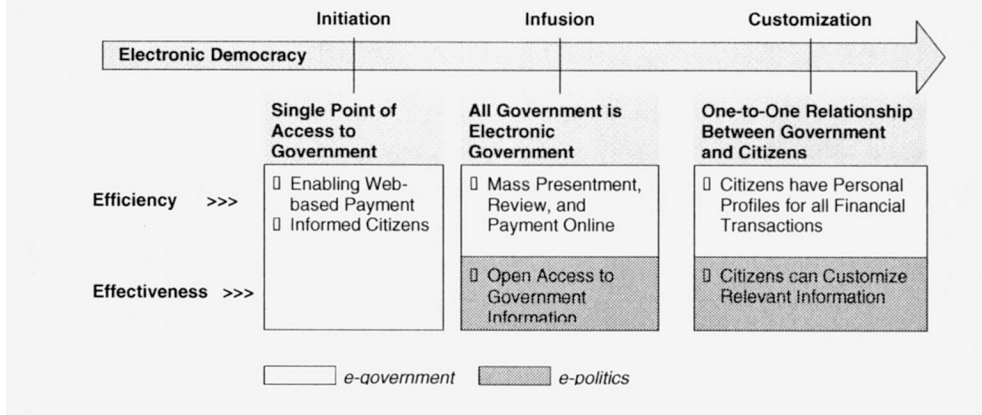
E-Government is a permanent commitment made by government to improve the relationship between the private citizen and the public sector through enhanced, cost-effective, and efficient delivery of services, information, and knowledge. Broadly defined, e-government includes the use of all information and communication technologies, from fax machines to wireless palm pilots, to facilitate the daily administration of government, exclusively as an Internet-driven activity that improves citizen's access to government information, services, and expertise to ensure citizen's participation in, and satisfaction with government process (UN & ASPA, 2001). Narrowly defined, e-government is the production and delivery of government services through IT applications, used to simplify and improve

transactions between governments and constituents, businesses, and other government agencies (Sprecher, 2000).

The development and implementation of e-government brings about impacts and changes to the structure and functioning of the public administration (Snellen, 2000). Unlike the traditional bureaucratic model where information flows only vertically and rarely between departments, e-government links new technology with legacy systems internally and, in turn, links government information infrastructures externally with everything digital (Tapscott, 1995). Moreover, e-government will help breaking down agency and jurisdictional barriers to allow more integrated whole-of-government services across the three tiers of government (federal, state, and local). Government in the offline environment can be difficult to access, which is especially problematic for people in regional and remote locations. E-Government offers a potential to dramatically increase access to information and services. E-Government makes it easier for citizens to participate in and contribute to governmental issues.

Various stages of e-government reflect the degree of technical sophistication and interaction with users (Hiller & Belanger, 2001). A broad model with a three-phase and dual-pronged strategy for implementing electronic democracy is proposed by Watson and Mundy (2000) (see Figure 1). The three phases draw on the principles of skill development (Quinn, Anderson, & Finkelstein, 1996), and the prongs echo the dual foundations of democratic government — effectiveness

Figure 1. Three phases model



and efficiency. Note that we identify e-government and e-politics as elements of e-democracy. E-Government informs citizens about their representatives and how they may be contacted and it improves government efficiency by enabling citizens to pay transactions online; whereas e-politics is the use of Internet technology to improve the effectiveness of political decisions by making citizens aware of the how and why of political decision making and facilitating their participation in this process.

The *initiation phase* focuses on providing citizens with a single point of access to government information and Web-enabling government payments are the critical initial goals. For a minimum level of political involvement, citizens need to know who represents them and what is happening in the political scene.

When the e-democracy proceeds to the *infusion phase*, nearly all governments adopt the principles of e-government. Online review and payment applications

are widely installed. Citizens can make most government payments via the Web and electronic bill presentment is the standard. Government becomes more efficient via two major approaches. Small governments opt for an application service provider (ASP) solution, while large governments implement in-house systems. An initiation stage is necessary because governments need to create the infrastructure (e.g., software firms, methodologies, consulting skills), acquaint governments and citizens with the concept of e-government, and learn how to scale from a handful to tens of thousands of online government services. Once the foundation of skills and knowledge has been built and the idea has gained currency, large-scale adoption is feasible.

With the further development of e-government, citizens will not be satisfied with a one-size-fits-all solution, and customization will be demanded. During the *customization phase*, electronic democracy implements a one-to-one rela-

tionship between citizen and government. To further improve their personal efficiency, all citizens have an electronically maintained, personal profile of their financial interactions with government. An address change, for example, is a single transaction that automatically notifies all government systems. In addition, citizens can get a detailed breakdown of their particular government payments so that they are more directly connected with how their taxes and fees are spent (e.g., amount contributed to education).

### **DEVELOPED VS. DEVELOPING COUNTRIES**

Every year, the United Nations releases a report on the least developed countries (LDC) and compares their economic conditions in several different categories. For 2002, 49 countries were designated as the least developed. These countries were decided based on their low GDP per capita, their weak human assets, and their high degree of economic vulnerability (UNCTAD, 2002). E-Government implementation and development is a high-priority issue on various countries' agenda. Some countries have surpassed others in online services that they offer to their citizens. Indicators on education and literacy show that, in Mozambique, only 7% of the total population was enrolled in secondary school. Indicators on communications and media show that, in Bangladesh, only 3.4% of the population has a telephone, while 9.3% are in the circulation of daily newspapers (UNCTAD, 2002).

Although e-government technologies have a potential to improve the lives of 80% of the world's population that lives in developing countries, the developed countries such as the U.S., Canada, UK, and Australia are so far leaders in e-government (Annual Global Accenture Study, 2002), reaping the vast majority of initial gains of e-government implementation. Actually, the gap between developed and developing countries in Internet technological infrastructures, practices, and usage has been wider rather than narrower over recent years. Besides the lack of sufficient capital to build up expensive national information infrastructure (NII) on which e-government is based, developing countries also lack the sufficient knowledge and skill to develop suitable and effective strategies for establishing and promoting e-government.

An estimated 500 e-government programs were launched in the year 2001 by governments worldwide (Palmer, 2002). E-Government strategies have had a tremendous impact on the way governments interact with their citizens. More than 75% of Australians file income taxes online, while the mayor of Minnesota receives about 13,000 e-mails from the public each week (Palmer, 2002). According to the 2002 Annual Global Accenture (former Anderson Consulting; AC) Study, Canada is the leader in e-government implementation. The remaining top 10 countries are (in order): Singapore, the United States, Australia, Denmark, the United Kingdom, Finland, Hong Kong, Germany, and Ireland. A survey by the



United Nations found that of its 190 member states, only 36 out of the 169 available Web sites had one-stop portals and less than 20 offered online transactions (Jackson, 2002). This clearly shows a big gap in current e-government implementation status in different countries. A more recent study using the United Nations data empirically proves that e-government development and implementation differ in three areas: income level, development status, and region (Siau & Long, 2005).

In comparison with other countries, the United States along with Australia, Singapore, and Canada are the early leaders in the march toward e-government. Governments in the United Kingdom, France, Germany, Spain, Norway, Hong Kong, and New Zealand have vowed to change their policies toward the implementation of e-government in order to take the full advantage of the digital information age. Other cautious implementers include Italy, Japan, Netherlands, and South

*Table 1. Main differences between developed and developing countries*

	Developed Countries	Developing Countries
<b>History and Culture</b>	<ul style="list-style-type: none"> <li>• Government and economy developed early, immediately after independence</li> <li>• Economy growing at a constant rate, productivity increasing, high standard of living</li> <li>• Relatively long history of democracy and more transparent government policy and rule</li> </ul>	<ul style="list-style-type: none"> <li>• Government usually not specifically defined; economy not increasing in productivity</li> <li>• Economy not growing or increasing productivity; low standard of living</li> <li>• Relatively short history of democracy and less transparent government policy and rule</li> </ul>
<b>Technical Staff</b>	<ul style="list-style-type: none"> <li>• Has a current staff, needs to increase technical abilities and hire younger professionals</li> <li>• Has outsourcing abilities and financial resources to outsource; current staff would be able to define requirements for development</li> </ul>	<ul style="list-style-type: none"> <li>• Does not have a staff, or has very limited in-house staff</li> <li>• Does not have local outsourcing abilities and rarely has the financial ability to outsource; current staff may be unable to define specific requirements</li> </ul>
<b>Infrastructure</b>	<ul style="list-style-type: none"> <li>• Good current infrastructure</li> <li>• High Internet access for employees and citizens</li> </ul>	<ul style="list-style-type: none"> <li>• Bad current infrastructure</li> <li>• Low Internet access for employees and citizens</li> </ul>
<b>Citizens</b>	<ul style="list-style-type: none"> <li>• High Internet access and computer literacy; still has digital divide and privacy issues</li> <li>• Relatively more experienced in democratic system and more actively participate in governmental policy-making process</li> </ul>	<ul style="list-style-type: none"> <li>• Low Internet access and citizens are reluctant to trust online services; few citizens know how to operate computers</li> <li>• Relatively less experienced in democratic system and less active participation in governmental policy-making process</li> </ul>
<b>Government Officers</b>	<ul style="list-style-type: none"> <li>• Decent computer literacy and dedication of resources; many do not place e-government at a high priority</li> </ul>	<ul style="list-style-type: none"> <li>• Low computer literacy and dedication of resources; many do not place e-government at a high priority due to lack of knowledge on the issue</li> </ul>

Africa. Though there has been significant progress made in developed countries in e-government implementation, many developing countries have been left behind with a long way to catch up. Table 1 summarizes differences between developed and developing countries in various aspects of government.

### **History and Culture**

The history and culture between developed and developing countries are different in many aspects. Developed countries are known more for their early economic and governmental growth, with many governments forming in the 1500s. Several of the developing countries have just recently gained their independence and still do not have a specific government structure. Culture is also a major difference between developed and developing countries. Religious and other backgrounds among citizens of developing countries prevent them from doing certain activities that are commonplace among developed countries. War is also notorious among some developing countries in the Middle East and Asia (e.g., Afghanistan), which depletes their economy and their government structure.

### **Technology Staff**

The in-house staff for most developed countries has been in existence and well-established. Although many of them are old, with half of the existing United States government information technology (IT) workers eligible to retire within the next three years (Ledford, 2002), the existing department is up and working. In

contrast, many developing countries do not have an IT department in place or have an IT department that is low-skilled and insufficiently equipped. Education in these countries is a major problem as well as lack of financial resources to pay skilled workers. This brings up major issues with the development and maintenance of systems.

Governments in many developed countries choose to outsource e-government projects. Developed countries often house companies specialized in e-government development within their borders, which makes outsourcing an affordable and convenient alternative. Though companies specialized in e-government development may be available in developing countries, the competitive systems development rates they charge may not be affordable for many developing countries. Even if outsourcing is affordable, without appropriate understanding of IT, many government officials of developing countries will find it difficult to specify requirements and resources to devote for the projects to be outsourced.

### **Infrastructure**

The size and abilities of infrastructures between developed and developing countries differ dramatically. For example, India's capacity for international telecom traffic reached just 780 Mbps by the end of 2000, which is a mere 1.4% of the capacity available in the neighboring country, China (Dooley, 2002). Developed countries have the infrastructure size and abilities to make Internet and telephone access available to almost all of their resi-

dents, with some populations over 300 million. The insufficient infrastructure of developing countries is due to economic conditions, war or destruction, which may have recently occurred, and governmental regulations of the telecommunications industry. A dilemma of government regulations also exists in India, where the sector has been a monopoly since its independence from Great Britain in 1947 (Dooley, 2002). All of these factors, unfortunately, hinder the progress of e-government in developing countries.

### **Citizens**

The difference of Internet accessibility between developed and developing countries is a reflection of the countries' infrastructure and telecommunication abilities. As mentioned previously, developing countries lack financial resources and government stability and structure to contain a sizable infrastructure. This results in low access to the Internet and telephone. One third of the world's population has never made a phone call, and 63 countries have less than 1% access to the Internet (ICeGD, 2002). In developed countries, almost every citizen has access to the Internet, and the rate of computer literacy surpasses that of developing countries.

### **Government Officers**

It is imperative that government officials understand and value e-government. The level of resources they are willing to allocate is dependent on their understanding of technology and the benefits that will ensue. In developed countries, most government officials use the Internet or com-

puters on a daily basis. Therefore, government officials in developed countries are familiar with technology and realize how efficient it is. This increases their dedication to allocating additional resources for further implementation. In developing countries, IT is a vague concept, and government officials are somewhat unwilling to allocate already scarce resources toward something they are not familiar with.

## **A CONCEPTUAL FRAMEWORK OF E-GOVERNMENT IMPLEMENTATION**

Most, if not all, e-government strategies and implementation plans in developing countries have been based on theories and experiences of developed countries (Huang, D'Ambra, & Bhalla, 2002). Feeling the pressure and demand from citizens to provide e-government services online, many developing countries have no choice but to hastily jump into the e-government implementation wagon by following e-government development strategies proposed and carried out by developed countries. However, due to substantial differences in many key aspects of e-government related technological and social conditions between developed and developing countries, e-government development strategies and experiences from developed countries may not be directly applicable to developing countries. Even in developed countries, about 20-25% of e-government projects are either never implemented or abandoned immediately after implementation, and a further 33% fail partially in terms of falling short of major

goals, causing significant undesirable outcomes or both (Heeks, 2000).

The Center for International Development at Harvard University, USA, supported by IBM, identified four key factors describing differences between developing and developed countries in terms of implementing e-commerce (Kirkman, Osorio, & Sachs, 2002). These four factors are adapted to study e-government in this research, which are termed as National E-Government Infrastructure (NeI) factors.

#### **NeI Factor 1: Network Access**

Network access is measured by the availability, cost, and quality of information and communication technology (ICTs) networks, services, and equipment. More specifically, it includes the following key elements:

- **Infrastructure Development.**

Infrastructure development is a necessity before countries can consider any large projects dedicated to e-government. Citizens must have access to services before any of the cost saving benefits will apply. Also, with a lack of back-end infrastructure, governments and their employees will be unable to move into a transactional process and further stages of e-government implementation.

- **Resources and IT Support.**

Outsourcing can be an option for countries to implement e-government. The private sector has an obligation to support governments throughout the world in their dedication to e-government.

Developing countries need financial discounts and support from the private sector to successfully develop applications due to their lack of resources and staff.

- **Utilization.**

The citizen utilization of the Internet is based on the access to the Internet and the Web site. Technical support must provide 24/7 access in addition to providing a better infrastructure so that more citizens can utilize the Internet. Much like in developed countries, citizen utilization is an important part of the cost savings for countries.

#### **NeI Factor 2: Network Learning**

Network learning concerns two key issues: (1) Does an educational system integrate ICTs into its processes to improve learning? and (2) Are there technical training programs in the community that can train and prepare an ICT workforce? Technical staffing and training is a major issue in e-government implementation. In developing countries, the problems lie in the lack of financial resources to hire full-time, in-house support and in the inability to find such support due to the lack of education in these countries. Outsourcing is an alternative; however, affordable and competent companies may not be available. Even if a country can find the finances to support an outsourcing project, stability and maintenance of the application are often difficult.

#### **NeI Factor 3: Network Economy**

Network economy concerns how businesses and governments use information and communication technologies to



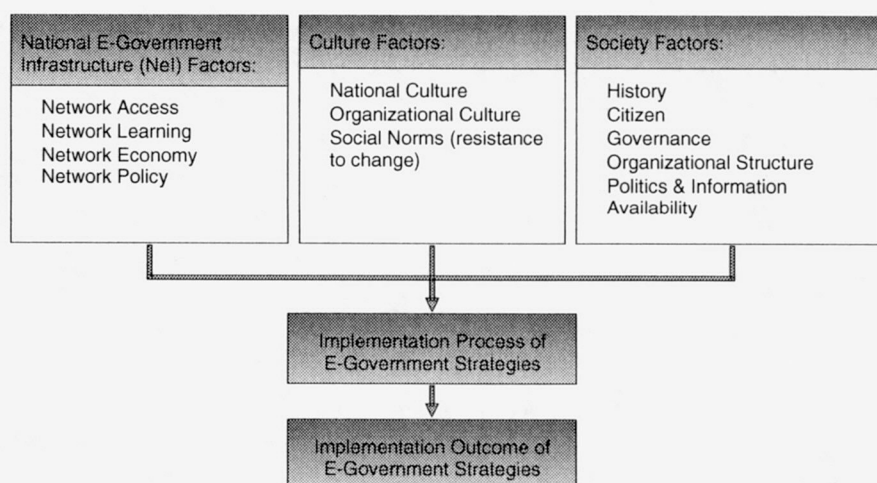
interact with the public and with each other. Key issues involved include collaboration, partnership, public-private sector partnership, e-community creation, and so forth. Boundary removal between different agencies in a government is a major issue in e-government. In many developing countries, government structure is undefined and destabilized by corruption and communism. Consequently, boundary removal and department collaboration is a difficult and slow process. In many countries, war and terrorism is a constant issue that disrupts government operations on a daily basis. Government departments must collaborate with each other, with private sectors, and with related communities in order for e-government to be implemented in an efficient way. Due to the low computer literacy and high cost of online access, long and unnecessary transactions need to be cut down in processes to al-

low users to quickly access documents and print them or fill them out online.

#### Net Factor 4: Network Policy

Network policy concerns the extent that the policy environment promotes or hinders the growth of ICT adoption and use. Some related key issues include legislations, laws, strategies (visions and missions), accountability, and so forth. Government agencies and departments must be accountable for their information and processes they support. It is essential for processes and duties to be segregated and responsibilities to be assigned to appropriate agencies and departments. These agencies and departments then need to work together to design their Web pages and IT flows. After implementation, they must have the abilities and be held accountable to support the Web pages and troubleshoot them. Governments must also

Figure 2. A conceptual research framework



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be accountable for their financial and accounting systems. Many developing countries have issues and economic problems due to their lack of reliable accounting systems.

### Culture and Society Factors

E-Commerce largely deals with business transactions in private sector whereas e-government deals with services in the public sector. Due to key differences between private and public sectors (e.g., Bozeman & Bretschneider, 1986; Caudle, Gorr, & Newcomer, 1991; Rainey, Backoff, & Levine, 1976), factors other than the ones identified by the previously-mentioned Harvard University e-commerce research project may also be important to e-government strategies and implementations. Prior relevant research suggested some key factors for e-government strategies and implementations, which can be used to identify differences in e-government between developed and developing countries. Those suggested factors include society factors like *history*, *citizens* (Huang, D'Ambra, & Bhalla, 2002), *government staff and governance* (Wimmer, Traunmuller, & Lenk, 2001), *organizational structure* (Baligh, 1994); and cultural factors like *national culture* (Hofstede, 1980, 1991), *organizational culture* (Hofstede, 1980; Schein, 1993), and *social norms* (Ajzen, 1988). Other than those suggested by literature, society factors like *politics* and *information availability* should also be considered. Developing countries are often less democratized with underdeveloped press communication resulting in

unbalanced and deficient information availability. These politics and information factors have significant impact on the speed of infrastructure establishment in developing countries, thus should be considered in creating e-government strategies.

Based upon the earlier literature review and discussion, a research framework incorporating critical success factors (CSFs) which influence e-government strategies and implementations is proposed and shown in Figure 2. Some CSFs identified in the proposed framework could be more important to developed countries than to developing countries, or vice versa. The framework can also be used to assess and guide the strategic development of e-government implementation in developed and developing countries.

### CASE STUDY

The following case study is used to demonstrate how the proposed e-government implementation framework can be used to analyze different e-government strategies adopted in developed and developing countries. It presents a snapshot of current e-government implementation in the U.S. (the largest developed country) and China (the biggest developing country in the world, with a focus on Shanghai - the biggest city and economic center of China) in comparing their e-government implementation strategy.

#### E-Government Implementation Strategy in the U.S.

The U.S., as the largest developed country, has one of the most advanced National E-Government Infrastructures

(NeIs) in the world, and it also has a long history and culture of democratic government structure and capitalist economic system. As a result, the U.S. government adopted the following three strategic principles in the implementation of e-government: (1) citizen-centered, not bureaucracy-centered; (2) results-oriented; and (3) market-based, actively promoting innovation (source: [www.firstgov.gov](http://www.firstgov.gov)). In short, e-government implementation strategy of the U.S. is market-based with the aim of serving and supporting citizens' specific requirements, which is assessed by clear and specific results.

The policy environment in the United States is an important consideration in understanding the strategy for e-government implementation. A complete set of laws relating to the development of e-government has been in the place already, including the Privacy Act, the Computer Matching and Privacy Protection Act, the Electronic Freedom of Information Amendments, the Computer Security Act, the Critical Infrastructure Protection, the Government Paperwork Elimination Act, and the Electronic Government Act (Relyea, 2002).

According to the white paper of the U.S. federal government's e-government strategy (2002 and 2003), more than 60% of all Internet users interact with government Web sites. Moreover, by leveraging information technology (IT) spending across federal agencies, the U.S. federal government will make available over \$1 billion in savings from aligning redundant investments. Federal IT spending in the United States exceeded \$48 billion in

2002 and \$52 billion in 2003. That level of IT spending provides enormous opportunities for making the transformation government into a citizen-centered e-government. Indeed, a good portion of current federal IT spending is devoted to Internet initiatives, yielding over 35 million Web pages online at over 22,000 Web sites. However, past agency-centered IT approaches have limited the government's productivity gains and ability to serve citizens. As a result, the federal government is determined to transform the way it does business with citizens through the use of e-government.

A September 2002 report from the Pew Foundation found that 71 million Americans have used government Web sites – up from 40 million in March 2000. A June 2002 United Nations report, *Benchmarking eGovernment: A Global Perspective*, rated the United States as the world leader in e-government on the basis of achievements over the last year. The United States Web portal, FirstGov.gov, is currently in stage 4 of its implementation (Hiller & Belanger, 2001), which integrates various government services internally and externally for the enhancement of efficiency, usability, and effectiveness. The FirstGov.gov attracts almost 6 million visitors a month, which is America's Gateway to more than 180 million Web pages from federal and state governments, the District of Columbia, and the U.S. territories. Named one of the "50 Most Incredibly Useful Web Sites" by Yahoo, July 2002, and to *PC Magazine's Top 100 Classic Sites*, March 2003, FirstGov.gov was most recently awarded

the prestigious *Innovations in American Government Award* for transcending traditional government boundaries.

In January 2003, the current e-government project managers met with the members of the 2001 e-government task force. This group of more than 100 government managers shared a number of insights about unresolved e-government challenges that the 2003 strategy should address. None of the identified challenges were involved technological barriers (as discussed earlier, the U.S. has one of the best Nels in the world so that its main strategic issues for successfully implementing e-government are largely non-technical issues). The challenges were centered around behavioral or policy changes needed, such as leadership support, parochialism, funding, and communication. Another challenge in 2003 is to physically migrate agency-unique solutions to each cross-agency e-government solution, reducing costs, and generating more citizen-centered results. The suggested solutions to these challenges include: establishing single sources of information, accessible by citizens in no more than three clicks (one-stop portals such as Recreation.gov and Regulations.gov); developing tools that provide a simple one-stop method to access government programs; and establishing common sets of standards for data collection and reporting.

In 2003 and 2004, the overall e-government strategy addressed the following areas:

- **Driving results and productivity growth:** IT and management reform in-

vestments that create an order of magnitude improvement in value to the citizen, especially in the areas of homeland security information sharing and knowledge flow;

- **Controlling IT costs:** Consolidating redundant and overlapping investments, enterprise licensing, fixing cost overruns, and competing away excess IT services charges;
- **Implementing the E-Government Act of 2002:** Including government-wide architecture governance and Web-based strategies for improving access to high quality information and services; and
- **Improving cyber security:** Desktop, data, applications, networks, threat and vulnerability-focused, business continuity, and privacy protection.

In summary, due to the relatively long history of democratic system, the main goals of the U.S. e-government focus on increasing effectiveness and efficiency of government work and, at the same time, reducing cost.

#### **Differences between the U.S. and China**

The first e-government implementation project in China began in 1994. According to the 11<sup>th</sup> Report of the Statistic of China National Network Development (RSCNND) by China National Network Information Centre (CNNIC), up to the end of 2002, the Internet users had achieved 59.1 million. It added up to 9% of the Internet users in the world (655 million). There were 371,600 Web sites,

among which 291,323 were in com.cn, 6,148 in gov.cn, 54,156 in net.cn, and 1,783 in org.cn. The number of computers linked to the Internet was more than 20.83 million.

Though China has maintained its position as the fastest growing economy in the world in recent years, there still exists a big gap in terms of National E-Government Infrastructure (NeI) between China and other developed countries like the U.S. Even though its economy has developed fast in the last decade, China is still in the process of transitioning from a centrally-controlled, planned economy to a market-based, capitalist economy. Using the proposed framework, we assess the e-government implementation status in China with a focus in Shanghai, the economic centre of China. Shanghai is one of the most developed regions/cities in China. If there exist differences between the U.S. and Shanghai in terms of NeIs and e-government implementation based on the proposed theoretical framework, the differences between the U.S. and China can be even bigger.

### 1. Network Access.

The information infrastructures in Shanghai have undergone mega changes and made some big progresses in recent years. Up to the beginning of year 2002, the bandwidth of Shanghai's Internet connection to the outside world was expanded to 2.5G; the network cable lines were stretched out for more than 550 kilometers that covered more than 99% of the whole city. The number of broadband Internet users in

Shanghai reached 125 thousand that year; the number of fixed phone users exceeded 6 million while mobile phone users exceeded fixed phone users. More than 3.1 million families had access to the Internet, which almost doubled the number of the previous year. However, even in Shanghai, one of the most advanced cities in China, subscribing to Internet service is still more costly in China than in developed countries such as the United States. In China, the charge of ISP (Internet Service Provider) is bi-directional; users pay for not only sending but also receiving information.

### 2. Networked Learning.

The development of the network learning is speeding up in Shanghai. The broadband of the main network of the Shanghai Science & Education Network (SSEN) was expanded to 1.25G from the 64k in its budding stage. The fibro-cable connecting the educational institutions in Shanghai was longer than 200 kilometers in the year 2001. More than 19 universities in Shanghai made their efforts to launch a common-shared database of the book information in these 19 universities' libraries. In this system, people could also search for the key academic periodicals and borrow through the Remote Borrowing/Lending Service. Up to the year 2001, the SSEN had a sea-sized collection of materials including: 12 thousand periodical databases, 200 thousand e-book resources, business sub-databases, science and technology sub-databases, digital periodical system data-



base, and so forth. More than 100 multi-functional databases provided a wide range of selections to the students' content. Furthermore, several universities in Shanghai got permission from the government to develop their "net-school" projects, which made the e-learning in Shanghai more professional and orderly. According to the *Human Development Report in 2001* by the United Nations Development Program (UNDP), which published the first Technical Achievements Index (TAI) in the world, China is listed as the 45<sup>th</sup> among the 72 countries whereas the U.S. is ranked 2nd in the list.

### 3. Networked Economy.

The information industry in Shanghai is keeping a fast developing momentum in recent years. The turnover of the information industry in Shanghai was 130.225 billion Yuan by its growth rate of 24.4%, which maintained its strategic position as Shanghai's first pillar industry. The proportion of the added value in this industry in the GDP amounted to 8.1% that was 0.7% more than the previous year. Among the information industry in Shanghai, the turnover of the information product manufacturing industry reached 101.3 billion Yuan, and its growth rate even hit 37.4%. The product sales percentage was also increased by 1.8% and summed up to 97.5%. Meanwhile the information services and software in Shanghai also achieved an output of 28.8 billion Yuan, a 52.2% increase from the previous year. The information industry in Shanghai has remained

in the top three throughout the whole country in terms of its scale, so much that it also draws worldwide attention. The network economy is thus greatly enhanced by the strategy Shanghai adopted — "To promote the Industrialization by Informationization." Among the 1,500 industry companies, 80% of them have set up IT departments; 97% of them have popularized the use of computer; 89% of them have become familiar with common software; 12% of them have conducted ERP; and 8% of them have implanted CRM. More than 500 marketplaces have adopted their MIS; most convenient chain stores and supermarkets have launched POS and also have them linked with each other to form a value-added network system. As a whole, China's e-commerce turnover is relatively small in size, accounting for only 0.23% of the U.S.'s annual e-commerce turnover.

### 4. Network Policy.

Network policy might be the weakest part of the four NeI factors for China. China has been transforming its economic system from the old Soviet Union's "planned economy" model to the capitalist's "market economy". The transition period, though seemingly to be on a right track, is painful and far from completion. The legal systems, laws, and regulations have been gradually established, yet they are far from maturing in managing the big developing economy, not to mention the completeness of its network economy policy and related laws.

Due to its relatively short history of modernized society and long history of feudal governmental system, China's democratic system and policy still have a long way to go even though they have achieved much more progress in the last decade. For example, to the year 2002, 12 policies, statutes, and regulations were taken into consideration by Shanghai municipal government. The major ones are listed as follows:

- Regulations on Shanghai's Informationization Projects Management;
- Detailed Rules of the Regulations on the IC Industry and Software Promotions in Shanghai;
- Decision on the Overall Informationization Construction in Shanghai;
- Suggestions on the Information Security in Shanghai;
- Management Measures on the Social Insurance Card System; and
- Management Measures on the Public Mobile System.

Besides these policies, statutes, and regulations, the implementations are also of the same importance. Shanghai's municipal government is dedicated in the administrations, supervisions, and mutual discussions of the confusions in order to achieve a better legal environmental situation.

#### 5. Culture and Society Factors.

Developed countries have a long history and culture of democratic governmental structure and capitalist economic

system, with many governments forming in the 1500's. Many developing countries have not completed its process of establishing an effective and transparent governmental structure as well as an efficient capitalist economic system. China has only started its "open door" policy in the late 1970s and "market-driven economy" in 1990s. The differences in history and culture, citizens, government officers, and technical staff between China and other developed countries like the U.S. are also noticeably large.

For example, China was under the feudal government system for nearly 5,000 years, where the dictator of the country, the emperor, has absolute power and possesses absolute wealth in the country. Only until the early 1910s, such a governmental structure was overturned. However, the very long history of ruling by an absolute powerful emperor would have an impact on modern governmental structure and system. Even now, national and provincial governments still have certain privileges to access and use valuable resources, such as financial, human, and production resources. Governmental agencies and organizations are generally more effective/powerful than private sectors in carrying out e-government implementations. The level of transparency of governmental management mechanism and decision-making process is relatively low. Because of those historical reasons and practically some advantages existing in governments, many university graduates and talents favor

to work for governments. As a result, governmental officers and/or technical staff in governments are generally more knowledgeable than those in the private sector using information technologies and systems in their daily work.

In summary, due to the differences discussed earlier in Nels and other social issues, it may not be feasible for private sector to play a leading role in e-government implementation; instead it may be governments to drive the progress of e-government implementation. Therefore, the e-government implementation strategy between the U.S. and China are largely different, which will be discussed next.

### **E-Government Implementation Strategy in China**

As analyzed earlier, due to the substantial differences in all four key aspects/factors of NeI and other CSFs between China and developed countries like the U.S., instead of adopting the e-government implementation strategies developed in the U.S. directly, China should adopt a strategy that fits well with its current position in terms of the four aspects of NeI and other CSFs as specified in the proposed assessment framework. For example, as the center of China's economy development, Shanghai's e-government implementation can function as a role model for other cities and provinces in China to follow up. Three specific e-government implementation strategies of Shanghai are specified. They are: (1) to increase the transparency of government work, (2) to provide the convenience and

better services to citizens and enterprises, and (3) to improve the efficiency of the government administration.

Compared with the U.S.'s e-government strategic principles — "citizen-centered", "results-oriented" and "market-based" (eGovernment Strategy, 2002, 2003), Shanghai has largely different strategic goals. The ultimate goal of e-government implementation could be quite similar, which is to improve the performance and efficiency of the government work and lead to better interactions/cooperation between government and the public and between the government and private enterprises. The unique feature of Shanghai's e-government strategy is to "increase the transparency of the government work". Other than achieving its usual goals, e-government in Shanghai is used as an instrument in expediting government transformation and conformity. Via the implementation of e-government, civil rights are concretized, bribability is minimized, and governance by law and democracy are enhanced.

In general, the e-government implementation in China as a whole is aiming to serve its overall economic development goal, which is to completely transform China's former Soviet Union style "planning economy" to "market economy". Such changes in the overall mechanism of the country will definitely have profound effects on e-government implementation strategy and practice. On the other hand, the U.S. has a long history of a market economy and democratic system. The government work is relatively much more transparent than that in China. Therefore,

“increasing the transparency of government work” may not seem to be important as it is to China.

In fact, based upon the successful experience of e-government implementation strategies in developed countries, China adopted a different e-government implementation strategy, which could be characterized as “government-driven and partnership with the private sector”. In this strategy, governmental departments consolidate all forces and resources available in a society (a city or a province) to lead the implementation of e-government while establishing partnership with private sector for the implementation purpose. So far, China’s e-government implementation is still at the stage 1 with some features in stages 2, 3, and 4 in some economically more developed cities and provinces, whereas the U.S. may already be at the stage 3, according to the five-stage model (Hiller & Belanger, 2001), and it has achieved some initial results. Chinese government perceived that the rapid development of the Internet in the U.S. resulted from effective and significant direct support and sponsorship from the government through the military, education, and government procurement policies, which has been regarded as a good example and effective means for driving the development of e-government in China by Chinese government.

The dominant role played by Chinese government generally fits well with the historical and cultural characteristics as well as the Nel of China. In fact, the Chinese government could be the only possible entity in the society that has

enough power and capability to coordinate all related government agencies, organizations, and private sectors as well as consolidate all available resources to effectively implement e-government. The government has also had successful experience in playing the leading role in modernizing its previous outdated telecommunication industry, which is perhaps the most successful contemporary example of China’s interventionist economic strategy. By mid-2001, China’s public switching capacity was 300 million circuits, which is the world’s largest. This was largely due to the supply-driven program of network rollout by the government with the growth rate of double digits through the 1990s (Lovelock & Ure, 2001).

The fund for e-government implementation is being mainly covered by governments both at central and provincial levels. For example, the investment by the central national government alone is reportedly standing at least over USD\$120 million (Lovelock & Ure, 2001). By 1998, China has set up 145 gov.cn domain names in China. According to the China Internet Network Center (CNNIC) annual report, the number of current gov.cn domain names is more than 5,864.

The Chinese government is speeding up the construction of network infrastructure in preparing for its completion of e-government implementation in 2005. Since the initiation of first e-government program “Digital Beijing”, which the Beijing Municipal Government used on computerization of administration procedure and e-education in 1994, the Chinese government has made much progress

on e-government. The purpose of e-government construction falls into three categories: building the internal network to handle government affairs at all levels and the external Web to handle business in connection with enterprises; public services and affairs between government; promoting 12 key services involving customs, taxation, finance, public security, social security, and agriculture and water resource; and accelerating the establishment of important databanks such as population and agricultural information. Services currently offered by government Web sites mainly include function/vocation introduction, government announcement/laws and regulations, government news, trade/regional information, work guide, and so forth (Source: Semi-annual Survey Report on the Development of China's Internet in January 2002, China Internet Network Center).

The Government Online Project (GOP) provides good evidence indicating the government's dominant role and support for e-government development in China, and it has three stages. Stage one focuses upon connecting 800-1,000 government offices and agencies to the Internet; stage two focuses on having government offices and agencies move their information systems into compatible electronic form; and stage three will occur sometime late in the decade when government offices and agencies become paperless.

The purpose of the GOP is to create a centrally accessible administrative system that collects and transports data to and from users, users being the public and

the enterprise system as well as government departments. In other words, the government's strategy for driving the "information economy" is to first launch the GOP by setting up formal government Web sites so that the public can acquire information and procure specific government services via the Internet. The focus then shifts to promoting office automation via government Web sites in order to cut down on excessive bureaucracy and, hence, expenses.

By the end of 2000, 80% of all government agencies, both local and national, had established Web sites. Some examples of the implemented e-government Web sites include:

- State Economic and Trade Commission State Administration of Internal Trade;
- Central Committee of the League Commission of Science, Tech & Industry for National Defense;
- State Administration of Foreign Exchange Control General Office of CPPCC;
- Supreme People's Court Supreme People's Procurator;
- Ministry of Agriculture Ministry of Civil Affairs;
- Ministry of Foreign Affairs Ministry of Foreign Trade and Economic Cooperation;
- Ministry of Information Industry Ministry of Justice;
- Ministry of Labor and Social Security Ministry of Land and Natural Resources;



- National Bureau of Oceanography National Intellectual Property Right Office;
- China Council for Promotion of International Trade China National Space Administration;
- CNNIC General Administration of Civil Aviation of China; and
- General Administration of Customs.

(Source: Ministry of Information Industry (MII) <http://www.mii.gov.cn/mii/index.html>)

They are only a few examples of Chinese e-government implementation projects. However, currently most Chinese people cannot pay their taxes, obtain their driver licenses, IDs, residence certificates, and so forth, from the government Web site, and the paperless government still has a long way to go.

The Chinese government, like all governments, is stricken with turf battles between ministries, commissions, and other organizations which all view the Internet as touching on their domain of authority or interest. As noted earlier, the Government Online Project was initiated in early 1999. The following two strategic projects were also planned and will be fully implemented in the near future. *Enterprise Online* is to encourage industries to aggressively adopt the full use of available Internet technologies, and to provide a greater degree of transparency. *Family Online* is to encourage increased use of network resources by families across China, including those in rural areas, and to bring the populace at large onto the government's new communications platform.

In summary, while China has achieved its fast economic development in the late decade, it has also started to move to a more democratic and transparent government system and mechanism. E-Government has become one key implementation mechanism for the government to achieve its goal of a more transparent government. China adopted an e-government implementation strategy different from the U.S. Based on its own economic, historic and social factors, China's e-government implementation is so far largely driven by government, rather than by market forces. In a relatively short time period, it has achieved some noticeable results although there is still a long way to go.

## DISCUSSIONS AND CONCLUSION

Although there are some prior studies published on e-government strategies and implementation (e.g., Carter & Belanger, 2005; Chircu & Lee, 2003; Glassey, 2001; Greunz, Schopp, & Haes, 2001; Huang, D' Ambra, & Bhalla, 2002; Wimmer, Traunmuller, & Lenk, 2001), to our knowledge, most if not all published e-government strategies are from the perspective of developed countries, not from the perspective of developing countries. Due to the considerable differences between developed and developing countries, the latter cannot directly adopt e-government strategies used in developed countries. For that reason, the current study intends to do some initial work to bridge this gap. It compares strategic issues and implementations of e-government

between developed and developing countries. More specifically, the following issues are addressed:

- Proposing a conceptual framework that includes the critical success factors influencing e-government strategies and implementations for developed and developing countries.
- Using a case study to illustrate how the proposed framework can be used to analyze different e-government strategies in a developed country (the U.S.) and a developing country (China).

Due to the substantial differences in four aspects of NeI and other CSFs as specified in the proposed framework, developing countries cannot and should not directly adopt developed countries' successful e-government implementation strategies. The proposed framework provides a clear structure and guideline for developing suitable e-government implementation strategy. Developing countries should consider their own positions in terms of CSFs as specified in the proposed e-government strategy framework and learn from other countries' successful e-government implementation strategies, and then work out their e-government implementation strategies that fit with their countries' characteristics and conditions.

Future studies can be conducted to collect national data in both developed and developing countries to empirically and statistically verify the proposed framework and study the relationships among the specified CSFs. More specifically, the importance of those CSFs to e-government

strategies and implementation can be ranked through using survey research methodology. More complicated relationships existing between CSFs can be determined using Structure Equation Modeling technique. In this way, CSFs for implementing e-government strategies can be specifically identified and validated. With the guidance of the proposed framework, e-government strategies and implementations in developing countries can be more effective and efficient.

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