The Success and Failure of E-Government Implementation in Developing Countries: Lessons and Recommendations for Thailand

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ABSTRACT

E-government, which is the use of ICTs in governments and public administration, has been widely utilized as a strategic tool to modernize structures, processes and the overall culture of public administration. However, there has been a high rate of e-government failure in developing countries. A main reason is that most currently published e-government strategies are based on successful experiences from developed countries. Realizing the pressure and demand from the public to provide e-government services online, many developing countries have no choice but to hastily follow e-government development strategies proposed and implemented by developed countries. This paper intends to do some initial work to bridge this gap. The purposes of this paper are to identify key factors for the success and failure of e-government implementation in selected developing countries, and to draw implications for e-government implementation in Thailand. According to the results of this qualitative study, the key factors for e-government success in developing countries include effective ICT infrastructure, adequate financial resources, qualified staff and adequate human resources training, multiple channels of access to e-government services, increased IT literacy among citizens, good collaboration among government departments and agencies, effective public-private partnership framework, increased citizens' awareness of e-government, necessary changes in laws and legislation, establishment of a clear vision and a comprehensive strategy that is tailored to local conditions, and strong leadership with sustained commitment at all levels.

Keynotes: E-government success, e-government failure, e-government implementation, developing countries, Thailand

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ความสำเร็จและความล้มเหลวของการนำรัฐบาลอิเล็กทรอนิกส์มาใช้ในประเทศกำลังพัฒนา

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บทคัดย่อ

รัฐบาลอิเล็กทรอนิกส์ได้ถูกนำมาใช้อย่างกว้างขวางในฐานะที่เป็นเครื่องมือเชิงกลยุทธ์ที่ทำให้โครงสร้าง กระบวนการ และวัฒนธรรมทั้งมวลของการบริหารรัฐกิจมีความทันสมัยยิ่งขึ้น เนื่องจากมีการนำกลยุทธ์รัฐบาลอิเล็กทรอนิกส์มาใช้กันอย่างแพร่หลาย จึงมีการศึกษาและงานวิจัยเกี่ยวกับกลยุทธ์รัฐบาลอิเล็กทรอนิกส์และการนำนโยบายรัฐบาลอิเล็กทรอนิกส์ไปปฏิบัติเป็นจำนวนมาก อย่างไรก็ตาม กลยุทธ์รัฐบาลอิเล็กทรอนิกส์ส่วนใหญ่ที่มีการเผยแพร่ในปัจจุบันมีที่มาจากประสบการณ์ที่ประสบความสำเร็จของประเทศพัฒนาแล้ว โดยแท้จริงแล้ว การนำนโยบายรัฐบาลอิเล็กทรอนิกส์ไปปฏิบัติในประเทศกำลังพัฒนานั้นต้องการการศึกษาที่เฉพาะเจาะจงและแนวทางที่เหมาะสม ดังนั้น วัตถุประสงค์ของบทความนี้ คือ เพื่อที่จะระบุปัจจัยหลักของความสำเร็จและความล้มเหลวของรัฐบาลอิเล็กทรอนิกส์ในประเทศกำลังพัฒนาที่เป็นกรณีศึกษา และเพื่อที่จะให้ข้อเสนอแนะเกี่ยวกับการนำนโยบายรัฐบาลอิเล็กทรอนิกส์ไปปฏิบัติในประเทศไทย

ผลการศึกษาเชิงคุณภาพนี้ชี้ให้เห็นว่าปัจจัยหลักที่นำไปสู่ความสำเร็จของรัฐบาลอิเล็กทรอนิกส์ในประเทศกำลังพัฒนา ได้แก่ โครงสร้างพื้นฐานทางเทคโนโลยีสารสนเทศและการสื่อสารที่มีประสิทธิภาพ ทรัพยากรทางการเงินที่เพียงพอ บุคลากรที่มีคุณสมบัติเหมาะสมและการฝึกอบรมทรัพยากรบุคคลที่เพียงพอ ช่องทางเข้าถึงบริการรัฐบาลอิเล็กทรอนิกส์ที่หลากหลาย ความสามารถด้านเทคโนโลยีสารสนเทศที่เพิ่มขึ้นของพลเมือง ความร่วมมือที่ดีระหว่างหน่วยงานภาครัฐ กรอบความร่วมมือระหว่างภาครัฐและภาคเอกชนที่มีประสิทธิภาพ ความตระหนักเกี่ยวกับรัฐบาลอิเล็กทรอนิกส์ที่เพิ่มขึ้นของพลเมือง การเปลี่ยนแปลงที่จำเป็นเกี่ยวกับกฎหมาย การกำหนดวิสัยทัศน์ที่ชัดเจนและกลยุทธ์ที่ครอบคลุมซึ่งมีการปรับให้เหมาะสมกับบริบทท้องถิ่น และความเป็นผู้นำที่เข้มแข็งพร้อมทั้งความรับผิดชอบอย่างต่อเนื่องในทุกระดับ

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1.Introduction

In the modern world, information and communication technologies (ICTs) have been playing an increasingly vital role in our daily lives. In the realm of government, ICT applications have dramatically changed government services as well as people's expectations of the quality and efficiency of government information sharing and public service delivery (Pascual 2003; Riley and Sheridan 2006). E-government, which is the use of ICTs in governments and public administration, has been widely utilized as a strategic tool to modernize structures, processes and the overall culture of public administration (Chen, Chen, Huang, and Ching 2006; Haque, Pathranarakul, and Phinaitrup 2012; Stahl 2005; Torres, Pina, and Acerete 2005). It represents 'the introduction of a great wave of technological innovation as well as government reinvention' (Ndou 2004, p. 1). E-government policy is currently undertaken throughout the world, bringing a new stage to public sector reform (Kudo 2008; Meijer and Zouridis 2006). As pointed out by Zouridis and Thaens (2005), 'the transformation of government into e-government turns out to be a global phenomenon' (p. 22). Many governments around the world have formulated their dreams, visions, and plans for introducing at least some forms of e-government. They have put critical information online, automated once cumbersome processes, and interacted electronically with their citizens (Riley and Sheridan 2006).

Due to the widespread adoption of e-government strategies, it has attracted more and more research interest and focus from theorists and researchers. This has led to a large number of studies and research on e-government strategies and implementation. However, most currently published e-government strategies are based on successful experiences from developed countries. Realizing the pressure and demand from the public to provide e-government services online, many developing countries have no choice but to hastily follow e-government development strategies proposed and implemented by developed countries (Chen et al. 2006). This is a main

reason why there has been a high rate of e-government failure in developing countries. In fact, e-government strategies and experiences from developed countries could not be directly applied to developing countries, because of the substantial differences between developed and developing countries (Chen et al. 2006; Heeks 2002). Different human, organizational and technological factors, issues and problems which pertain in developing countries require focused studies and appropriate approaches (Ndou 2004). Therefore, this paper intends to do some initial work to bridge this gap. The purposes of this paper are to identify key factors for the success and failure of e-government implementation in selected developing countries, and to draw implications for e-government implementation in Thailand. The findings and insights in this paper will provide a better understanding of e-government implementation in developing countries as well as offer lessons and recommendations for developing and refining e-government projects in Thailand.

Similar to other developing countries, Thailand has implemented e-government to solve the problem of government failures such as dwindling capabilities, overlapping, lack of integration, inefficiency, structural problems, inappropriate roles and size of the public sector, widespread corrupt practices, and so forth. The implementation of e-government has provided citizens with increasing access channels to government information and services, resulting in greater accountability and transparency. It has also enabled public agencies to deliver services to citizens more efficiently and effectively by simplifying government processes altogether (OPDC 2006). Nevertheless, Thailand has confronted many difficulties related to e-government implementation such as lack of public officials' readiness, absence of common ICT standards and central infrastructure, and the digital divide (Lorsuwannarat 2006). Therefore, the lessons drawn from e-government implementation in other developing countries, both in what works and what does not, will provide meaningful guidance for Thailand in solving existing problems, anticipating potential problems, and creating more robust and effective e-government projects.

The structure of this paper is as follows. Section 2 identifies the research objectives of this study. Section 3 provides literature review on e-government, including the definitions of e-government, the benefits of e-government, and the success and failure of e-government in developing countries. In Section 4, the National E-Government Infrastructure (NeI) framework (Chen et al. 2006), which is employed to analyze the case studies in this paper, will be described. Section 5 contains the methodology that underpins the research process. Section 6 presents the analysis of the case studies, consisting of two success cases and two failure cases. Each case study is presented in a common format: a brief background; the implementation of e-government; and the analysis of the four factors influencing e-government implementation. Section 7 summarizes lessons learned for Thailand, highlighting the factors critical to the success and failure of e-government implementation, and provides some suggestions for reducing the risk of e-government failure along with each factor. Section 8 identifies the limitations that have to be considered for future research. Finally, the paper offers some concluding remarks.

2.Research Objectives

The objectives of this study are three-fold: to understand the success and failure of e-government; to identify the factors critical to the success and failure of e-government implementation in developing countries; and to draw lessons and provide recommendations for e-government implementation in Thailand.

3.Literature Review

3.1 Defining E-Government

It is almost impossible to create a brief, workable definition of e-government, not only because it has very little theoretical foundation, but also because it is in a constant state of evolution (Bekkers and Homburg 2005;

Chadwick 2006). The meaning of e-government is also based on pragmatic experiences and visions (Bekkers and Homburg 2005; Chadwick 2006; Ndou 2004). Moreover, there are different national interpretations of the term (Chadwick 2006). Thus, e-government lacks a consistent, widely accepted definition. It is the term with a variety of definitions (Schelin 2007).

Some definitions are rather narrow, focusing on using ICT, particularly the Internet (Ndou 2004; Snellen 2005). Some scholars simply define e-government as 'digital governmental information or a way of engaging in digital transactions with customers'; for others, e-government simply consists of 'the creation of a web site where information about political and governmental issues is presented' (Ndou 2004, p. 3). These narrow ways of defining e-government restrict the range of opportunities it offers. As pointed out by Ndou (2004), one of the main reasons for e-government failure is related to the narrow definition and poor understanding of the concept, processes, and functions of e-government.

Others view e-government more broadly as efforts to transform government (Jansen 2005; Snellen 2005). For instance, Riley and Sheridan (2006) define it as 'government's use of ICTs to work more effectively, share information and deliver better services to the public' (p. 189). In the OECD definition of e-government, it is defined as 'the use of information and communication technologies, and particularly the Internet, as a tool to achieve better government' (OECD 2003, as cited in Bekkers and Homburg 2005, p. 7). According to Bekkers and Homburg (2005), e-government is 'the use of modern information and communication technologies, especially Internet and web technology, by a public organization to support or redefine the existing and/or future (information, communication and transaction) relations with 'stakeholders' in the internal and external environment in order to create added value' (p. 6). These broad definitions are more practical than narrow definitions since e-government is a multidimensional and complex concept, requiring a broad definition and understanding, in order to be able to design and implement successful strategies (Ndou 2004).

Although e-government is defined in various ways, the common theme behind those definitions is that 'e-government involves the automation or computerization of existing paper-based procedures that will prompt new styles of leadership, new ways of debating and deciding strategies, new ways of transacting business, new ways of listening to citizens and communities, and new ways of organizing and delivering information' (Pascual 2003, p. 5). Its ultimate goals are to enhance access to and delivery of public services to benefit citizens, and to help strengthen government's drive towards effective governance and increased transparency (Pascual 2003).

3.2 Benefits of E-Government

The benefits generated by e-government can generally be categorized into three main areas: the efficiency and effectiveness of public administration, the quality of public service delivery, and the openness and transparency of political processes (Haldenwang 2004; Ndou 2004).

3.2.1 Efficiency and Effectiveness of Public Administration

E-government can improve the efficiency and effectiveness of internal functions and processes of public agencies by interrelating different departments and agencies (Haldenwang 2004; Haque et al. 2012; Ndou 2004). Therefore, 'information can flow much faster and more easily among different governmental departments, reducing processing time, paperwork bottlenecks, and eliminating long, bureaucratic and inefficient approval procedures' (Ndou 2004, p. 4). The sharing of information can also increase internal efficiency by reducing time for using, storing and collecting data, decreasing labor costs and information handling costs, as well as enhancing the speed and accuracy of task processing (Bhatnagar 2002; Chadwick 2006; Ndou 2004). More importantly, 'e-government will help breaking down agency and jurisdictional barriers to allow more integrated whole-of-government services' (Chen et al. 2006, p. 24). This is because it facilitates both vertical cooperation and horizontal cooperation by providing the ability to share information across individual

bureaus, departments, ministries and levels of government in an electronic form, contributing to the flattening of hierarchical command structures (Bhatnagar 2002).

3.2.2Quality of Public Service Delivery

E-government is often employed primarily to enhance the quality of public service delivery in terms of time, content, and accessibility by improving the provision of information and reorganizing the transaction of public services (Chen et al. 2006; Haldenwang 2004; Ndou 2004; Pascual 2003). As pointed out by Ndou (2004), e-government provides citizens and businesses with access to a greater range of information collected and generated by government. It also expands the reach and accessibility of public services and allows citizens to experience a faster and more transparent form of access to government services (Chadwick 2006; Ndou 2004). Moreover, 'vertical and horizontal integration of services can be realized, enabling the integration of information and services from various government agencies to help citizens and other stakeholders get seamless services' (Ndou 2004, p. 4).

3.2.3Openness and Transparency of Political Processes

E-government can also lead to a fundamental change in the relationship between governments and citizens (Dada 2006; Haldenwang 2004; Ndou 2004). This is because the intensification of information and communication flows that characterizes e-government can strengthen the transparency and openness of political processes (Haldenwang 2004). According to Ndou (2004), e-government helps increase the transparency of decision-making processes. In many cases, it provides citizens with opportunities to directly participate in decision making by allowing them to provide their ideas and suggestions in forums and on-line communities. Furthermore, e-government makes it easier for citizens to participate in and contribute to governmental issues (Chen et al. 2006).

3.3 Success and Failure of E-Government in Developing Countries

An increasing number of e-government projects have been implemented in developing countries. This is because 'e-government – the use of information and communication technologies (ICTs) to improve the activities of public sector organizations – brings with it the promise of greater efficiency and effectiveness of public sector operations' (Heeks 2003, p. 2). More importantly, it has the potential to enable developing countries to reach development objectives faster and at a lower cost than conventional approaches (Basu 2004).

However, at present, most e-government projects implemented in the developing world fail either totally or partially. In a survey regarding the success and failure rates of e-government in developing countries, Heeks (2003) finds that the majority of e-government projects in developing countries fail, with 35 percent being classified as total failures and 50 percent as partial failures. Only 15 percent are considered as successes. This is a disturbing fact, particularly as developing countries have the limited availability of resources such as capital and skilled labor, and cannot afford to wastefully spend large amounts of money typical of such projects (Dada 2006; Heeks 2002).

Moreover, e-government failures could deepen the digital divide in developing countries and further marginalize them with the networking revolution (Heeks 2002; Ndou 2004). Developing countries which fail to embrace and use e-government as a tool for entering the global network and for addressing development needs 'will suffer pivotal disadvantages in form of information poverty that could further widen the gap in economic status and competitiveness' (Ndou 2004, p. 7). Since the failure of e-government in developing countries is a real and practical problem, it is vitally important to examine the reasons for success and failure of e-government initiatives in those countries (Stanforth 2007).

4.Conceptual Framework

This paper adopts the National E-Government Infrastructure (NeI) framework proposed by Chen et al. (2006) as the research framework to identify and analyze the factors critical to the success and failure of e-government implementation in selected developing countries. According to this framework, there are four factors which influence e-government strategies and implementation.

4.1 NeI Factor 1: Network Access

Network access is measured by the availability, cost, and quality of ICT networks, services, and equipment. More specifically, it includes the following key elements:

Infrastructure Development. Infrastructure development is a necessity before countries can consider any e-government projects. Citizens must have access to services before any of the cost saving benefits will apply.

Resources and IT Support. Outsourcing can be an option for countries to implement e-government projects. Developing countries may need support from the private sector in terms of financial and human resources to successfully develop applications due to their lack of resources.

Utilization. The citizen utilization of the Internet is based on the access to the Internet and the Web site. In addition to providing a better infrastructure, technical support must provide 24/7 access so that more citizens can utilize the Internet.

4.2 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 that can train and prepare an ICT workforce? Technical staffing and training is a major issue in e-government implementation.

4.3 NeI Factor 3: Network Economy

Network economy concerns how businesses and governments use ICTs to interact with the public and with each other. Key issues involved include collaboration between government departments and agencies, public-private sector partnership, and e-community creation. In order to implement e-government projects in an efficient way, government departments and agencies must collaborate with each other, with private organizations, and with related communities.

4.4 NeI Factor 4: Network Policy

Network policy concerns the extent that the policy environment promotes or hinders the growth of ICT adoption and use. Related key issues include laws and legislation, as well as strategies (visions and missions). Before implementing e-government projects, a complete set of laws relating to the development of e-government should be in place. Furthermore, the government needs to have the overarching vision which is translated into effective strategies.

5.Research Methodology

Due to time constraints, this study applies a qualitative research methodology by using secondary data, including published reports and papers, and related documents on e-government projects in developing countries. Content analysis is used for data analysis.

6.Case Studies

6.1 Success Case: CARD and E-Seva Projects in the State of Andhra Pradesh in India

6.1.1 Background

Andhra Pradesh is a large state in southern India. Until the mid-1990s, it was the least developed state in South India in economic terms, and had no

significant IT usage in the public sector. In 1998, Chandrababu Naidu won the election and became the state's Chief Minister. Soon after he took over, Naidu who was known as a reform-oriented leader started on the path of reaching out to people through performance and better governance. After the implementation of new initiatives with a major focus on e-government projects, Andhra Pradesh has made significant progress on economic, infrastructure, and social fronts. In terms of IT usage, it has become the most advanced in India (Krishna and Walsham 2005). As pointed out by Sudan (2002), 'Andhra Pradesh has emerged as one of the leading states in India in e-government applications, with the State Government implementing a comprehensive plan to utilize IT for better services to citizens' (p. 1). The most successful e-government projects in the state of Andhra Pradesh are the CARD and e-Seva projects (Basu 2004; Krishna and Walsham 2005).

6.1.2 The CARD and E-Seva Projects

CARD stands for the Computer-aided Administration of Registration Department project. Prior to the implementation of the CARD project, all sale, mortgage, and gift transactions for immovable property had to be registered through the manual system at the subregistrar's offices. Since large amounts of money were involved in transactions, the subregistrar's offices had been associated with corruption and unnecessary delays. Although the minimum time for completing the registration of a transfer document was supposed to be two weeks, it took five to six weeks in practice. In 1998, the registration office in Hyderabad – the capital city of Andhra Pradesh – was taken up for computerization as one of the earliest e-government projects. Since then, the age-old manual system of registering legal deeds has been replaced by a simple, transparent, and convenient system. The time required for registration is mostly less than half a day. After success in Hyderabad, the CARD project was extended to cover the entire state. By March 2003, the project was implemented in all the 387 subregistrar's offices across the state, marking the complete implementation of the project (Krishna and Walsham 2005).

As for the e-Seva peoject, it is a substantially more complex e-government project which is successfully implemented in a developing country context. The project's objective is 'to simplify and facilitate citizens' interaction with the multiple agencies involved in infrastructure and other basic services' (Krishna and Walsham 2005, p. 132). Before the launch of the e-Seva project, a citizen had to deal with multiple agencies at different offices in different locations for matters concerning payment of charges for utilities like electricity and water, property tax, birth and death registration, passport applications, vehicle permits, driving licenses, reservations of train tickets, and so on. Since processing was manual and slow, citizens normally had to wait in long queues. Moreover, the pain of having to deal with corrupt officers was multiplied because a citizen had to interact with many separate offices and staff. The e-Seva project was intended to solve these problems by providing comprehensive service at a large number of locations in Hyderabad (Krishna and Walsham 2005; Kshetri 2002). The first e-Seva center, established in 1999, was funded fully through state government resources. After successful operation for a year, the project was extended throughout the Hyderabad city. This has enabled a citizen to approach any center within the city for any of the needed transactions, instead of dealing with multiple agencies. By mid 2003, there were 36 e-Seva centers and 81 ATM payment points with a total of around 400 counters in operation. The project was planned to be extended to 117 municipalities with a total of 214 centers, making the service available to 85 percent of the population of the state (Krishna and Walsham 2005).

6.1.3Analysis.

NeI Factor 1: Network Access

Infrastructure Development: Before implementing the CARD and e-Seva projects, infrastructure development was considered as a major element of the e-government strategy. This was because the state government realized that without good ICT infrastructure, public services could not be electronically

delivered to citizens (Sudan 2002). According to Krishna and Walsham (2005), back-end infrastructure development in Andhra Pradesh involved 'bandwidth, or more generally, network connectivity, using fiber optics, hybrid coaxial, satellite, and wireless, with less expensive wireless technologies for expansion into rural areas' (p. 130). The effective back-end infrastructure has facilitated the networking of transactions (CARD) and different databases (e-Seva). In addition, the state government's emphasis on infrastructure development has enabled citizens to access public services more conveniently. As pointed out by Krishna and Walsham (2005), the CARD project was already extended throughout the state and the e-Seva project would be extended to cover the entire state in the next few years.

• ***Resources and IT Support:*** The CARD project's total capital cost was approximately US$7 million (Krishna and Walsham 2005). The implementation of this project was fully funded by the state government's budget (UNDP 2007). This illustrates that e-government projects can be successfully implemented at a minimum cost and without financial support from the private sector. Moreover, the CARD project proves that e-government could be implemented by just training the existing staff, without recruiting new IT staff or seeking the private sector's support in terms of human resources. Nonetheless, this project has involved private Indian firms with the technical competence in handling IT infrastructure and systems development issues (Krishna and Walsham 2005). On the other hand, the e-Seva project has involved a great deal of support from the private sector due to its complexity. Although the first center was totally funded through state government resources, the establishment of other centers involved private companies through a bidding process. The hardware and software operational components were outsourced to separate private companies who were paid a small charge on transactions put through their systems. These have helped provide a reliable infrastructure without any further investment by the government. However, the state government did not require the private sector's support regarding IT personnel, since all e-Seva

centers have been staffed by government employees who were trained to take over operations of the system (Krishna and Walsham 2005).

• ***Utilization:*** Due to the state's low per capita income, only a tiny fraction of the population in Andhra Pradesh can afford personal computers and Internet services. Moreover, the illiteracy rate of 54 percent means that a majority of the population lacks basic skills required to use the Internet (Kshetri 2002; Sudan 2002). However, the state government has succeeded in overcoming these barriers by providing various public services through the subregistrar's offices and the e-Seva centers which are available throughout the state, covering both urban and rural areas. In those offices and centers, the illiterate can also be assisted by well-trained government employees in doing transactions and accessing public services (Krishna and Walsham 2005).

Nel Factor 2: Network Learning

• ***Educational System:*** The state government has focused on education and research institutions to ensure a pool of highly skilled and qualified personnel for both the IT industry and e-government implementation. A new institution, the International Institute of Information Technology, devoted solely to IT education, was established in Hyderabad. This institute is unique in that it combines the best of university education with training by leading IT companies , such as IBM and Oracle. A Bachelor of Computer Applications Program was also introduced for the first time and is now available in 414 colleges in the state. Besides, a Master of Science in Information Technology Program has been structured in association with Carnegie Mellon University in the U.S. for providing high-quality world class IT education using distance learning methods. This program has produced a pool of skilled IT workforce. Apart from IT education and using computers for education, a strong emphasis has been placed upon thinking, analytical, creative, and innovative skills that will become increasingly important in the future (Sudan 2002).

• ***Technical Training:*** With respect to technical training programs, Andhra Pradesh has adopted a two-track approach. Firstly, awareness and training programs have been provided for Ministers, Secretaries, and Heads of Departments. Secondly, an attempt has been made to build up a team of public employees with IT knowledge and understanding. There have been various measures to build internal capabilities and skills through training in order to ensure that IT becomes an intrinsic part of the organizational culture in the government. A major measure is to equip the Dr. Marri Chenna Reddy Human Resources Development Institute of Andhra Pradesh with computer training facilities to cater to on-going training programs provided for public employees. This two-track approach has laid a solid foundation for capacity building within the government for planning and implementing e-government projects (Sudan 2002).

NeI Factor 3: Network Economy

• ***Collaboration:*** These two successful projects demonstrate that there has been good coordination between different government departments and agencies. To implement the CARD project, all transactions need to be at networked computer terminals. Creating a comprehensive database requires collaboration between governmental agencies involved in property sale registrations (Krishna and Walsham 2005; Sudan 2002). As for the e-Seva project, it requires much more coordination than the CARD project as it is one of the most complex e-government projects implemented in India. Its success has derived from good collaboration between various departments and agencies involved in infrastructure and other basic services. They need to cooperate with each other in creating networked databases and integrating several subsystems (Krishna and Walsham 2005).

• ***Public-Private Partnership:*** A major goal of the IT strategy in Andhra Pradesh is to synergize with the private sector. In particular, this meant cooperation with the Indian IT industry (Krishna and Walsham 2005). The CARD

project requires the private sector's cooperation in managing IT infrastructure and systems development issues. As for the e-Seva project, it clearly illustrates that in implementing complex e-government projects, the government needs to collaborate with the private sector to fund and support those projects. As pointed out by Krishna and Walsham (2005), 'e-Seva centers have been set up through government-private sector joint participation' (p. 132). The hardware and software infrastructure is maintained by private companies. For example, the services of GartnerGroup have been engaged for structuring the portal which integrates the delivery of citizen services on a one-stop mode. However, operation of the services is handled by public employees. The public-private partnership has led to the economic viability and long-term sustainability of both projects.

• ***E-Community Creation:*** To create e-community, the Chief Minister has skillfully used all the available media to communicate the importance of IT for the future development of the state, and to explain his e-government agenda. This has generated the enthusiasm in the public at large (Krishna and Walsham 2005; Sudan 2002). In addition, the state government has realized that merely communicating the vision with the citizens cannot guarantee success. It is also important to ensure that citizens are truly empowered by the usefulness of technology. Therefore, the government has attempted to make citizens acknowledge that the CARD and e-Seva projects can provide them with greater convenience (Kshetri 2002; Sudan 2002).

NeI Factor 4: Network Policy

• ***Laws and Legislation:*** Before the implementation of the CARD project, some legislation such as the Registration and Stamps Act, Urban Land Ceiling Act, Surplus Agriculture Land Act, Endowment Property Act, and the Property Act were revised to accommodate the new procedure (UNDP 2007). As for the e-Seva project which is much more complicated than the CARD project, it involves some changes in legislation related to 'authentication of users, security and protection of databases, auditing of transactions, receipting of payments

and privacy of citizen data' (Sudan 2002, p. 6). These two projects clearly demonstrate that the state government has put a strong emphasis on laws and legislation, which is a major foundation for implementing e-government projects.

• ***Strategies:*** Soon after being elected as the Chief Minister, Naidu announced a major thrust in information technology, with the explicit objective of radically improving ways of governance and development. The vision he had for following the successful e-government projects in Southeast Asian countries like Singapore has played a vital role in the success of the CARD and e-Seva projects (Krishna and Walsham 2005). Both projects were initiated by his overarching vision for the future. Based on his vision, the state government embarked upon a major exercise to initiate the Vision 2020, consisting of information technology and knowledge activities as major components (Sudan 2002). Then, external consultants such as McKinsey and KPMG were responsible for translating the vision of the state government into organizational and technical frameworks, and defining specific goals and targets (Krishna and Walsham 2005). The overarching vision and effective initiatives have contributed to the success of both e-government projects.

6.2 Success Case: E-Services Project in Malaysia

6.2.1 Background

As elsewhere, Malaysia has implemented e-government as a leading component of administrative reform and governance innovations (Siddiquee 2007). At present, Malaysia is one of the leaders in the implementation of e-government solutions. According to a survey on international e-government ranking list, Malaysia has improved tremendously since 2005. The country was ranked 157 out of 198 countries in 2005, but in 2007, the ranking leapfrogs to 25 (Wah 2007). The Malaysian government initiated the implementation of e-government by introducing the Multimedia Super Corridor (MSC) in 1996, in order to transform the nation into a knowledge-based economy. The

establishment of the MSC is seen as a milestone as it has accelerated ICT applications in the public sector to enhance its services for citizens. E-government is one of the seven MSC flagships (Ahmad and Othman 2007; Ambali and Hashim 2007; Shafie 2007; Siddiquee 2007). Its objectives are 'to bring dramatic improvements in the quality of government's interactions with its citizens by enhancing convenience, accessibility and efficiency of its services and also making government more responsive to the needs of its citizens' (Ambali and Hashim 2007, p. 441). Under the e-government flagship, seven main projects were identified as the core of the e-government applications. These projects include Electronic Services Delivery (E-services), Electronic Procurement (E-procurement), Electronic Labor Exchange (ELX), Generic Office Environment (GOE), Human Resource Management Information System (HRMIS), Project Monitoring System (PMS), and E-Syariah (Ahmad and Othman 2007; Karim 2003; Shafie 2007). According to Karim (2003), the first three projects have recorded significant success in the e-government program. However, this paper will only focus on the e-services project, which has resulted in significant improvements in service delivery (Karim 2003; Siddiquee 2007).

6.2.2The E-Services Project

This project is a pilot project that enables Malaysian citizens to conduct transactions through a one-stop service window and provides easier access to government agencies such as the Road Transport Department, the Ministry of Health, and utility companies (Ahmad and Othman 2007; Ambali and Hashim 2007; Karim 2003; Shafie 2007). The e-services scheme has effectively integrated various public services like the renewal of driving licenses, the registration of new vehicles, the payment of summons, the acquisition of health information, and the payment of utility bills (Ambali and Hashim 2007; Siddiquee 2007). As of April 2007, a total of 11 services are offered by e-services (Shafie 2007). Citizens are now allowed to access all these services electronically. They are provided with a variety of service delivery channels, such as the Internet,

Interactive Voice Response (IVR), and kiosk machines, with 24-hour access that is available anywhere at their convenience. Thus, they are no longer limited to carrying out these transactions at agency branches and utility offices (Ahmad and Othman 2007; Ambali and Hashim 2007; Karim 2003; Shafie 2007). In addition, 'the use of ICT allows for multiple language capabilities for each access device and the services offered are tailored to be more user-friendly, multimedia and help-responsive in addressing the needs of such segments of population as the elderly, the ICT disadvantaged and physically disabled persons' (Karim 2003, p. 196).

6.2.3Analysis

NeI Factor 1: Network Access

• ***Infrastructure Development:*** As a new entrant into the world of ICTs, Malaysia had given priority to the establishment of strong ICT infrastructure before venturing onto e-government development (Mohamed and Bakar 2004). For instance, to build an information superhighway, 'the MSC is linked to the world through a 10 Gb/s network that allows it to support its flagship applications' (Ramasamy, Chakrabarty, and Cheah 2004, p. 879). Thus, it can be said that ICT infrastructure in Malaysia is well-developed, particularly in major cities. Although the infrastructure is still lacking in rural areas, the government has been attempting to develop it so that e-services can be accessed nationwide (Basu 2004; Himmelsbach 2002). The government's emphasis on infrastructure development has played an important role in enhancing the success of the e-services project.

• ***Resources and IT Support:*** Since the Malaysian government has realized the potential benefits of e-services, it has provided the appropriate investments to make the e-services project work (Ahmad and Othman 2007; Hammim 2002). The project has been fully funded by the government (Ramasamy et al. 2004). In terms of IT staff, the government decided not to outsource the staffing issue to the private sector. Instead, government

employees have been provided with training programs to improve their IT knowledge and understanding, so that they would be able to handle operation of online services efficiently.

• ***Utilization:*** Since ICT penetration rate in Malaysia is still rather low, the government has aggressively encouraged wider ownership of personal computers through tax deductions and also provided ICT facilities in rural areas, such as the Internet village (Karim 2003). With respect to e-services, the government has provided better, wider, and more affordable access to the services by leveraging multiple channels (beside the Internet) such as interactive TV, IVR, and multimedia kiosks located in shopping malls (Ahmad and Othman 2007; Ambali and Hashim 2007; Karim 2003; Shafie 2007). These options have helped increase citizens' usage of e-services.

NeI Factor 2: Network Learning

• ***Educational System:*** In terms of IT literacy, Malaysia is considered advanced due to the government's proactive efforts in encouraging and promoting an IT-literate society through education (Karim 2003). The government has allocated a large amount of budgets for upgrading the Malaysian educational system and its facilities. Its efforts in the field of education to provide for the development of human resources include programs at all levels of education, ranging from primary level education to tertiary level education (Ramasamy et al. 2004). In addition, the government has collaborated with private firms to provide digital education nationwide for youth, students, and citizens at large (Ambali and Hashim 2007). In 2003, Malaysian Grid for Learning (MyGfL) was also endorsed by the current Prime Minister as 'the national e-Learning initiative to promote and support the lifelong learning agenda in Malaysia to accelerate the spill-over of e-government benefits and/or e-services to people, especially the poor, through the use of ICT' (Ambali and Hashim 2007, p. 442).

• ***Technical Training:*** Due to the eagerness in creating a society of knowledge workforce, the Malaysian government has placed a strong emphasis on the development of technical expertise (Basu 2004; Mohamed and Bakar 2004). As pointed out by Ramasamy et al. (2004), the government has provided various funds for the training and retraining of both government employees and IT workers. Those training programs have helped develop the human resource pool for the MSC in general, and for the e-government project in particular.

NeI Factor 3: Network Economy

• ***Collaboration:*** In implementing the e-services project, different government agencies have worked closely together to introduce online services in an attempt to increase the ease and efficiency of public services to citizens. The collaboration has involved not only technical issues but also shared customers (Ahmad and Othman 2007; Shafie 2007). The project coordinators have played a key role in facilitating planning for seamless services, clarifying data sharing arrangements, and addressing accountability issues (Ahmad and Othman 2007). The government is confident that with the full implementation of the e-services project, 'more and more services could be provided online where agencies at federal, state and local authority will collaborate relating to services and present them as one public service portal' (Siddiquee 2007, p. 86).

• ***Public-Private Partnership:*** The implementation of e-services in Malaysia has involved a great deal of cooperation between the government and the private sector (Ahmad and Othman 2007). As pointed out by Karim (2003), the e-services project, as well as other pilot projects under the e-government flagship, was set up through smart partnerships between local and international firms working together with the government in developing leading-edge solutions.

• ***E-Community Creation:*** To ensure acceptance and usability of e-services, the government has continuously attempted to encourage and promote an ICT culture (Karim 2003). This has been carried out by promoting

the effective use and awareness of ICTs to improve standards of living, learning, work and recreation, as well as people's access to online services (Ambali and Hashim 2007). The government has also endeavored to raise citizens' awareness of the benefits of e-services by means of various methods like brochure publications and demonstrations (Ahmad and Othman 2007; Shafie 2007).

NeI Factor 4: Network Policy

• ***Laws and Legislation:*** The Malaysian government has made necessary changes in legislation in parallel with the implementation of the e-services project (Karim 2003). Several policies and regulations have been introduced to support the implementation of e-services. Among the existing and future laws are Communications and Multimedia Act 1998, Digital Signature Act 1997, Computer Crimes Act 1997, Copyright Amendment Act 1997, Personal Data Protection 2004, Electronic Government Activities Act (proposed), and Electronic Transactions Act (proposed) (Ahmad and Othman 2007). These laws have helped increase Malaysian citizens' confidence and trust in using online services.

• ***Strategies:*** What differentiates Malaysia from other countries is the brainchild of the former Prime Minister Mahathir Mohammed, who conceived the idea of MSC in 1995. His overarching vision had resulted in the strong commitment to e-government among the government leaders, causing the role of the government in developing e-government initiatives to be expansive (Hammim 2002; Ramasamy et al. 2004). In particular, the government leaders have strong drive for providing e-services (Basu 2004; Himmelsbach 2002). They have translated the Prime Minister's vision into an action plan by putting in place the appropriate strategies to establish a successful implementation of e-services nationwide (Mohamed and Bakar 2004).

6.3 Failure Case: E-Government Initiative in Jordan

6.3.1 Background

The ICT initiatives in Jordan started with the REACH initiative, which was launched in 1999. REACH is an acronym for the actions to be taken in the following areas: Regulatory framework strengthening, Enabling environment (Infrastructure development), Advancement programs, Capital and finance, and Human resource development. It was the core ICT program initiated to transform the country into e-Jordan. The major goal of the REACH initiative is to support Jordan's emerging IT sector and maximize its ability to compete in local, regional, and global markets. To comply with REACH objectives, Jordan has undertaken major ICT programs, including the e-government initiative (CSDMS 2008; Elsheikh, Cullen, and Hobbs 2008).

6.3.2 The E-Government Initiative

The Jordan e-government initiative is a national program initiated by King Abdullah II in September 2001. It has been utilized as the major tool to modernize Jordanian public administration, which is organized in a bureaucratic hierarchy (Elsheikh et al. 2008). The e-government project is mainly aimed at 'using new technologies to facilitate inter- and intra-agency communication and cooperation, as well as providing information and services to its citizens more efficiently' (Elsheikh et al. 2008, p. 88). The long-term vision for the project is 'to create a society where electronic government is a contributor to the electronic and social development of Jordan' (Al-Omari 2006). The e-government initiative relies on five building blocks: introduction of e-services, infrastructure development, education and training, legal change, and fostering establishment of management and organizational framework (Ciborra and Navarra 2005; Elsheikh et al. 2008). The government agency which plays a key role in administering the e-government program is the Ministry of Information and Communications Technologies (MoICT) (CSDMS 2008; Elsheikh et al. 2008). After seven years of the implementation, the e-government initiative in Jordan

is classified as a partial failure, since the intended goals have not been achieved (CSDMS 2008; Ciborra 2005; Elsheikh et al. 2008). As pointed out by CSDMS (2008), the Jordanian government has failed to achieve most of its e-government objectives, particularly the goal of achieving rapid social and economic development. In addition, Jordan is still far behind many developing countries from utilizing ICTs in delivering public services and information online (Elsheikh et al. 2008).

6.3.3 Analysis

NeI Factor 1: Network Access

• ***Infrastructure Development:*** There are significant ICT infrastructure barriers to promoting e-government implementation in Jordan (Al-Omari 2006; CSDMS 2008; Elsheikh et al. 2008). They include 'high cost of telecommunications services and lack of an adequate civilian telecommunications "backbone" network nationwide' (Al-Omari 2006, p. 849). Thus, the telecommunications infrastructure is still inaccessible to most parts of Jordan (Elsheikh et al. 2008). Moreover, due to insufficient technical preparation and planning before implementing the e-government initiative, there has been duplication of effort and the installation of physical systems that do not connect efficiently and securely (Al-Omari 2006). As indicated by Elsheikh et al. (2008), 'developing an integrated approach to IT system architecture between ministries and across levels of government poses a serious challenge' to the Jordan e-government initiative (p. 95).

• ***Resources and IT Support:*** One of the significant problems hindering the success of Jordan's e-government project is the scarcity of financial resources, which has reduced government capacity to build up technical infrastructures as well as to effectively coordinate systems and implement the project (CSDMS 2008; Elsheikh et al. 2008). Furthermore, there is a shortage of human resources in many technical areas such as system developers, website developers, and network experts (CSDMS 2008). This is mainly due to low technical readiness and low computer literacy among public employees (Ciborra 2005). The lack of financial resources and IT personnel has compelled

the Jordanian government to seek a great deal of support from external donors and private firms for implementing the e-government initiative (CSDMS 2008; Elsheikh et al. 2008).

• ***Utilization:*** Another significant barrier to the introduction of e-government in Jordan is the low level of Internet penetration, '0.7 percent of population in terms of account subscribers and 1.9 percent in terms of users' (Al-Omari 2006, p. 849). This problem is exacerbated by the relatively high cost of Internet access and telecommunications services (Al-Omari 2006; CSDMS 2008). In spite of low accessibility to the Internet, the Jordanian government has not established online accessed points for providing public services (Al-Omari 2006; Elsheikh et al. 2008).

NeI Factor 2: Network Learning

• ***Educational System:*** Since the Jordanian government has not placed a strong emphasis on creating e-society through education and integrating ICTs into educational processes, there is a shortage of skilled workers (Elsheikh et al. 2008). Therefore, the educational system needs to be reformed 'both to provide the resources for e-government development and to provide Jordan's IT sector with the skills necessary to become a leading contributor to economic growth and job creation' (Al-Omari 2006, p. 849).

• ***Technical Training:*** There is the widespread lack of computer literacy among Jordanians. This has limited the participation of citizens, businesses, and government agencies in e-government (Al-Omari 2006; CSDMS 2008; Ciborra and Navarra 2005; Elsheikh et al. 2008). Although the Jordanian government has attempted to strengthen capacity and knowledge on ICTs and e-government throughout the region, more needs to be done (Elsheikh et al. 2008). At present , there are insufficient IT training programs in both the public sector and the community (Ciborra 2005; Elsheikh et al. 2008). Thus, the government needs to put more emphasis on capacity building through technical training programs, which could help build confidence and boost understanding among both

citizens and public employees of the potential benefits offered by e-government (Al-Omari 2006; CSDMS 2008; Elsheikh et al. 2008).

NeI Factor 3: Network Economy

• ***Collaboration:*** To implement the e-government project, the MoICT is responsible for coordinating a number of activities with all other government ministries and departments (Ciborra and Navarra 2005). Nevertheless, 'each government agency is still in charge of its own digital transformation towards a more "customer-centric" approach in the delivery of services by means of appropriate technology, knowledge management and skilled staff' (Elsheikh et al. 2008, p. 89). Due to 'the de facto independence and autonomy of the Ministries' and 'the different practices in systems implementation', it is difficult for those government agencies to collaborate with each other (Ciborra 2005, p. 264). This lack of coordination is also exacerbated by the resistance to information and databases sharing among public agencies (CSDMS 2008).

• ***Public-Private Partnership:*** To improve the delivery of public services, the government has consulted with and asked for feedback and suggestions from the private sector and other non-governmental organizations. In other words, the e-government project has been led by the private sector, in partnership with the government. These relations create innovative public-private partnerships (Ciborra and Navarra 2005; Elsheikh et al. 2008).

• ***E-Community Creation:*** A lack of citizen awareness and participation is another major barrier to the successful implementation of e-government in Jordan. Currently, the general population and the public and private sectors have very limited knowledge of what e-government is and how to benefit from it (Al-Omari 2006; CSDMS 2008; Elsheikh et al. 2008). Hence, it is necessary for the government to employ various measures to increase citizen awareness of the benefits of e-government.

NeI Factor 4: Network Policy

• ***Laws and Legislation:*** Since the enabling legal framework for e-government deployment does not currently exist in Jordan, the government

must develop effective legal and regulatory measures to support its e-government initiative so that it could be successfully implemented (Al-Omari 2006). Laws that make electronic processes legally equivalent to paper-based processes, such as laws on electronic transactions and electronic signatures, need to be created. These supportive laws and legislation can provide 'a secure computing environment to reduce the risks of unauthorized access that could lead to fraud, sabotage, and crimes associated with invasion of information systems and breaches of security and privacy' (Elsheikh et al. 2008, p. 94).

• ***Strategies:*** The vision of the Jordan e-government initiative is 'to complement economic and social development by providing access to government e-services and information for everyone in the Kingdom irrespective of location, economic status, IT skills, and educational level' (Elsheikh et al. 2008, p. 88). Due to this clear vision, the top of the state (the King himself and the MoICT) have expressed high level of commitment to the e-government initiative (Ciborra 2005; Ciborra and Navarra 2005). The Jordanian government has accordingly launched a set of strategies and facilitated the required changes for the transformation through e-government (Elsheikh et al. 2008). However, the strategies for implementing e-government were not well-defined, since they do not respond to the country's and the citizens' needs and match their profiles. Moreover, the government has launched several e-initiatives at the same time, including REACH, e-government, e-learning, and e-health. This has led to a loss of focus on any specific initiative, despite the fact that all initiatives that have been introduced are completely new to both the government and the citizens (CSDMS 2008).

6.4 Failure Case: SARI Project in the State of Tamil Nadu in India

6.4.1 Background

Tamil Nadu is a rural state in southern India. Due to the barriers of distance and location to the provision of public services, the telecenters or

kiosks providing e-government services were established in 12 out of the 84 villages (Kumar and Best 2006). According to Kumar and Best (2007), telecenters or kiosks are 'places or centers that provide shared public access to information and communications technologies for meeting the educational, social, personal, economic, and entertainment needs of the community' (p.1). They have been utilized as the primary instruments for providing e-government services to poor communities in rural areas where the ICT infrastructure is inadequate and the costs of individual access to the Internet are relatively high.

6.4.2 The Sustainable Access in Rural India (SARI) Project

The SARI project, which was initiated in November 2001, is one of the first e-government projects in India aiming at establishing commercially sustainable telecenters in rural communities (Kumar and Best 2006; Kumar and Best 2007). The goal of the project is to promote 'rural social, economic, and political development by providing comprehensive information and communications services through computer and Internet kiosks in rural communities' (Kumar and Best 2006, p. 2). At its peak, this project established over 80 kiosks or telecenters in rural communities in Melur Taluk (an administrative unit within the district) of Madurai district in Tamil Nadu. A majority of the kiosks are owned and operated by local entrepreneurs, while some are operated by self-help groups from a local non-governmental organization. Those Internet kiosks offered the following e-government services: the applications for online birth, death, income, and community certifications; the ability to apply for senior pensions; and a program allowing citizens to lodge complaints and grievances with senior district officials and with the Chief Minister's cell in the state capital. All of these services were implemented through online forms which 'were completed by the community member and transmitted electronically to the local taluk office for processing' (Kumar and Best 2006, p. 2). The SARI project was successful in achieving its objectives of delivering e-government services for over a year. Despite the initial success, it failed to

sustain operation over the long term. Since usage over time was low and the poorest people were not using the services, the e-government services offered by the kiosks had come to an end by December 2002 (Kumar and Best 2006). Thus, this e-government project can be classified as a partial failure under the type of "sustainability failure."

6.4.3 Analysis

NeI Factor 1: Network Access

• ***Infrastructure Development:*** To implement the SARI project, a Wireless-in-Local Loop (WLL) technology was used to provide Internet connectivity to rural villages. This Internet connectivity was offered to local communities at the kiosks. Nevertheless, this project 'did not aim at computerizing or transforming the back office operations connected with the processing of the e-government applications in the taluk office' (Kumar and Best 2006, p. 3). The taluk office simply received the applications transmitted electronically through the 12 kiosks, and then processes and delivered the services in the usual way; in other words, it still maintained manual hand written registers. Hence, the only procedural change that occurred in the taluk office was at the front end (Kumar and Best 2006). The lack of back-end infrastructure development made the e-government services ineffective.

• ***Resources and IT Support:*** There was a lack of sufficient resources for sustaining the project. Inadequate financial resources had reduced the state government's capacity to develop technical infrastructures and to provide technical training to the government officials in the taluk office (Kumar and Best 2006). Moreover, the kiosk operators lacked long-term financial viability (Kumar and Best 2007). In terms of personnel, the taluk office staff lacked IT knowledge and skills. As pointed out by Kumar and Best (2006), 'the government officials were not trained adequately to understand and provide this new mode of service, and those who did gain knowledge and experience with time were shifted frequently to new locations' (p. 9).

• ***Utilization:*** Due to citizens' low accessibility to the Internet, a number of telecenters were established to provide public services online. However, telecenter services were unaffordable for low-income people, who are a majority of the population in Tamil Nadu. As indicated by Kumar and Best (2007), the kiosks had served mainly those sections of the communities that enjoy a higher social status and are economically better off. This is the main reason why kiosk users constituted only 3-14 percent of the village population. If kiosk services had been provided more cheaply, the kiosks would have been more effective in serving a broader set of community members.

NeI Factor 2: Network Learning

• ***Educational System:*** The high rate of illiteracy in the area of the project implementation is another reason why the project failed. According to Blattman, Jensen, and Roman (2003), the low level of education constitutes a substantial impediment in access, use, and affordability of telecenter services. This indicates that the state government of Tamil Nadu has not focused on both creating e-society through education and integrating ICTs into the educational system.

• ***Technical Training:*** Initially, the SARI project provided training related to the e-government services to the taluk office staff. However, the training had been cancelled after the transfer of the Tahsildar (head of the taluk office). This was partly 'due to a lack of sufficient resources with the private-sector implementing partner responsible for the training' (Kumar and Best 2006, p. 9).

NeI Factor 3: Network Economy

• ***Collaboration:*** The effective e-government services provided through the kiosks were birth certificates and old age pensions. This was due to the fact that these two services required little interaction with other levels in the government hierarchy. In contrast, other services were not effective since they required coordination between different levels (Kumar and Best 2006). This indicates the lack of coordination among public agencies, particularly those at different hierarchical levels.

• ***Public-Private Partnership:*** The SARI project had developed institutional partnerships with many public and private agencies for delivering its services, such as the Indian Institute of Technology, Georgia Institute of Technology, and n-Logue Communications. Nonetheless, there was a lack of proper evaluation and monitoring of the private project partners' performance. This is another major reason for the project's failure (Kumar and Best 2006).

• ***E-Community Creation:*** Since a telecenter is a new resource in the community, the SARI project is intrinsically concerned with creating demand (Blattman et al. 2003). The kiosk operators played a crucial role in generating awareness of telecenter services as well as promoting adoption and use of those services (Kumar and Best 2006; Kumar and Best 2007). However, wider diffusion of the kiosks among rural communities which have a low socio-economic status requires local champions from within those communities , not just the kiosk operators who seem to be able to influence mainly those from their own communities. The absence of local champions from within the communities is one of the main reasons for low usage of the kiosks among local citizens (Kumar and Best 2007).

NeI Factor 4: Network Policy

• ***Laws and Legislation:*** There is no information indicating that the state government has established the enabling legal and regulatory framework for the implementation of e-government projects. The lack of laws that make electronic processes legally equivalent to paper-based processes might make citizens reluctant to use telecenter services. This may be another cause of the project's failure.

• ***Strategies:*** The SARI project initially succeeded since it was established on a solid foundation with the full support of the state government in the form of written orders for starting its operations in the area. Another major reason for the project's initial success was the strong commitment of a dedicated Tahsildar, who was instrumental in motivating the staff to provide

e-government services. Nevertheless, his transfer in January 2003 contributed significantly to the ultimate failure of the project. This was because the new official, who was appointed to replace him, did not have the same level of commitment for coordination and monitoring of the project (Kumar and Best 2006). In addition, the strategies for implementing the SARI project were not driven by the specific needs of communities (Blattman et al. 2003).

7.Lessons and Recommendations for Thailand

Even though the ability of Thailand to reap the full benefits of e-government is still limited and is largely hampered by various barriers, the case studies provided above show that Thailand could take advantages of the ICT revolution by taking into account the critical factors contributing either to the success or failure of e-government. The case analysis provides the Thai government with many valuable and important lessons regarding the factors critical to the success and failure of e-government implementation. In fact, there are a large number of key factors for e-government success and failure (Gil-Garcia and Pardo 2005). However, the analysis above falls within some of those factors as follows:

7.1 ICT Infrastructure

The development of basic ICT infrastructure that is capable of supporting and enabling the implementation of e-government is an important key to e-government success (Basu 2004; McClure 2001; Ndou 2004). For e-government to succeed in Thailand which has suffered from the digital divide, it is first required to establish the necessary technological infrastructure, so that all citizens can have equal access to ICTs (Basu 2004; Dada 2006; Jaeger and Thompson 2003). In addition, since the Thai public sector still lacks common ICT standards and central infrastructure which are essential for e-government projects requiring information sharing, the more effective back-end

infrastructure needs to be developed (Lorsuwannarat 2006). As shown in the analysis of success cases above, the Andhra Pradesh and Malaysian governments' strong emphasis on back-end infrastructure development has enhanced their public agencies' capabilities to provide seamless online services and transactions.

7.2 Financial Resources

The feasibility of having a successful e-government project directly depends upon 'the governments' overall ability and readiness to spend on the necessary information technology and related costs' (Basu 2004, p. 116). E-government failures in Jordan and Tamil Nadu clearly indicate that the government's inability to provide adequate financial resources is a major hurdle for e-government success. Thus, the Thai government must allocate sufficient funding for e-government by taking into account the specific needs of e-government projects, particularly those involving long-term funding requirements and collaboration among various agencies (Basu 2004; Gil-Garcia and Pardo 2005). Alternatively, some e-government projects may be outsourced in order to cut costs and thereby achieve more within financial constraints (Ebrahim and Irani 2005).

7.3 Human Resources

The success of e-government projects in Andhra Pradesh and Malaysia illustrates that qualified staff and training schemes are necessary conditions for the existence of successful e-government initiatives (Dada 2006; Gil-Garcia and Pardo 2005; Ndou 2004). The required skill sets include not only ICT skills, but also managerial skills necessary to implement the reform and change in public administration (Culbertson 2005; Settles 2005). Since the Thai public sector has been characterized by the chronic lack of qualified personnel and inadequate human resources training, public agencies need to identify and provide the basic and specialist skills needed for effective e-government through vocational training for all public employees (Leitner and Kreuzeder 2005; Lorsuwannarat 2006; Ndou 2004).

7.4 Utilization of the Internet and Multiple Access Channels

Delivering e-government services requires the high level of Internet penetration among citizens. However, in each of the four cases analyzed above, there is a low penetration of the Internet. The main difference between the success cases and the failure cases is the availability of multiple channels of access. Therefore, since Thailand has only 14.7 percent of population having access to the Internet and 7.6 percent having personal computers, e-government should not be limited to interaction through the Internet (UN 2008). Multiple channels of access to e-government services, such as interactive digital television, mobile devices, one-stop service centers, and public kiosks, are essential to supplement Internet use (Bhatnager 2002; Haldenwang 2004; Jaeger and Thompson 2003; McClure 2001; Ndou 2004; Pascual 2003).

7.5 Citizens' IT Literacy

The case analysis clearly indicates that the success of e-government depends largely on citizens' IT literacy, which is necessary for enabling people to use and benefit from e-government applications. Thus, education and training initiatives must be considered as priority actions (Cloete 2005; Ndou 2004). Due to the fact that there is the lack of IT literacy among a majority of Thai people particularly those in rural areas, the government should invest more to develop human resources for ICT 'through increased use of ICT in educational institutions and through academic and training programmers that improve the employability of educated youths in the ICT sector' (Basu 2004, p. 118). Computer literacy training programs provided to community members in rural areas are particularly important, since they can enable the disadvantaged to use new facilities for accessing electronic information and services. This can help reduce the digital divide (Cloete 2005; Ndou 2004; Settles 2005).

7.6 Collaboration among Government Departments and Agencies

As shown in the cases of Andhra Pradesh and Malaysia, good collaboration among government departments and agencies on developing systems to enable appropriate data sharing is critical to the success of e-government projects, particularly in interorganizational projects (Gil-Garcia and Pardo 2005; Jaeger and Thompson 2003). If government agencies often act as independent and autonomous units without taking into account what other agencies are doing like in the Jordan case, efforts to use technology to integrate or share data across multiple agencies for providing seamless services can be constrained (Gil-Garcia and Pardo 2005). Moreover, NECTEC – the central agency responsible for the implementation of e-government initiatives in Thailand – needs to play a more active role in providing necessary guidance, facilitating planning for seamless services, clarifying data sharing arrangements, and addressing accountability issues.

7.7 Public-Private Partnership

The cases of e-government projects in Andhra Pradesh and Malaysia also illustrate that collaboration between the public and private sectors is an important element in the e-government development process. This is because partnerships with the private sector can provide resources, skills, and capabilities that the government lacks (Bhatnagar 2002; Heeks 2003; Ndou 2004; Pascual 2003). However, to avoid the failure of e-government caused by a lack of proper evaluation and monitoring of private partners' performance like the case of Tamil Nadu, the Thai government needs to develop an effective e-government public-private partnership framework which covers all aspects of e-government development and implementation.

7.8 Citizens' Awareness

A major success factor of e-government projects in Andhra Pradesh and Malaysia is the governments' determined effort to create e-community by

raising citizens' awareness of e-government. According to Lorsuwannarat (2006), most Thai people do not use e-government for many reasons including unfamiliarity with ICT and concerns about privacy and security of information. Therefore, the Thai government should attempt to make citizens, especially those in rural areas, aware of what e-government is and how to benefit from it. The government should also lead the way to making Thai people confident that electronic transactions are safe and effective (Basu 2004). Various measures , such as promotional campaigns and digital playing fields, can be employed to increase citizens' awareness of e-government (Dada 2006; Zouridis and Thaens 2005).

7.9 Laws and Legislation

As evident from the cases of Jordan and Tamil Nadu, restrictive laws and regulations developed prior to or in ignorance of technologies relevant to e-government can affect the success of e-government projects. An effective strategy for overcoming these challenges is to make necessary changes in legislation in parallel with the implementation of e-government (Gil-Garcia and Pardo 2005). In Thailand, a range of laws and regulations related to electronic activities have already been enacted. However, a majority of Thai people are still not confident of using online services due to concerns about privacy and security of information (Lorsuwannarat 2006). Therefore, to make e-government services gain widespread acceptance, the government needs to establish protections and legal reforms to further ensure the privacy, security and legal recognition of electronic interactions and electronic signatures (Ebrahim and Irani 2005; Ndou 2004).

7.10 Strategies

Another important factor for the success of e-government initiatives is the establishment of a clear vision and a comprehensive strategy that is not only benchmarked on global best practices, but also tailored to local realities (Ndou

2004; Pascual 2003). The cases of Jordan and Tamil Nadu clearly show that e-government strategy which is not sensitive to local conditions can lead to failure. In addition, strong leadership and the demonstrated commitment of both politicians and public sector managers are critical to the success of e-government (Leitner and Kreuzeder 2005; McClure 2001; Ndou 2004; Pascual 2003). As analyzed above, a major factor behind the success of e-government in Andhra Pradesh and Malaysia is the presence of strong leadership with sustained commitment at all levels, from the political to the administrative. Therefore, to make e-government successful in Thailand, political leaders need to have the overarching vision and strong commitment. They have to make e-government a priority and guide transformation by putting it in a broader context. Then administrative leaders need to play a vital role in translating political vision into an effective strategy.

8. Limitations and Future Research

This paper has some limitations that need to be addressed. First, the notions of "success" and "failure" are highly subjective – viewed from different perspectives, one person's failure may be another's success (Dada 2006; Heeks 2002). Thus, the case studies analyzed in this paper are limited by the subjectivity of evaluation. Another limitation is that this paper is based on a small number of case studies. Hence, future research should be conducted to collect national data in other developing countries to empirically and statistically verify the NeI framework. The last limitation is that there are critical success factors other than the NeI factors, such as cultural and social factors, that may also be important to e-government implementation. Those factors, which are not considered in this paper, provide opportunities for additional research.

9.Conclusions

Nowadays, many governments in the developing world 'are moving away from traditional bureaucratic emphasis on departmental silos and information isolation to a new paradigm that emphasizes coordinated network building, external collaboration, and customer services' (Schelin 2007, p. 124). A strategic tool which has been widely utilized by developing countries to transform their public sectors into this new paradigm is e-government. While e-government presents great opportunities to developing countries for improved government performance and increased citizen satisfaction, it poses a range of challenges which need to be addressed (Krishna and Walsham 2005; Ndou 2004; Sudan 2002). Although those challenges have caused most e-government projects in developing countries to fail, the potential for e-government in those countries does exist, as the cases of Andhra Pradesh and Malaysia have shown.

Similar to other developing countries, Thailand has implemented e-government in the hope of achieving many promised benefits, including social and economic development. However, e-government in Thailand has been facing a number of challenges. Therefore, in order to avoid e-government failure, the Thai government should consider Thailand's positions in terms of the NeI framework and learn from other developing countries' e-government experiences, and then work out e-government implementation strategies that are appropriate for the country's unique conditions, needs, and obstacles (Chen et al. 2006; Karim 2003; Ndou 2004). Above all, in trying to achieve development goals through e-government, the Thai government should consider projects that would deliver the most benefits to the broadest number of people. If only a small number of people can gain benefits from e-government projects, the modernization of public agencies through e-government will be questioned as to whether it is a development or an illusion (Lorsuwannarat 2006).

References

Ahmad, M. B., & Othman, R. B. (2007). Implementation of Electronic Government in Malaysia: The Status and Potential for Better Service to the Public. Retrieved August 13,2008,from http://www.intanbk.intan.my/psimr/articles/Article1%20-%20Full.pdf

Al-Omari, H. (2006). E-Government Architecture in Jordan: A Comparative Analysis.Journal of Computer Science, 2(11), 846-852.

Ambali, A. R., & Hashim, R. (2007). E-Government in Malaysia: Trends, Policy, Issues and Initiatives. Retrieved August 13,2008, from http://delivery.acm.org/10.1145/1330000/1328151/p441ambali.pdf?key1=1328151&key2=0418980221&coll=&dl=GUIDE&CFID=2068935&CFTOKEN=60579332

Basu, S. (2004). E-Government and Developing Countries: An Overview. International Review of Law Computers, 18(1), 109-132.

Bekkers, V., & Homburg, V. (2005). E-Government as an Information Ecology: Backgrounds and Concepts. In Victor Bekkers, & Vincent Homburg (Eds.), The Information Ecology of E-Government:E-Government as Institutional and Technological Innovation in Public Administration.Amsterdam: IOS Press. 1-20.

Bhatnagar, S. (2002). E-Government: Lessons from Implementation in Developing Countries. Retrieved Auguest 10,2008, from http://www.iimahd.ernet.in/~subhash/pdfs/RDDAutumn2002.pdf

Blattman, C., Jensen, R., & Roman, R. (2003). Assessing the Need and Potential of Community Networking for Development in Rural India. The Information Society, 19(5), 349-364.

Centre for Science, Development and Media Studies (CSDMS) (2008). Reviewing Jordan's e-Government Development: Seven Years of Promise. Retrieved September 1,2008, from http://www.egovonline.net/articles/article-details.asp?Title=Reviewing-Jordan's-e-Government-Development:-Seven-Years-of-Promise&ArticalID=2065&Type=COUNTRY%20PERSPECTIVE

Chadwick, A. (2006). Internet Politics: States, Citizens, and New Communication Technologies. New York: Oxford University Press.

Chen, Y. N., Chen, H. M., Huang, W., & Ching, R. K. H. (2006). E-Government Strategies in Developed and Developing Countries: An Implementation Framework and Case Study. Journal of Global Information Management, 14(1), 23-46.

Ciborra, C. (2005). Interpreting E-Government and Development: Efficiency, Transparency or Governance at a Distance? Information Technology & People, 18(3), 260-279.

Ciborra, C., & Navarra, Diego G. (2005). Good Governance, Development Theory, and Aid Policy: Risks and Challenges of E-Government in Jordan. Information Technology for Development, 11(2), 141-159.

Cloete, F. (2005). Maximising the Potential of Transforming Policy Failure into Policy Success: E-Government, the Digital Divide and E-Development. In Giorgio Petroni, &Fanie Cloete (Eds.), New Technologies in Public Administration Amsterdam: IOS Press. 113-132.

Culbertson, S. (2005). E-Government and Organizational Change. In Mehdi Khosrow-Pour (Ed.), Practicing E-Government: A Global Perspective Hershey, PA: Idea Group. 83-109.

Dada, D. (2006). The Failure of E-Government in Developing Countries: A Literature Review. The Electronic Journal on Information Systems in Developing Countries, 26(1), 1-10.

Ebrahim, Z., & Irani, Z. (2005). E-Government Adoption: Architecture and Barrier. Business Process Management Journal, 11(5), 589-611.

Elsheikh, Y., Cullen, A., & Hobbs, D. (2008). E-Government in Jordan: Challenges and Opportunities. Transforming Government: People, Process and Policy, 2(2), 83-103.

Gil-Garcia, J. R., & Pardo, Theresa A. (2005). E-Government Success Factors: Mapping Practical Tools to Theoretical Foundations. Government Information Quarterly, 22(2), 187-216.

Haldenwang, C. V. (2004). Electronic Government (E-Government) and Development. The European Journal of Development Research, 16(2), 417-432.

Hammim, R. (2002). Unisys: Malaysia Ahead in E-Government Solutions. Retrieved August,13,2008, from http://findarticles.com/p/articles/mi_hb5556/is_200204/ai_n21960694

Haque, S., Pathranarakul, P., & Phinaitrup, B. (2012). Modernizing Public Sector Organization: Enhancing Coordination and Communication by the Application of E-Government Technology. International Journal of Independent Research and Studies, 1(4), 135-141.

Heeks, R. (2002). Information Systems and Developing Countries: Failure, Success, and Local Improvisations. The Information Society, 18(2), 101-112

_____. (2003). Most eGovernment-for-Development Projects Fail: How Can Risks be Reduced?. Retrieved Augest, 10, 2008 from http://unpan1.un.org/intradoc/groups/public/documents/NISPAcee/UNPAN015488.pdf

Himmelsbach, V. (2002). Malaysia a Potential Leader in Smart Cards, E-Government. Technology in Government, 9(11), 14.

Jaeger, Paul T., & Thompson, Kim M. (2003). E-Government around the World: Lessons, Challenges, and Future Directions. Government Information Quarterly, 20(4), 389-394.

Jansen, A. (2005). Assessing E-Government Progress – Why and What. ?. Retrieved Augest, 10, 2008 from http://www.afin.uio.no/forskning/notater/7_05.pdf

Karim, Muhammad R. A. (2003). Technology and Improved Service Delivery: Learning Points from the Malaysian Experience. International Review of Administrative Sciences, 69(2), 191-204.

Krishna, S., & Walsham, G. (2005). Implementing Public Information Systems in Developing Countries: Learning From a Success Story. Information Technology for Development, 11(2), 123-140.

Kshetri, N. (2002). Providing Citizen Services Online: E-seva in Andhra Pradesh State of India. Retrieved ?. Retrieved August, 23, 2008 from http://www.iconnect-online.org/Stories/Story.import4918

Kudo, H. (2008). Does E-Government Guarantee Accountability in Public Sector? Experiences in Italy and Japan. Public Administration Quarterly, 32(1), 93-120.

Kumar, R., & Best, Michael L. (2006). Impact and Sustainability of E-Government Services in Developing Countries: Lessons Learned from Tamil Nadu, India. The Information Society, 22(1), 1-12.

_____. (2007). Social Impact and Diffusion of Telecenter Use: A Study from the Sustainable Access in Rural India Project. Retrieved September,4, 2008 from http://mikeb.inta.gatech.edu/uploads/papers/328-1701-1-PB-1.doc

Leitner, C., & Kreuzeder, M. (2005). Organisational Changes, Skills and the Role of Leadership Required by eGovernment. Retrieved from Retrieved September,4, 2008 http://www.springerlink.com/content/5x4cvq299838rjf3/fulltext.pdf

Lorsuwannarat, T. (2006). Lessons Learned from E-Government in Thailand. Retrieved August, 18, 2008 from http://202.44.73.6/upload/file/KMGSPA/1_1KM_org/e%20Government%20in%20Thailand%20(Development%20or%20Illusion)%20(2006).pdf

McClure, D. L. (2001). Electronic Government: Challenges Must Be Addressed With Effective Management and Leadership. Retrieved August, 29, 2008 from http://www.gao.gov/new.items/d01959t.pdf

Meijer, A., & Zouridis, S. (2006). E-Government is an Institutional Innovation. In Victor Bekkers, Hein van Duivenboden, & Marcel Thaens (Eds.), Information and Communication Technology and Public Innovation: Assessing the CT-Driven Modernization of Public Administration), Amsterdam: IOS Press. 219-229

Mohamed, A., & Bakar, Syed H. S. A. (2004). Evolution of Information Systems in Malaysia. Retrieved August, 29, 2008 from http://www.springerlink.com/content/nyjh2r1mubex2 wv4/fulltext.pdf

Ndou, V. (2004). E-Government for Developing Countries: Opportunities and Challenges. The Electronic Journal on Information Systems in Developing Countries, 18(1), 1-24.

Office of the Public Sector Development Commission (OPDC). (2006). OPDC Annual Report 2006. Bangkok: OPDC.

Pascual, Patricia J. (2003). E-Government. Retrieved August, 10, 2008 from http://www.apdip.net/publications/iespprimers/eprimer-egov.pdf

Ramasamy, B., Chakrabarty, A., & Cheah, M. (2004). Malaysia's Leap into the Future: An Evolution of the Multimedia Super Corridor. Technovation, 24, 871-883.

Riley, Tom B., & Sheridan, W. (2006). Comparing e-Government vs e-Governance. Digest of Electronic Government Policy and Regulation, 29, 188-190.

Schelin, Shannon H. (2007). E-Government: An Overview. In G. David Garson (Ed.), Modern Public Information Technology Systems: Issues and Challenges Hershey, NY: IGI Publishing.110-126.

Settles, A. (2005). What Skills are Needed in an E-World: E-Government Skills and Training Programs for the Public Sector. In Mehdi Khosrow-Pour (Ed.), Practicing E-Government: A Global PerspectiveHershey. PA: Idea Group. 383-414

Shafie, S. (2007). E-Government Initiatives in Malaysia and the Role of the National Archives of Malaysia in Digital Records Management. Retrieved August, 13, 2008 from http://www.archives.go.jp/news/pdf/MrShaidin2.pdf

Siddequee, N. A. (2007). Public Service Innovations, Policy Transfer and Governance in the Asia-Pacific Region: The Malaysian Experience. Journal of Administration and Governance, 2(1), 81-91.

Snellen, I. (2005). Technology and Public Administration: Conditions for Successful E-Government Development. Some Introductory Observations. In Giorgio Petroni, & Fanie Cloete (Eds), New Technologies in Public Administration , Amsterdam: IOS Press. 5-19.

Stahl, B. C. (2005). The Paradigm of E-Commerce in E-Government and E-Democracy.In Wayne Huang, Keng Siau, & Kwok Kee Wai (Eds.), Electronic Government: Strategies and Implementation. Hershey, PA: Idea Group. 1-19

Stanforth, C. (2007). Using Actor-Network Theory to Analyze E-Government Implementation in Developing Countries. Information Technologies and InternationalDevelopment, 3(3), 35-60.

Sudan, R. (2002). Towards SMART Government: The Andhra Pradesh Experience. Retrieved August, 28, 2008,from http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN00509.pdf

Torres, L., Pina, V., & Acerete, B. (2005). E-Government Developments on Delivering Public Services among EU Cities. Government Information Quarterly, 22(2), 217-238.

UN (2008). UN E-Government Survey 2008: From E-Government to Connected Governance. New York: UN.

UNDP (2007). Computer-Aided Administration of Registration Department (CARD, Hyderabad, Andhra Pradesh. August, 29, 2008 from http://www.apdip.net/resources/case/in04/view.

Wah, K. (2007). E-Government: Malaysia is now ranked 25th. Retrieved August, 13, 2008 from http://ecommerze.blogspot.com/search/label/ e-Government.

Zouridis, S., & Thaens, M. (2005). Reflections on the Anatomy of E-Government. In Victor Bekkers, & Vincent Homburg (Eds.), The Information Ecology of E-Government: E-Government as Institutional and Technological Innovation in Public Administration. Amsterdam: IOS Press. 21-36.