

**SWINBURNE UNIVERSITY OF TECHNOLOGY**  
**Faculty of Information and Communication Technologies**

**THE ROLE OF A SOCIAL SYSTEM IN THE  
IMPLEMENTATION AND SUSTAINABLE USE OF  
LOCAL E-GOVERNMENT:  
AN INDONESIAN CASE STUDY**

by

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**Submitted in fulfilment of the requirements for the award of  
Doctor of Philosophy (ICT)  
20<sup>th</sup> December 2013**

## **Abstract:**

*Electronic government (e-government) has become an important issue for public administration worldwide, which is made possible by a combination of information technology (IT) and public administration changes. The main objectives of e-government are to alter the structure and process of government organisations to improve performance and increase citizens' access to government services online.*

*However, many e-government implementations, particularly in developing countries, have resulted in failure caused by institutional, human, financial and infrastructure challenges that mostly result from a lack of resources, political commitment and poor maintenance. These commonly occur when government organizations try to sustain their e-government facilities alone. It is argued that an individual organization seldom has enough competence, resources and legitimacy to produce an innovation and commercialize it to a wider community. Consequently, organizations need to coordinate and cooperate to develop an innovation and rely on other actors to emerge and survive.*

*This study draws on a social system framework from Van de Ven et al., (1999) to understand the case of e-government implementation and sustainable use within two local governments (Regencies) in Indonesia. The findings show that components in the social system emerge simultaneously within an e-government implementation and its ongoing, sustainable use. These components include: (1) Institutional arrangements that legitimate, regulate, and standardize the innovation. (2) The resources endowments of technology knowledge and skills, financing mechanism, and human competence. (3) Governmental activities in development and functioning of e-government and building resource channels; (4) Market mechanisms that change cultural norms, educate stakeholders and stimulate demand for e-government products. All these components are made evident through the coordination and cooperation of actors involved in the social system that sustains the e-government implementation.*

*Components of Van de Ven, et al.'s (1999) social system framework were adjusted and extended based on the findings of the study within the context of the public sector. This adaptation is based on the consideration that "the specific characteristics of an industrial infrastructure vary according to the technology on which it based" (Van de Ven, 2005, p. 367).*

*The findings from the two Indonesian Regencies can be generalised to a broader population with some limitations. However, this in-depth study of the cases contributes valuable theoretical and practical knowledge to the community. The study findings show that the involvement of actors, such as employees, citizens, politicians, and businesses, are a major factor in the sustainability of e-government. Future research requires exploration of the roles of these actors to provide a broader perspective of their roles in e-government implementation and sustainable use.*

## **Acknowledgements**

This thesis has been completed after a long journey with the research process and strong support from my supervisors. As an International student whose English is not my first language, I experienced huge challenges in reporting the results. However, the blessings from God and the support from supervisors have enabled me to pass the challenges.

Firstly and foremost, I would like to express my deep sincere gratitude to my principal supervisors Associate Professor Rosemary Stockdale and Associate Professor Helana Scheepers. They are truly great teachers and supervisors. More importantly, they have been true supporters and great mentors for me. They are a great companion in my PhD journey. They always listened, checked my English, and gave me excellent advice that guided me through the difficult research process. It has been such a pleasure to work with them.

Special thanks also to all my family members, especially to my wife and children who have been waiting for the day I finish this PhD, and also to all my friends both in Indonesia and Australia, as well as to my employer.

I also would like to thank to RISO (Research into Information System in Organizations) director Professor Judy McKay and all the members.

Lastly, I would also like to thank the Head of Jembrana Regency and Luwu Utara Regency and the staff who have participated in this research. I could not have finished this research without their assistance. My thanks also to my Phd sponsor Indonesian Directorate General of Higher Education (DIKTI).

## **Declaration by Candidate:**

### **Originality Declaration**

I hereby declare that this thesis submission is my own work and to the best of my knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the award of any other degree or diploma at Swinburne University or any other educational institution, except where due acknowledgement is made in the thesis. Any contribution made to the research by others, with whom I have worked at Swinburne University of Technology or elsewhere, is explicitly acknowledged in the thesis. I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.

Signed .....

Date .....

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## CHAPTER 1: Introduction

Electronic government (e-government) has become an important issue for public administration worldwide. It is made possible by a combination of information technology (IT) and change in public administration (Yuan, Xi, & Xiaoyi, 2012). The application of technology-based services within government organizations enables citizens to access government services 24/7. These online services are beneficial to both governments and citizens.

E-government can be utilized by governments to deliver information and services, better connection between government leaders and citizens, increased public participation in government policies and democracy, as well as improved efficiency in services (Feeney & Welch, 2013). Government agencies can realize benefits in the form of cost reduction and efficiency (Carter & Belanger, 2005; Ndou, 2004). At the same time citizens can benefit from greater access to information and are able to participate in government decision-making (Carter & Belanger, 2005; Chadwick & May, 2003; Ndou, 2004).

In order to realize the goals and benefits of e-government, government institutions in many countries have put considerable effort in sustaining the implementation and use of e-government. Government expenditure on e-government projects is expected to grow every year. For example, the US expenditure on IT for federal government institution in 2013 was US\$ 80.5 billion and it is expected to increase to US\$ 81.9 billion by 2014 (VanRoekel, 2013). India spent US\$ 6.4 billion in 2013, a 7 % increased over 2012. The Indonesian government is estimated has spent about US\$ 11 billion during the last ten years (Nurdin, Stockdale, & Scheepers, 2012a) to support their e-government implementation and use within all government institutions across the country. Meanwhile, Bulgaria spent US \$ 11.5 million just for electronic data exchange project only in 2012 (Persio, 2012). In addition, Saudi Arabia is expected to spend US\$ 10 billion on information technology and e-government projects by the end 2013 and US\$. 2 billion of the spending was allocated for 400 new e-governemnt projects in 2013 (Saudi Arabia, 2013).

The high investment on e-government projects shows that e-government sustainability is important for all government to enable delivery of economic and social services to their citizens (United Nation, 2012). However, the majority of e-government implementations and their subsequent use, particularly in developing countries, have resulted in a high level of failure (e.g. Best & Kumar, 2008; Dada, 2006; Dong, et al. 2012; Heeks, 2002; Nawi, Ibrahim, & Rahman, 2013). Heeks (2003) found that 85% of e-government projects fail due to unsustainable in the long term.

E-government failure is understood as an e-government project is successfully implemented and used for a certain period of time but then abandoned (Heeks, 2008). The e-government project is functioned and used as well as benefits government organizations and their stakeholders for certain period but fail to sustain the operation, use, and benefits in later period. Some examples of e-government projects that were not sustained are: the Tele-centre in Tamil Nadu, India (Best & Kumar, 2008; Kumar & Best, 2006); public e-services in Malaysia (Nawi, Ibrahim, & Rahman, 2013); Tele-centres in Madhya Pradesh, India (Bailur, 2007) and in Jamaica (Bailey, 2009).

The sustainability failure in e-government implementation and use is caused by a plethora of institutional, human, financial and infrastructure resource challenges (Ebrahim & Irani, 2005; Lam, 2005; Moon, 2002; Nawi, Ibrahim, & Rahman, 2013). Avgerou (2008) found that failure to sustain information technology in developing countries is mostly due to lack of resources, political commitment and poor maintenance. These challenges are common when government organizations individually try to sustain their e-government implementation and use because they do not have enough resources, competence and legitimacy to succeed in the long term.

Sustainability of e-government initiatives has become a significant challenge for many governments, although little attention has been paid to this problem by researchers or practitioners (Aichholzer, 2004; Gordon & Hinson, 2007; Wangwe, Eloff, & Venter, 2012). E-government sustainability is critical important for government and community development (Pade, Mallinson, & Sewry, 2009) and

organizing and managing government administration processes (Nawi et al, 2013). However, a few scholars have suggested a variety of theoretical and practical approaches for understanding e-government sustainability. From a theoretical perspective, for example, Lessa, Belachew, & Anteneh (2011) proposed to study e-government sustainability through understanding the gap between the current state of e-government and its expected future development. Other studies have used Stakeholder Theory (e.g. Bailur, 2007); Actor Network Theory (Stanforth, 2007); Diffusion of Innovation (Chigona, 2008); and Organizational Theory (Gordon & Hinson, 2007; Nurdin, Stockdale, & Scheepers, 2012) to study e-government sustainability.

From a practitioners' perspective some solutions have also been proposed. For example, Agha & Akhtar (1992) recommend collaboration between three groups of implementers: development planners, information professionals and aid agencies. These implementers are encouraged to work, individually and collectively, so as to sustain information systems. Bhatnagar (2000) proposed a solution that government employees need to be convinced of the benefits of IT through first hand experiences, demonstration and the provision of continual training to ensure that the government technology use is sustainable.

Problematically, these studies see the implementation and sustainable use of e-government from a private sector perspective where the sustainability relies on a limited number of actors such as a company and its managers. These studies also fail to consider that the implementation and sustainable use of e-government requires the involvement of many collaborating actors.

Previous studies (e.g. Heeks, 2007; Stanforth, 2006; Tan, Pan, & Lim, 2005) have found that the implementation and use of e-government organizations involve many actors to achieve the goals. And other studies (e.g. Harder & Jordan, 2013) also found that the sustainability of e-government is determined by organizational capacity, such as technical and financial resources, but only a limited number of studies have addressed how an organization and its members coordinate and cooperate to access the resources, in particular within local government organizations.

This study, therefore, views the implementation and sustainable use of e-government as a collective achievement. These can be achieved through the coordination and cooperation of various government actors with other actors, such as public to public, and public to private (Dawes & Eglana, 2008; Luna-Reyes, Gil-Garcia, & Cruz, 2007) to obtain the resources, competence, and legitimacy. Government actors do not have competency to go-it-alone to sustain their e-government implementation and use, but need to rely on other actors to accomplish all functions to emerge and survive (Van de Ven, Polley, Garud, & Venkataraman, 1999) the implementation and use of e-government. The actors perform critical functions through coordination and cooperation to emerge the infrastructures in a social system for implementation and sustainable use of e-government. The social system infrastructures include; institutional arrangements, resource endowments, proprietary activities, and market consumption (Van de Ven, 1993; Van de Ven et al., 1999).

## **1.1: Research aim, questions, and objectives**

### **A. Research aim**

The aim of this research is to address the problem outline in the introduction above by investigating how e-government at local government levels can be sustained. This is achieved through understanding the emergence of social system infrastructures in implementation and sustainable use of local e-government, the roles they play and their coordination and cooperation in the social system. The emergence of social system and the roles they play can bridge the gap of current lack understanding of how resources can be leveraged collectively to sustain e-government at local level.

### **B. Research questions**

The research aim was addressed through answering the following three specific research questions:

1. What components of the social system are involved in implementation and sustainable use of local e-government?
2. How does each component of the social system play a role in implementation and sustainable use of local e-government?

3. How does the social system contribute to coordination and cooperation in the sustainability of local e-government?

### **C. Research objectives**

To achieve the research aim and answer the research questions, this study has three objectives. First, this research applied a social system framework from Van de Ven et al., (1999) to provide theoretical and practical knowledge on how a social system infrastructure emerge and play roles in sustaining local e-government. Second, since the the implementation and use of e-government involve coordination and cooperation of multiple actors (Dawes & Eglena, 2008; Luna-Reyes, Gil-Garcia, & Cruz, 2007), this study also provides guidances to practitioners how government should coordinate and cooperate to sustain local e-government implementation and sustainable use. Finally, since lack understanding of the implementation and sustainable use of local e-government, this study applied a social system framework within two cases of local e-government implementation and sustainable use. The social system framework includes a variety of components of industrial infrastructure and is adapted to an e-government context to fit this study. The adaptation is supported by the argument that infrastructure specifics vary according the location of the technology Van de Ven (2005, p.367). This includes finding out how does the theory fit with the case context. The framework is used as a “sensitizing device” (Klein & Myers, 1999, p.75) and used as a basis for interview questions.

### **1.2: Research Methodology**

An interpretive case study of e-government implementation and use was applied to investigate two local governments (Regencies) in Indonesia. The data were gathered through field observation, semi-structured interviews, written documents and other follow-up data-gathering such as emails, online chats, telephones and three follow-up short visits. The data analyses were carried out using Grounded Theory approach (Corbin & Strauss, 1990).

As a result based on these analyses and findings from the data, the final output produced a modified social system framework.

### **1.3: Contributions**

The contributions of this thesis are as follows:

Contributions to theory:

- This study contributes a social system framework to inform the implementation and sustainable use of local e-government. The framework is adapted from an existing framework developed in a commercial/industry context. The adaptation enhances theoretical understanding of how different social system infrastructures arise in a local e-government context.
- This study also contributes to the extension of the social system framework in both private and public sector contexts. While the study identifies new constructs that apply to sustainability of local e-government, it also determines that certain elements are applicable within all organizational contexts. Therefore, while the public sector requires a specific lens to understand implementation and sustainable use of local e-government, there is a requirement for a broader organizational context to be considered.
- A further contribution is the identification of the range of actors who coordinate and cooperate to emerge and evolve the social system, and the role they play as a major factor in the sustainability of e-government. The importance of these actors has not been previously identified. Local e-government is not sustainable without the actions of coordination and cooperation generated by a wide range of actors from many organizations.

Contributions to practice:

- This study supports local government organizations to solve common problems of the failure of e-government sustainability such as institutional, human, financial, and infrastructures resources challenges. This study provides practical knowledge to government organizations on how they should coordinate and cooperate in a social system to eliminate those challenges.



- The study contributes guidance for government organizations on how they should coordinate and cooperate in implementation and sustainable use of local e-government. For example, the social system guides local government organizations to understand the resources they need and the actors they require to identify in an e-government initiative. This enables them to collectively engage, coordinate and collaborate to sustain e-government to realise benefits for both government organizations and stakeholders.
- This study also provides practical knowledge on how local governments perform collective actions in the social system to reduce burden and risk in implementation and sustainable use of e-government. The local governments can apply the findings in practicing coordination and cooperation in the social system to share responsibilities and burdens to develop the social system infrastructures that support implementation and sustainable use of e-government.

#### **1.4: Definitions of key terms.**

Roles: The term of “role” comes from sociological concept (Biddle, 1986). Role is defined as “*a particular set of norms that is organized about a function*” (Bates & Harvey, 1975, p. 106); and “*a comprehensive pattern for behaviour and attitude*” (Turner, 1979, p. 124). The roles are evolved “*through social interaction, and various cognitive concepts through which social actors understand and interpret their own and others' conduct*” (Biddle, 1986, p.71).

Social system framework: it was first introduced by Van de Ven and Garud (1989) and then expanded by Van de Ven et al. (1999). A social system incorporates various components of commercial/industrial infrastructure for technology innovation. These components are:

- Institutional arrangements (with the sub-systems: legitimacy, law/regulations, and standards);
- Resources endowment (with sub-systems: science and technology, financial mechanism and competent human resources);

- Proprietary activities (with sub-systems: products development, business function and resources channel);
- Market consumption (with sub-systems: cultural norms, market creation, and competition).

For the purposes of this study the social system framework has been adapted to an e-government study context. Details of adaptation are discussed in Chapter 3.

Sustainability: The term sustainability originally came from environmental studies and it denotes various concepts such as long period preservation (Luftman & Brier, 1999), continuity of technology maintenance (Laws et al., 2002) and improving a condition for an unlimited time in the future (Pezzey, 1992). For this study's purposes, sustainability is defined as the ability of e-government systems to continuously operate and be available for use within government organizations for the benefits of both government and the stakeholders.

## 1.5: Publications

During the course of this study the following papers were published (Appendix C):

Nuridin N. Stockdale R. & Scheepers H. (2010). Examining the Role of the Culture of Local Government on Adoption and Use of E-Government Services. *Proceedings of International Federation for Information Processing Conference on e-Government. M. Janssen et al. (Eds.): EGES/GISP 2010, IFIP AICT 334, pp. 79–93.*

Nuridin N. Stockdale R. & Scheepers H. (2011). Understanding Organizational Barriers Influencing Local Electronic Government Adoption and Implementation: The Electronic Government Implementation Framework. *Journal of Theoretical and Applied Electronic Commerce Research, 6(3) pp.13-27.*

Nuridin N. Stockdale R. & Scheepers H. (2012). Internal Organizational Factors Influencing Sustainable Implementation of Information Systems: Experiences from a Local Government in Indonesia. *Proceedings of 12<sup>th</sup> Australasian Conference on Information Systems (ACIS), Melbourne, Australia.*

Nuridin N. Stockdale R. & Scheepers H. (2012). Organizational Adaptation to Sustain Information Technology: The Case of E-Government in Developing Countries. *Electronic Journal of e-Government, 10(1), pp.70-83*

Nuridin N. Stockdale R. & Scheepers H. (2012). The Influence of External Institutional Pressures on Local E-Government Adoption and Implementation: A Coercive Perspective within an Indonesian Local E-Government Context.

*Proceedings of International Federation for Information Processing Conference on e-Government. H.J. Scholl et al. (Eds.): EGOV 2012, LNCS 7443, pp.13–26.*

Nuridin N. Stockdale R. & Scheepers H. (2012). Benchmarking Indonesian Local E-Government. *Proceedings of Pacific Asia Conference on Information Systems (PACIS), Paper 115. Available online at: <http://aisel.aisnet.org/pacis2012/115>*

Nuridin, N. Stockdale, R. & Scheepers, H. (in press) The Role of Social Actors in the Sustainability of E-Government Implementation and Use: Experience from Indonesian Regencies. *Proceedings of the 47<sup>th</sup> HICSS (paper 722). Hawaii, January 2014*

## 1.6: The thesis structure

This thesis comprises ten chapters (see Figure 1).

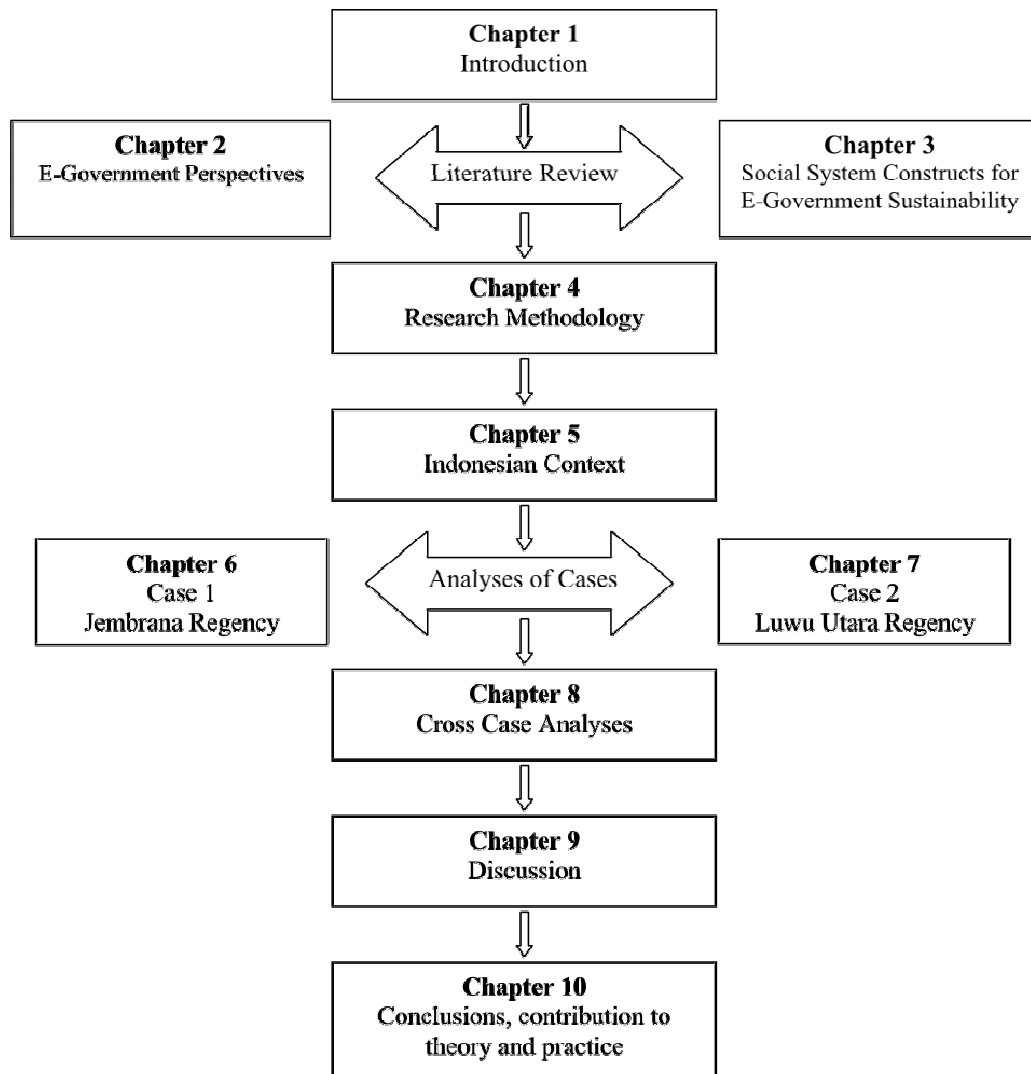


Figure 1: Thesis Structure

Chapter 1: Overview of research area, research questions, main contribution, key terms and thesis outline.

Chapter 2: Literature review related to e-government theory. Definitions of e-government from variety perspectives e-government from supply and demand side perspective, definition of e-government sustainability, definition of e-government

implementation and use, e-government at local government context, definition of e-government stakeholders, and current state of e-government at local level.

Chapter 3: Literature related the social system and the framework. The discussions include definition of organization, definition of actors, definition of infrastructures, public sectors versus private sectors, the use of social system framework for the sustainability of e-government implementation and use. The discussion of the social system includes institution arrangement, resources endowment, governmental activities, and stakeholder demands.

Chapter 4: Study methodology. The discussions include this study philosophical paradigm, justification for interpretive research, justification for using hermeneutic, justification for a case study method, this study procedures which include case selection strategy, unit of analysis, data collection procedures, participant recruitment strategy, and sequence data collection. It is also discussed data transcription and translation procedures, data analysis, data presentation, research credibility, and ethical issues.

Chapter 5: Indonesian context: demographic issues, governmental, local government situation, legal and standard issues, the emergence of e-government, current state of Indonesian local e-government and central government institutions roles in local e-government implementation and use.

Chapter 6: Case study 1 (Jembrana Regency) analyses.

Chapter 7: Case study 2 (Luwu Utara Regency) analyses.

Chapter 8: Cross case analyses. The analyses include the local government context, current state of e-government, and the social system roles in implementation and sustainable use of local e-government.

Chapter 9: Discussion of the findings and relationship to the theory and research questions.

Chapter 10: Conclusions: Reflection on research questions and the social system for implementation and sustainable use of local e-government. Research implications for theory and practices are also addressed. Future research direction is also provided.

The next part of the thesis discusses the literature review, which comprises two chapters.

- Chapter 2 is dedicated to e-government implementation and sustainable use theory
- Chapter 3 discusses the theoretical construct building using a social system framework and its application within the e-government context.

## CHAPTER 2: E-Government Perspectives

### 2.1 Introduction

This chapter starts with a discussion of e-government definition in section 2.2. Sections 2.3 and 2.4 discuss e-government from supply and demand point of view, and e-government sustainability. E-government implementation and use are presented in section 2.5 and 2.6. E-government at local government level and stakeholders are discussed in sections 2.7 and 2.8. Finally, section 2.9 discusses current state of e-government development within a local government context.

### 2.2 Defining E-Government

The implementation of technology within government organizations has caused the emergence of new terms for technology implementation such as digital government (e.g. Joshi, et al. 2001; Marchionini, Samet, & Brandt, 2003; D.M West, 2005), online government (e.g. Peled, 2001), Net State (e.g. Lawson, 1998), one-stop government (e.g. M. A. Wimmer, 2002a, 2002b), and mobile government (M-government) (e.g. Kuscu & Kuscu, 2003; Sharma & Gupta, 2004; Trimi & Sheng, 2008). All these can be summarized into term: **e-government**. This has been accepted globally and refers to the technological implementation within government organizations.

Electronic government (e-government) has been defined in different ways by many scholars and the definitions have been adapted to fit each research context. For example, if research on e-government is focused on the government perspectives (supply side), the definition includes government perspectives such as administration and management reform. However, when an e-government study is carried out from perspective of stakeholders (demand side), e-government is defined on the basis of the stakeholders' perspective, which is to improve citizens and businesses services and interaction. Table 1 summarizes examples of e-government definitions from these two perspectives.

**Table 1: Two Perspectives of E-Government Definitions**

<b>Perspective</b>	<b>E-Government definitions</b>	<b>Authors</b>
Government perspectives (supply side)	<i>“the implementation of information and communications technology to change the structure and process of government organisations aiming at performance improvement”</i>	(Mofleh, Wanous, & Strachan, 2009)
	<i>“The use of Information and Communication Technologies (ICTs), and particularly the Internet, as tools to achieve better government”</i>	(OECD, 2003, p. 11)
	<i>“The use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government”</i>	(The-World-Bank-Group, 2011)
	<i>“The application of Information and Communication Technology (ICT) for delivering Government Services, exchange of information, communication transactions, integration of various standalone systems and services between Government and Citizens (G2C), Government and Business (G2B) as well as back office processes and interactions within the entire Government frame work”</i>	(Bose & Rashel, 2007)
	<i>“The use of information and communication technologies (ICTs) to improve the activities of public sector organisations”.</i>	(Heeks, 2008)
Stakeholders perspectives (demand side)	<i>“Utilizing the Internet and the Web for delivering government information and services to citizens”</i>	(United-Nations, 2002, p. 1)
	<i>“Government’s use of technology, particularly web-based Internet applications, to enhance the access to, and delivery of, government services to citizens, business partners, employees, and other government entities”</i>	(Brown & Brudney, 2001)
	<i>“A government’s use of technology, such as the Internet, to aid the delivery of information and services to citizens, employees, business partners, other agencies and other government entities”</i>	(Layne & Lee, 2001)
	<i>“E-government is the use of information technology to enable and improve the efficiency with which government services are provided to citizens, employees, businesses and agencies”</i>	(Carter & Belanger, 2005, p. 5)
	<i>“A web-based information system which provides online services and an interaction channel”</i>	(Al-Haddad, Heyland, & Hubona, 2011, p. 1)



Three common interactions can be identified from these definitions: government to government (G2G), government to business (G2B), and government to citizens (G2C). G2G relationship is the use of e-government to establish communication or businesses between government to government agencies; G2B is the use of e-government for government to business relationship, while G2C is the use of e-government to connect government agencies or employees with their citizens.

Yildiz (2007) proposes a broader view of e-government where e-government can be an instrument to build Government-to-Civil Society Organizations (G2SC) and Citizen-to-Citizen (C2C). G2SC is the use of e-government by government agencies not only to serve citizens, but also the use of e-government to promote government accountability, transparency, and making coordination and communication with larger societies agencies such as non-government organizations (NGO) for disaster management. Whereas, C2C is the use of e-government to empower citizens and increase their involvement in government decision making process. This includes the use of e-government to promote discussion among citizens regarding a variety of civic issues.

The United Nations (UN 2008) indicates that e-government should be from both government and citizens perspectives because e-government implementation is targeted not only to improve government administration and management, but also to provide better citizens services. This implies that e-government should be understood as a system that benefits both government agencies and stakeholders.

However, in 2012 the United Nations (2012) urged governments across the world to rethink the term of e-government. should be understood as an instrument for sustainable development, which the UN (2012, p. 1) said that e-government should be utilized as *“a transformative role of the government towards cohesive, coordinated, and integrated processes and institutions through which such sustainable development takes place”*. In this new paradigm, e-government emphasises building linkages between government institutions and their stakeholders to enable sustainable government development. This means e-government is no longer merely viewed as government administration or citizens’ services reformation

instrument. It is about integrating and connecting government institutions and its stakeholders to achieve collective development through the collaborative use of e-government. As a result, this study redefines e-government as: *The implementation and the use of collaborative information technology for sustainable government and the development of its stakeholders.*

### **2.3 E-Government from Supply and Demand Side**

Innovations are triggered by “shocks” from internal or external sources of organizations (Van de Ven et al. 1999). The “shocks” are often associated with demand and supply of the innovation within organizations. Demand comes from potential actors to use an innovation, while supply comes from the production of the innovative product or process itself (Christiaanse & Huigen, 1997; King et al. 1994). In the context of local government implementation and sustainable use of e-government, demand may come from external environment such as local citizens and business who demand online services through e-government systems. Citizens and businesses may have experienced online services provided by private firms and then consequently demand similar services from their local government. The demand from citizens and businesses cause the local government to sustain their e-government implementation and use.

However, innovation demand may also come from institutional arrangements, such as from public policy regimes (e.g. central government) (Dobbin & Dowd, 1997; Van de Ven, 1993) and regulatory instruments (Van de Ven, 1993; Van de Ven & Garud, 1989). Central government can mandate a local government to sustain e-government service as they have the capability to exert the power, which may be exerted through resources dependency or regulation (Cho & Wright, 2001; Tolbert & Zucker, 1983). At the same time, central government may also supply e-government systems to local government, which then become supply push forces. Meanwhile internal stakeholders, such as employees, may also demand e-government systems in performing their tasks.

Supply and demand also play roles within local government and its stakeholders' relationship. On one hand, local government may force their stakeholders to use the e-government systems. For example, government “*mandating companies to use*

*electronic invoices when dealing with government authorities*” (Henriksen & Damsgaard, 2007, p. 18). On the other hand, the stakeholders may also demand the local government to implement and use e-government systems. Both supply push and demand pull processes shape the actors actions and interactions in innovation diffusion (King et al. 1994). Local and central government actors may need to make interactions to endow resources, such as creating competent human resources and finance, to ensure e-government implementation and sustainable use. For example, local and central government may form a collaborative task force to coordinate e-government implementation and sustainable use (Henriksen & Damsgaard, 2007).

## **2.4 E-Government Sustainability**

Sustainability is conceptualised in various ways. A basic concept of sustainability is seen as preservation by Luftman & Brier (1999), who argue that sustainability is the ability to preserve the technology over a long period. Another study specifically refers to sustainability as the maintenance of the technology (Laws et al. 2002). However, the basic concept of sustainability is not only to preserve or maintain, but also improving the condition of current situation for an unlimited time in the future (Pezzey, 1992).

In context of unlimited time, IS sustainability is understood as an activity of making information systems work over time within an organizations’ setting (Braa, Monteiro, & Sahay, 2004) or the IS is in continuous operation and development (Krishna & Walsham, 2005). Furthermore, to be considered sustainable, the IS should also provide continuous value to an organization (Peppard & Ward, 2004). For this study’s purposes, e-government sustainability is understood as the ability of government organizations to continuously operate and use e-government systems over a long period of its lifecycle to provide continuous benefit values for both government organizations and stakeholders.

Avgerou (2000) describes this phenomenon as an IT innovation that has been taken for granted and institutionalized within organizations to sustain its operations. Similarly, when e-government systems have been taken for granted and institutionalized the government organizations are able to sustain the technology for long period of time. The sustainability of e-government project is essential to a long term positive impact of government and stakeholders’ development (Pade, Mallinson, & Sewry, 2009).

Number of strategies need to be considered to support the sustainability of e-government projects. Pade, Mallison, & Sewry (2009, p. 342-343) propose those strategies which include; make simple and clear objectives, approaching the project in a holistic way, using ICT to enhance local development activities, cultivating an influential project champion, incorporating socially excluded groups, increase awareness of ICT policy influencing the project, understand the local political context, involve community target groups in the project process, Focus on local/demand driven needs, establish local information and knowledge systems, provide appropriate training and capacity building, facilitate local content development, motivate and provide incentive for ICT Job, focus on economic self-sustainability, encourage local ownership, build local partnerships, choosing appropriate technology, and ongoing monitoring and evaluation of the project.

Meanwhile, Markus & Tannis (2000) have similar argument regarding sustainability who argue that the continuity of IS operations needs activities such as evaluation, system improvement, and human skills improvement. This implies that government organizations' ability to sustain their e-government requires continual efforts and resources allocation. This includes continuous resources support from all participating actors within and outside organizations (Braa et al. 2004). The resources are required to maintain the system, to ensure that it is continuously operated and developed within the organizations.

Kettinger et al., (1994) also argue that the availability of resources such as finances, human, and technological infrastructure within organizations can determine their ability to sustain technology within their organization. However, some government organizations lack resources to support their e-government systems to ensure sustainability. For example, lack of financial and human skills are an impediment in major cases of e-government implementation (Chen et al. 2006; Ebrahim & Irani, 2005; Moon, 2002) and such limitations are common within government organizations in developing countries (Heeks, 2002c).

To solve these problems, government organizations have to “run in packs”, which means organizations coordinate and cooperate with others to cope with the limitations, because seldom do single actors produce change alone (Van de Ven, 2004 & 2005). Previous studies (e.g. Huxham & Vangen, 2005; K. Kumar & Van Dissel, 1996) suggest organizations need to collaborate to cope with their inability to achieve their goals alone due to limited resources, or to share risks. A number of

actors, such as implementers and users, play roles in the emergence and sustainability of e-government systems. For example, Van de Ven (1999) argues that the emergence of innovation within industry firms is supported by a collective of actors playing roles in a social system that incorporates institutional arrangements, resources endowments, firms' proprietary activities and market mechanism. Van de Ven et al. (1999) adds that the accumulation of these institutional arrangements, resources, and activities creates an infrastructure that facilitates actors interacting with each other over time to emerge and develop innovations. The emergence and development of e-government innovation involves two important activities: implementation and use.

## **2.5 E-Government Implementation**

A large number of studies have focused on technology implementation in private (e.g. Akkermans & van Helden, 2002; Al-Mashari & Al-Mudimigh, 2003; Cooper & Zmud, 1990; Markus, 1983) and government (e.g. Jain & Kesar, 2008; Scott, Golden, & Hughes, 2004; Shareef, Archer, Kumar, & Kumar, 2010; Weerakkody, Dwivedi, Brooks, & Williams, 2007) organizations. The studies concentrated on single or multiple organizations' context and at different levels of information technology (IT). These studies highlighted IT implementation in private and public organizations in single or multiple countries. However, few studies have been carried out at local government level, particularly within the context of a developing country.

Most organizations adopt an innovation to enhance their performance, but the innovation will only enhance performance when it has been implemented and used (Damanpour, 1987). Technology implementation is defined "*as an organizational effort directed toward diffusing appropriate information technology within a user community*" (Cooper & Zmud, 1990, p. 124). Rogers (1995, p. 403) defines implementation as "*all of the events, actions, and decisions involved in putting an innovation into use*". These definitions highlight the fact that implementation is not a one-phase process, but it is "*an ongoing social process*" (Kling, 2000, p. 220) which requires ongoing effort from many actors before the innovation is used to enable routinization. This long implementation process is described as "*events and actions that pertain to modifying the innovation, preparing the organization for its use, trial use, acceptance of the innovation by the users and continued use of the innovation until it becomes a routine features of the organization*" (Damanpour & Schneider, 2006, p. 217).

The implementation of technology within government organizations is a long process that requires ongoing support from participating actors from external and internal government (Braa et al. 2004). This continuous support is required to ensure that e-government is sustainably implemented and used as demanded by government stakeholders such as citizens and businesses. In other words, government organizations are confronted with the stakeholders' needs to implement IT in delivering better services and products (Vriens & Achterberg, 2004).

Sustaining the implementation and use of information systems (IS), such as e-government systems, within public sectors involve many actors such as adopters, providers, supporters, and controllers (Mantzana et al. 2007). Adopters can be users, such as employees and other stakeholders, who use the e-government system for delivering or accessing government services. Providers can be an IT department responsible for resource provision to sustain the e-government implementation, while supporters are IT staff who design and develop e-government systems. Controllers are government leaders or IT managers who are responsible for policy implementation and monitoring.

These different actors need to coordinate and cooperate to develop innovation (Van de Ven, 2005). This is aimed to ensure an innovation, such as e-government systems, can be implemented smoothly. Van de Ven, et al. (1999) associate this smooth process with *“bicycle racers who cue their pace to one another and take turns breaking wind resistance until the ending sprint”*. Coordination in IS project implementation involves not only individuals, but also groups, departments and units who have their own responsibilities and autonomy (Brazier, Jonker, & Treur, 1996). These different actors need to coordinate in tasks such as completion, delegation and information exchange. Tasks between different actors are performed collectively through cooperation (Brazier et al. 1996) by utilizing resources collectively and helping other actors to cope with difficulties. As a result, an IS project can be accomplished with no or limited barriers. Cooperation across individuals, teams, and organizational units has been found to significantly determined IS project implementation success (e.g. Biehl, 2007).

Different actors involved in an e-government project implementation have been found in a number of cases. For example, the implementation of Telekiosk in Dhar district, Madhya Pradesh, India (Cecchini & Raina, 2004) involved local government staff, a software vendor, a telecommunications company and government departments. Even though at the beginning the project was successfully implemented, the project could not be sustained because of the lack of coordination and cooperation among the actors involved in the further stages of the e-government

implementation. The system provided by the vendor was not compatible with local infrastructures because the system developers did not cooperate with local ICT staff. In this case, coordination between local government employees, project managers, and village operators were not harmoniously practiced.

During e-government implementation, a department or unit may require resources from other departments and units. The resource gap between departments can be solved through cooperation. For example, an e-service provider may require data from different agencies (e.g. government departments and private sectors) to complete their service (Sethi & Sethi, 2006). To enable data-sharing for e-services purposes, all actors involved in the project need to cooperate with each other. This cooperation can be coordinated and controlled under a regulation, or organized by a body formed by a government (Sachdeva, 2006). Government can also involve stakeholders in e-government implementation. For example, government may gather information from citizens and other stakeholders to improve certain e-government services (Linders, 2012).

## **2.6 E-Government Use**

Even though usage is considered insufficient to determine the success and effectiveness of an information system (Ginzberg, 1978), many studies (e.g. Szajna, 1993) agree that usage level can be an indicator of an IS success and effectiveness within organizations. Lucas (1978) suggests IS usage is an indicator in understanding IS success or failure. He argues that if a system is not used, it cannot be considered as successful. Similarly, a seminal study of DeLone & McLean (1992) on IS success models has applied IS usage as a criteria to determine IS success. This study defines IS use as “*the utilization of information technology (IT) by individuals, groups, and organizations*” (Straub & Limayen, 1995, p. 1328). Success of use in this context is understood as: *sustainable use to provide value for both government and its stakeholders.*

E-government systems’ use is understood in both perspectives of government and its stakeholders such as government employees, citizens and businesses (Belanger & Carter, 2009). Governments use of IS to provide effective goods and service, as well as to make interaction with their stakeholders. Meanwhile the stakeholders, such a citizens and businesses, use e-government to access the government service and information. As in private organizations, the use of IS within government organizations is influenced by the skills of both the government agencies and the

stakeholders. For example, Belanger & Carter (2009) found that inability to use internet to retrieve information has significantly affected American citizens willingness to use e-government systems such as e-participation and e-consultation.

However, e-government usage may not be used merely as a criteria to determine its success, rather e-government success should be viewed from the benefits provided to government constituents such as private sectors, citizens, and communities (United-Nations, 2008). The users in e-government systems are different to IS users in private organizations, which sometimes target the similar characteristics of customers. E-government users are more varied, as depicted in Table 2 They are citizens from different backgrounds, different-scale businesses, politicians, and non-government organizations.

**Table 2: Users in E-Government**

No.	Users	Authors
1	Citizens	(Layne & Lee, 2001; Oostveen & Besselaar, 2005; Verdegem & Verleye, 2009; Warkentin, Gefen, Pavlou, & Rose, 2002; Welch, 2005; West, 2004)
2.	Business	(Folstad, Jorgensen, & Krogstie, 2004; Warkentin et al. 2002)
3.	Employees (e-government employees)	(Carter & Belanger, 2005; Følstad, 2005; Oppermann, 2005)
4.	Politicians (such as parliament members)	(Folstad et al. 2004; Oostveen & Besselaar, 2004; Oppermann, 2005)
5.	Non-government organizations (NGOs)	(Borras, 2004; Brewer et al. 2005; Centeno, Bavel, & Burgelman, 2005; Sheridan & Riley, 2006)

E-government systems are used for variety of purposes by government stakeholders, as depicted in Table 3. Stakeholders may use e-government, such as websites, to access government information and obtain online forms or documents. In the perspective of government, these online services can reduce the cost and time in services delivery, as well as bringing government agencies closer to their stakeholders. Similarly, from the stakeholders point of view the online services can save their time and cost in obtaining government services.

Government organizations, such as local government, have gained benefits from the implementation of e-local government, such as providing decision support for



administrators, increasing efficiency of government administrations, a personal relationship between government and citizens, transparency, and cost reduction (Bhatnagar, 2000; Edmiston, 2003; Heeks, 2002c). In addition, the use of e-government systems enables local government to consolidate services into a ‘one stop shop’.

**Table 3:, Benefits of E-Government Use**

<b>No.</b>	<b>The use e-government</b>	<b>authors</b>
1.	Access of information on websites	Verdegem & Verleye, 2009; Welch, 2005; West, 2004; Yuan, Xi, & Xiaoyi, 2012; Zhao, Zhao, & Zhao, 2010
2.	Obtain online forms and documents (e.g. certificate and licences application forms)	Carter & Belanger, 2005; Harder & Jordan, 2013; Kumar & Best, 2006; Tolbert, Mossberger, & McNeal, 2008
3.	Transactions (payment tax, bill, etc.)	Brewer et al. 2005; Carter & Belanger, 2005; Hung, Chang, & Yu, 2006; Kaaya, 2004; Ke & Wei, 2004
4.	Interaction with government entities (citizens interact with government employees or vice versa) such as through discussion forums.	Åström et al. 2012; Bonsón et al. 2012; Cursey & Norris, 2008; Linders, 2012; Warkentin et al. 2002
5.	Political/democratic participation (e.g. e-Voting and participating in government policies)	Centeno et al. 2005; Følstad, 2005; Oostveen & Besselaar, 2005; Powell et al. 2012; Sheridan & Riley, 2006
6.	Tasks accomplishment, interaction, sharing information among employees, and providing services to citizens	Belanger & Hiller, 2006; L Carter & Belanger, 2005; Dong, Yu, Wang, & Zhang, 2012; Oppermann, 2005; Reddick & Turner, 2012; Scholl et al. 2012

Citizens’ participation in democracy, such as e-voting, is another benefit of e-government systems. Citizens and government are able to reduce election costs and time because the process can be carried out online. It requires less paper and staff to manage the voting. Citizens’ willingness to participate in every local election can improve. Politicians may utilize e-government systems to make interaction with government agencies and with their constituents.

## 2.7 E-government at Local Level

The term of local government is used by many countries across the globe. It refers to a smaller, collective, administrative authority than the state. Local government is defined as: “*the democratically elected multi-purpose institutions and their bureaucratic organizations, which exist through the statute at a sub-national level*” (Wilson & Game, 1998). Local government is also understood as: “*the formal institutions of a government at the local level*” (Pratchett, 1999), which means a local government may become the extension of a central government authority to the local level to provide services to its local citizens. Meanwhile, governance at local level is understood as “*the processes and structures of a variety of public, private, and community and voluntary sector bodies at the local level*” (Hambleton & Howard, 2012, p. 48)

Thus, local government can become an effective communication medium between local citizens and a central government because the central government has its representative at a local area (Rondinelli, Nellis, & Cheema, 1983). A local government has right to empower themselves to pursue their own interests as stated by Gao, Song, & Zhu (2013) “*local governments were empowered to generate revenue by themselves to cover deficits, which means that they have legitimate power, motivation and resources to follow their own policy preferences and to pursue self-interest*”. This includes building cooperation with other institutions to succeed in their policies’ implementation.

The form of local governments among countries is varied depending on the structure and the system of a country. It may include cities, villages, towns, townships, counties, special cities, etc. (Gabris & Golembiewski, 1996). Others terms relating to local government, such as provinces, regents, and districts, are also commonly used in many countries. The level of autonomy of a local government depends on the power distribution characteristics of a government such as centralization or decentralization. Local government in a centralized-system country have less administrative power than in a decentralized one.

In recent decades, many countries have promoted a decentralized system in a variety of contexts to distribute authority, particularly administrative, to local levels. The

decentralization of administration is practiced in the context of de-concentration, where central governments transfer particular functions and workload to local governments. And devolution, where central governments delegate decision-making authority and responsibility to local governments (Hutchcroft, 2001). Both types of decentralization are practiced in different ways among countries as regulated by their constitutions. Some countries give much more administrative freedom to local government, while other countries tend hold more authority at central level. However, whatever centralization type is practiced, a central government has authority to intervene a local government policy, for example when particular services at local government fall below acceptable standard, a central government will intervene to ensure the services improvement (Lowndes & Wilson, 2003).

The concept of e-government within local government resembles the innovation adoption and implementation within organizations. Initially, in an organisational context, managers may make the primary decision to adopt technology after identifying objectives to change aspects of the business (Gallivan, 2001). A secondary adoption decision is made by a group or individual employees to adopt the technology (Fichman & Kemerer, 1997; Gallivan, 2001). This secondary adoption can either be mandated or voluntary, depending on the context (Moore & Benbasat, 1991; Rogers, 2003). The term “influence”, which refers to technology (Leonard-Barton & Isabelle 1988), may also encourage management to implement at a lower level of organization by providing support.

Similarly, the concept of e-government adoption and implementation within a country has similarities, as described above, in that there are several levels of adoption: central government, local government, employees of local government and citizens. Implementation of technology within government organizations are often made by a central government and then diffused into lower-level government organizations or agencies. The diffusion of the technology into lower levels of government organizations can also be mandated or volunteered depending on the characteristics of the government organizations. However, implementation of technology within government organizations is complicated by the political nature and structure of government (Warkentin et al. 2002). The constitution of a government may allow central government to mandate local governments to

implement technology, since government, as stated by Rand (1964, p. 102), “*is an institution that holds the exclusive powers to enforce certain rules of social conduct in a given geographical area*”.

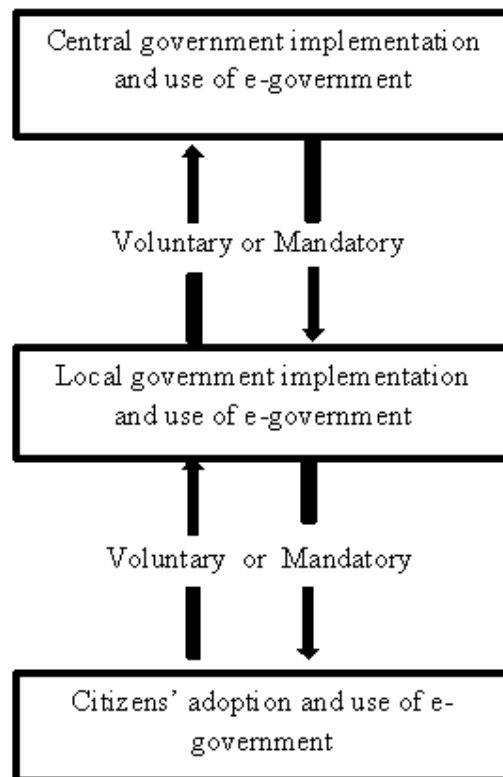
For example, the UK government launched a modernization agenda in 1997 to transform local authorities’ performance across the UK. This new agenda resulted in the implementation of e-government at local level across the UK (Beynon-Davies & Williams, 2003). In a further step, the UK central government set “e-government targets” which mandated all government agencies to provide online interactions between government agencies and the public by 2005 (Beynon-Davies & Martin, 2004). Failure to conform to these policies and regulations can result in sanctions by central governments, such as withdrawing funding that have been allocated to local governments (Griffin & Halpin, 2005). Similarly, the adoption and implementation of the *Smart Cards* project in the medical sectors of Canada is mandatory (Aubert & Hamel, 2001). These examples show that a central government has the power to impose the adoption of e-government on local government bodies by launching certain policies and regulations in order to improve government services.

In certain government contexts, e-government might be voluntarily implemented with the support from top government. For example, the successful implementation of an e-government portal by government departments in Hong Kong (Ho, 2006). The case of electronic tax managed by Central Excise in India is also voluntary and the citizens at local level are encouraged to implement the system (Sahu & Gupta, 2007). In both cases, the e-government initiatives are voluntarily implemented at lower levels, although the initiatives were started at central government level. However, in the case of Tanzanian’s Integrated Tax Administration (ITAX) (Schuppan, 2009), a part of their e-government implementation, the project was mandatorily implemented by all tax regions of the country by 2007. The initiative was controlled and supported by a task force authority at central government level.

At a grassroots level in the United States, the adoption of e-government at local levels was initiated before the E-Government Act (Moon, 2002; Norris & Moon, 2005), which included the planning of an e-government strategy and an initiative implementation launched in 2002 (Lee, Tan, & Trimi, 2005). The initiatives were

developed on the basis of local government initiatives that were then followed by government guidelines to support better implementation.

The above examples of e-government initiatives are drawn together in Figure 1 to show the instances of voluntary and mandatory implementation of e-government from central government to citizen level.



**Figure 2: Local Government Implementation Paradigm**

E-government has allowed local governments to ease the performance of responsibilities transferred by central government. The devolution of administration responsibility to local levels offer richer opportunities for local governments to implement local e-government with their own strategies and approaches, but the strategies and approaches should not contradict central government strategies (Paris, 2005). This implies that local government should comply with central governments guidelines or Blue Print of e-government implementation.

In conclusion, for the purposes of this thesis, local e-government is defined as: *The technology implementation and use at sub-national level (provinces, districts, counties or councils) that is carried out based on central government mandate or encouragement, or voluntary means.* Local e-government implementation and use within local government organizations becomes a part of national development policy of a country. This means local e-government might be an extension of central government policy in supporting local government and citizens' development according a country mission.

## **2.8 E-Government Stakeholders**

The development of information technology has led to the change in the way government organizations provide services to their stakeholders. The need for information technology implementation in government organizations seems inevitable for fulfilling their stakeholders' expectation and demands. In other words, government organizations are confronted with the stakeholders needs to implement information technology in delivering better services and products (Vriens & Achterberg, 2004).

Technology, such as e-government, provides an opportunity to governments to significantly improve their services and products' delivery according their stakeholders demands, because the technology allows them to reform their organizations and provide them with new capabilities. For example, they are able to provide citizens with up-to-date information concerning government affairs and effective communication channels, which diminish distances, time lag, social groups and institution barriers within the area (Musso, Weare, & Hale, 1999). However, there is a need for government organizations to identify who their stakeholders are in order to implement and utilize e-government appropriately.

There are a number of studies (e.g. Belanger & Hiller, 2006; Rowley, 2011; Yildiz, 2007) that have identified stakeholders in e-government. Their identification of e-government stakeholders are either based on categorization of e-government (Belanger & Hiller, 2006; Yildiz, 2007) or stakeholders roles in e-government (Rowley, 2011). Based on their categorization, e-government can be broadly categorized as a medium to build relationships between government to government

(G2G), government to citizens (G2C), and government to businesses (G2B), government to political process (G2IP), government to civic societal organizations (G2CS), and citizens to citizens (C2C). This has led to identification of e-government stakeholders, such as government agencies; citizens as individual or as a group; large, medium and small businesses; and non-for-profit organizations.

This identification of stakeholders seems relevant to the definition proposed by Freeman (2010, p. 25) who defines stakeholders as “any group or individual who can affect or is affected by the achievement of the organization’s objective”. Meanwhile, the United Nations (United-Nations, 2012, p. xii) uses the term “client” in referring to government stakeholders. The “client” is considered as actors or agencies that demand better services through the use of technology in government services provision. These “client” demands affect governments’ decisions to implement and utilize new technology such as e-government.

Rowley(2011) views e-government stakeholders from their roles (professions) in using e-government. The stakeholders identified by Rowley (2011) exist within and outside government organizations. However, this study categorizes the stakeholders’ roles identified by Rowley (2011) into the implementers and users perspectives as depicted in Table 4.

**Table 4: E-Government Stakeholders**

<b>Implementers</b>	<b>Users</b>
E-Government project managers	People as service users
Design and IT developers	People as citizens
Suppliers and partners	Businesses
Public administrators (employees)	Small-to-medium sized enterprises
	Public administrators (employees)
	Other government agencies
	Non-profit organizations
	Politicians
	Researchers and evaluators

Adapted from Rowley (2011, p. 56)

Public employees can be categorized as implementers or as users depending on how and when they play their roles. Government operational staffs are often the users of e-government systems who use the systems to improve their work performance, or

deliver better services to citizens. However, when government employees are function as IT designers and developers within an IT department or team, they can be categorized as implementers. In other words, the implementers can be viewed as supply-side of e-government, while users as demand-side of e-government. The stakeholders, such as individuals, groups and organizations, are categorized into the stakeholder groups above, based on their relationship with e-government systems (De', 2005).

## **2.9 Challenges and Issues in E-Government at Local Level**

E-government implementation and use is a challenging issue for many governments, particularly at local level, since many factors impede the implementations. These impeding factors include technological (Holden, Norris, & Fletcher, 2003; Roy, 2003), financial (Heeks, 1999; Irani, Themistocleous, & Love, 2003), and organizational constraints (Ho, 2002; Moon, 2002). These challenging factors have hindered the successful implementation of 85% of e-government systems, particularly in developing countries (Heeks, 2003).

Even though some local governments have made progress in implementing local e-government, the progress is slow (Edmiston, 2003). For example, the movement toward integrated and transactional e-government is slower in developing countries than developed countries such as the United States (Norris & Moon, 2005). Slow development of e-government is caused by many factors, such as low commitment of local authorities, absence of coordination and support from central government to help local government move to transactional or integrated stages of e-government implementation (Jukic & Vintar, 2006).

The majority of local e-government in developing countries are at the web presence stage (Holden et al. 2003), in which their offerings are primarily, basic information.



It is not surprising that the majority of developing countries experience more failure in e-government implementation (Jaeger & Thompson, 2003). For example, Nurdin, Stockdale & Scheepers (2012) found that about 75% of local e-governments in Indonesia are still at emergence and interactive stages where the local government only provide information on their websites. This means that the local stakeholders are unable to obtain online services from their local government, and as a result, it may fail to achieve benefits from their e-government implementation and use.

Many local governments have implemented e-government on a voluntarily or mandatory basis to improve their organization's performance in serving the citizens, but fail to maintain development of the initiatives. Some local e-government projects have successfully achieved their goals in providing better services to the citizens for some years, but have failed to sustain them over long term, such as in the cases of Tamil Nadu in India (Kumar & Best, 2006) and South Sulawesi local government in Indonesia (Hwang & Syamsuddin, 2008).

The success or failure of electronic government implementation at local level is influenced by many factors, such as vision, government support, level of collaboration or stakeholders involved, organizational change, objectives statements, adaptation of legacy systems, and organization structure or bureaucracy (Cordela, 2007; Evangelidis, 2002; Heeks, 2002c; Senyucel & Stubbs, 2006; Sharifi & Zarei, 2004). For example, the local government of Madhya Pradesh, India implemented Gyandoot project (Cecchini & Raina, 2004) to provide online services to rural poor citizens, but it has not achieved its goals because of low involvement and support of local staff and the low participation level of the poor citizens targeted in the initiative.

Most e-government challenges are related to actors' engagement in e-government implementation and use (see 5); for example, actors that support e-government implementation, but do not collaborate and support e-government implementation

when in use. This includes their low participation and commitment to the initiatives, which then affect their willingness to take maximum responsibility for e-government implementation and use. Low actors' skills or regulations also hinder their involvement in e-government implementation and use.

**Table 5: Local E-Government Challenges Implementation and Use**

<b>Challenges</b>	<b>Authors</b>
<b>Unclear mission and visions</b> – mission and visions are unclear or not stated before e-government implementation	Damodaran, Nicholls, Henney, Land, & Farbey, 2005; Lenk & Traounmuller, 2000; Zhang et al., 2005
<b>Conflict or unclear of goals</b> – goals to implement e-government are unclear, not stated or they conflict with central government (local government goals) or with other government projects implementation	Basu, 2004; Dawes & Nelson, 1995; Dawes & Pardo, 2002; Evans & Yen, 2006; Kim & Kim, 2003; Teo & Ang, 2001; Zhang et al., 2005
<b>Lack of participation</b> – citizens, political and internal government users participation include lack of use the e-services	Dugdale et al. 2005; Komito, 2005; Oostveen & Besselaar, 2004; Yang & paul, 2005
<b>Low commitment</b> – government leaders and employees commitment	Eynon & Margaret, 2007; Jaeger & Thompson, 2003; Lenk & Traounmuller, 2000
<b>Lack of partnership/collaboration</b> – partnership or collaboration among local governments, inter-departments and among employees	Chen et al. 2006; Eyob, 2004; Ndou, 2004; Sorrentino & Ferro, 2008
<b>Lack of responsibility</b> – responsibility of government leaders, officials and ICT management	Jaeger & Thompson, 2003; Jones, Irani, & Sharif, 2007; McDaniel, 2003; M. Wimmer et al. 2005
<b>Lack of organizational/employees learning</b> – governments do not learn from other governments' experience and do not provide training for employees. Employees who do not have skills to use technology	Atkinson, 2000; Cook, et al., 2002; Heeks, 2002b, 2005; Mukabeta et al., 2008; Vassilakis, et al. 2005
<b>Restrictive law and regulations</b> – no formal rules and regulations to regulate e-transactions or data sharing	Chen et al. 2006; Chen & Gant, 2001; Dawes & Nelson, 1995; Dawes & Pardo, 2002; Harris, 2000; Li, 2005; Titah & Barki, 2006; Vassilakis et al. 2005
<b>Rigid organization structure/hierarchy</b> – organization structure and hierarchy are not reformed and impede service integration and administrative processes as well as delaying services	Heeks, 2002b; Ho, 2002; Kunstelj & Vintar, 2004; Titah & Barki, 2006; Vassilakis et al. 2005; Yu-Che & Gant, 2001
<b>Weak coordination</b> – coordination between central and local government, between departments and employees.	Bekkers & Homburg, 2007; Burn & Robins, 2003; Evans & Yen, 2006; Jaeger & Thompson, 2003; Sharifi & Zarei, 2004; Traunmüller & Wimmer, 2003

The challenges summarized above have been found empirically in many e-government implementation projects. For example, the e-government project in Tamil Nadu, India was successfully adopted and implemented when the first public leader showed high commitment and support toward the Sustainable Access in Rural India (SARI) project implementation. However, when the new leader who replaced him failed to show the same level of leadership, commitment and support, the project development floundered (R. Kumar & Best, 2006).

A further example is the implementation of e-government in Zambia that has been challenged by the lack of coordination between government agencies, lack of commitment among government officials and an unclear implementation strategy. This resulted in impeding the e-government implementation (Weerakkody et al. 2007). Lack of coordination can impede the clarity of responsibility sharing in the project implementation, particularly the coordination between government agencies or between local and state governments. For example, the implementation of e-government in Jordan has experienced significant challenges because of the unclear responsibilities of the various actors involved in the project (Ciborra & Navarra, 2005).

In some African countries, rigid government structures and hierarchy have been found to be another challenge that affects e-government implementation (Heeks, 2002b). Rigid government structures and hierarchy hinder the change management that government organizations need to enact. In fact, e-government requires a new environment in which it is able to operate over a long period of time. This does not occur in African countries during implementation of the technology (Heeks, 2005). Failure of e-government implementation is rampant among those countries

## **2.10 Summary**

This chapter has discussed issues related to e-government implementation and use. The term of e-government has been defined from both government and stakeholders' perspectives and then applied in this study. The discussions also include e-government implementation, use and sustainability, as well as the context of e-

government at local level. E-government users and stakeholders were discussed separately to provide insight into the differences between them. All the discussion above was intended to provide understanding of e-government issues with respect to this study.

In the next chapter (Chapter 3), a theory, which is applied in this study, is discussed. The theory is built based on a social system framework from Van de Ven et al. (1999). The origin of the theory was applied in an industry innovation context (e.g. Van de Ven, 1993 & 2005). The discussion will include definitions of organization, actor, and infrastructure in this study's context. The difference between private and public sectors is also discussed to provide understanding for the theory application. The main section of Chapter 3 discusses the study's theory application.

## **CHAPTER 3: Social System Constructs for E-Government Sustainability**

*“Theory thus becomes instruments, not answers to enigmas, in which we can rest. We don’t lie back upon them, we move forward, and, on occasion, make nature over again by their aid” (James, 1907, p. 46).*

### **3.1 Introduction**

The previous chapter reviewed e-government literature; this chapter discusses social systems and the development of the constructs for e-government sustainability. Following this section, the definition of organization is discussed in section 3.2 to provide an understanding of the term because this study was carried out in local government organizational context. Section 3.3 and 3.4 discuss the differences between public and private sector organizations. Section 3.5 discusses a definition of actors and infrastructures in the context of this study. Section 3.6 discusses the social system for e-government sustainability. The discussion in this section covers all components of institutional infrastructure in the social system and how they are applied in e-government implementation and sustainable use for this study context.

### **3.2 Definition of organization**

Organization has been defined in many different ways by scholars, but all definitions for organizations have the following shared elements; common goals, a group of people, systems and institutions. For example, Gaus et al. (1936, p.66) defines organization as *“The arrangement of personnel for facilitating the accomplishment of some agreed purpose through the allocation of functions and responsibilities”*, while Mooney (1943) defines organization as *“The form of every human association for the attainment of a common purpose”*. Bernard (1938) defines a formal organization as *“A system of consciously coordinated activities or forces of two or more persons”*. Given the three definitions, it can be argued that an organization is a mechanism or a means by which a group of people perform their activities to achieve certain objectives.

Organizations can be formal or informal depending on the nature of people's consciousness when they establish it. Formal organizations are determined by people who work consciously, deliberately, and purposefully, whereas informal organizations are determined by criteria such as people making contact and interaction without any consciousness for specific purpose. The existence of these organizations is indefinite, less structured and there is no definite subdivision (Bernard, 1938). Meyer and Rowan (1977) view formal organizations as "*systems of coordinated and controlled activities*" (p.340) which allow their operations to be highly institutionalized by their environment.

For the purposes of this study, organization is defined as: *formal organizations where their interactions are governed by formal rules, hierarchies, and goals*. The people in the organizations fulfil the missions of organizations through the playing of roles and responsibilities. The organizations have a pattern of coordination and ordering of systems to achieve their goals. This pattern includes, "*coordination, a systematic order of positions and duties which defines a chain of command*" (Selznick, 1948, p. 25). This study subscribes to the belief that formal organizations are better organized in performing their tasks.

Scholars also view organization in different ways and it becomes a debate in organization studies (Astley & Van de Ven, 1983). For example, Perrow (1973) views organizations as a cooperative system in which he argues that the study of organizations should emphasize human relations within the organizations rather than studying organization as a machine. Topics, such as authority delegation, employees' autonomy, trust and openness, and interpersonal dynamic, should be studied. As a result the definition of organizations has been redefined with more focus on people and organizational relationship. For example, Ouchi (1980) views organizations as: "*any stable pattern of transactions between individuals or aggregations of individuals*". The actions of people in the organizations are framed by norms and institutional rules to ensure the organizations are operated in a planned, coordinated, and with purposeful action in achieving the goals (Boella & Torre, 2005).

This study, therefore, tends to view organizations from a collective action view, which "*emphasize collective survival. This survival is achieved through*

*collaboration between organizations and through the construction of a regulated and controlled social environment that mediates the effects of the natural environment”* (Astley & Van de Ven, 1983). This view is strengthened by assumption that organizations are cooperative systems that allow decisions to be reached, actions to be taken, and adjustment to be made when achieving their goals (Selznick, 1948). In other words, organizations and its members are able to collaborate in a coherent manner when developing an innovation.

The use of organization as a unit of analysis in information technology or information systems studies is common. For example, there is a study of organizational behaviour and social challenge in groupware development (e.g. Grudin, 1994), a study of relationship between IT and organizational change (e.g. Markus & Robey, 1988) and a study of interaction between information technology and organization (Orlikowski & Robey, 1991). Studies on organizational level allow us to understand interaction patterns within an organization such as power, turnover, attitudes, social support, organization structure and response to environmental demands (Salancik, 1995), which then enrich our understanding of organizations as a system that links to environment (Ashmos & Huber, 1987).

Previous studies, such as Miller & Doyle (1987); Pitt, Watson, & Kavan (1995), have highlighted the effectiveness of IT in organizations. The understanding of the effectiveness was gained through the understanding of organization and the actors’ interaction within the organization. This interaction involved strategic management, employees involvement, staff skills and services reliability (Miller & Doyle, 1987). This implies that understanding information outcome should involve understanding an organization and factors involved in an IT implementation and use. This includes the need to understand organization innovation through examining the organizational structure and work processes of administrative bureaucracy processes that might hinder implementation of innovation (Aiken, Bacharach, & French, 1980).

### **3.3 Definition of Actors**

Actors have been labelled with different names according to their contexts and perspectives. For example, Actor Network Theory (ANT) (Latour, 1987) views actors as both human and non-human elements. From an IS perspective, non-human



actors can be software or computers that can interact with humans to produce meanings. Lamb & Kling (2003) view actors from social perspectives. They argue that actors are humans who use or develop information systems and define social actors “*as an organizational entity whose interactions are simultaneously enabled and constrained by the socio technical affiliations and environments of the firms, its members and its industry*”. Also, they add that the social actors’ interactions are exerted with one another across organizational level, as well as within external organizational context through coordination mechanism to exchange resources. This interaction becomes a basis of social institution and identity in support of their organizational and inter-organizational activities.

Within organizations’ IS context, social actors have been considered to play important roles in any circumstance of IS implementation and use. The actors may be characterized as professional individuals, groups of firms, organizational members acting as a collective, or organizations interacting with environment regulators (Lamb, 2002). These actors are from any level within or outside organizations’ environment. Battilana, et al. (2009) argue that the actors’ social position facilitates their relationship with their environment and that position affects their perception of the phenomenon, which then determines the actors ability to implement a change.

The social actors concept proposed by Lamb & Kling (2003) suggests that individuals play roles within the institutional context where they are enhanced and constrained by their institutional environment. However, innovations are seldom emerged and developed by individual actors, but are emerged and developed by a number of actors who play institutional roles in a social system. This study, therefore, tends to view actors from institutional perspectives. Institutional actors are actors who exercise institutional roles that they either assume or are assigned. And the actors can be individuals, groups, or organizations (Van de Ven & Garud, 1993). These actors are interested in institutional aspects of new technology (e.g. standards, capability certification and best practices) (Wang & Swanson, 2007).

Individual actors are often viewed as institutional entrepreneurs “*who leverage resources to create new innovation or to transform existing ones*” (Maguire, Hardy, & Lawrence, 2004). Within an organizational context, the individual actors can exist

at different levels of government hierarchies. For example, it can be a head of local government who shows strong leadership and the motivation to champion the implementation and use of e-government within their organization (Farholt & Wahid, 2008).

This study does not position itself with the role of an individual actor in sustaining e-government implementation and use. It considers that e-government sustainability is emerged through numerous events and actors activities within a social system that consists of institutional infrastructures, such as institutional arrangement, resource endowment activities, competent human resources and stakeholders demands (Van de Ven & Garud, 1993). However, this study also acknowledges that individual actors, such as a champion, may play roles in energizing efforts towards collective action and make strategies to build stable interaction with other organizations (Garud, Sanjay, & Arun, 2002); but their individual roles may be constrained by resources and institutional arrangement. Van de Ven (2004 & 2005) suggests that actors “*run in packs*” to build and sustain innovation infrastructures.

Van de Ven & Garud (1993, p. 13) identifies actors in their biomedical innovation study and it includes professional/industry trade association, regulatory agency, financing agency or investor, academic, research, or educational institution, clinics, customers, private, and not-for-profit organizations. Ciborra & Navarra (2005) clearly divide the actors into external and internal dimensions when they describe e-government implementation and use in Jordan. External actors are actors from outside government organizations that contribute to the e-government implementation, such as consulting firms, vendors, donors and non-government organizations, while internal actors include government leaders, IT staff and employees. However, since this study was carried out within local government organizations, central government actors are considered as external actors. Based on the above perspectives, this study classifies actors for e-government implementation and sustainable use into three groups as depicted in Table 6.

**Table 6: Actors in e-government Sustainability**

<b>Group of actors</b>	<b>Actors</b>	<b>Description</b>
Government	Politicians	Publicly elected decision and policy makers
	Administrator	Middle and higher level salaried career employees executing politicians' policies
	Service provider	Lower level salaried career employees carrying out day to day government jobs. Directly or indirectly interacting with citizens.
Citizen	Consumer	Uses services offered by the government
	Activist	Citizens involved in efforts to execute specific government policies and decisions through civil action often individually or in groups
Business	Vendor	Companies mostly private who provide systems (software, hardware, and Infrastructure) and/or consulting services in e-government projects.

Based on (Axelsson, Melin, & Lindgren, 2013, p. 12) and (Sæbø, Flak, & Sein, 2011)

### **3.4 Public versus Private Sectors**

The difference between public and private organizations has been addressed in previous studies (e.g. Hooijberg & Choi, 2001; Perry & Rainey, 1988; Rainey, Backoff, & Levine, 2009; Rainey & Bozeman, 2000) which argue that public organizations have different characteristics compared to the private sector. These different characteristics can lead researchers to question the applicability of organizational and management theories. One significant difference between private and public organizations is the frequent change of top leader due to regular political cycles such as elections (Bretschneider, 1990; Rainey et al. 2009).

Other researchers (e.g. Boyne, 2002) also mention that public sector organizations are more bureaucratic and its managers are less materialistic, which can contribute towards a lack of commitment in achieving organizational goals. Boyne (2002) adds that private organizations belong to entrepreneurs or shareholders, whereas public organizations, on the other hand, are collectively owned by political communities. This impacts the different orientation in services delivery. For example, public

organizations focus on providing services that are utilized by citizens, while private organizations concentrate on providing competitive commercial goods and services for profit (Osburn, 2009). As a result, when private companies implement a project, such as IS, it is also targeted to gain company profit and competitiveness (Rocheleau & Wu, 2002)

This implies that one needs to view public organizations from different theoretical perspectives to enhance understanding and provide accurate analysis of public organizations. For example, since public organizations are collectively owned by political communities, it can be appropriate to understand government policy implementation, such as e-government, from collaborative perspectives (Chrislip, 2002; Wood & Gray, 1991).

In the context of IS management, Bretschneider (1990) clearly addresses the uniqueness of Public Organizations' Management Information System (PMIS). Bretschneider (1990) argues that IS managers within public sectors often face red tape and high inter-dependency between government actors, which require them to collaborate. Also, IS managers are also often placed at lower level in an organization's structure. Due to the high inter-dependency within public organizations, Bretschneider (1990) suggests that public organizations employ more coordination mechanism within and across organizations boundaries in IS planning and development.

In the leadership context, government middle-level leaders play critical roles in public organization IS development compared to private organizations. The IS development managers rely highly on a top leader who acts as a project champion (Caudle, Gorr, & Newcomer, 1991). This may be caused by frequent top turn-over, as argued by Rainey (1976), which makes them unable to support sustainability for a long period of their IS implementation and use. Public managers at middle levels are often not affected by political change; this enables them to play an important role in long term IS implementation and use.

Since public organization leaders are highly influenced by the political environment, the decision-making within public organizations is also highly centralized (Heintze & Bretschneider, 2000). This affects the decision-making process in IS development

as it is also more hierarchical and bureaucratic (Bretschneider, 1990). Public IS managers at the middle levels have to deal with a top political leader in any IS decision-making process. In addition, due to the political environment, public leaders also tend to practice transactional leadership (Parry & Proctor-Thomson, 2003) according to their appointers, such as citizens, business and parliament members. In response to these complex environmental demands, public leaders tend to manage IT through collective leadership and consensus (Gill, 2009). As a result, it is important to recognize the uniqueness of IS in public organizations to enable us to understand IS implementation and use within their own environment appropriately (Rocheleau & Wu, 2002).

### **3.5 Understanding Infrastructure**

The term of infrastructure has been used within different contexts. Some scholars (e.g. Swanson & Ramiller, 1997; Waddock, 2008) use the term institutional infrastructure in their studies, while other scholars use the term Information Technology (IT) infrastructure (Byrd & Turner, 2000; Duncan, 1995; Weill, 1992). Scholars' views on institutional infrastructure, based on their assumption that organizations develop an innovation, is that it is institutionalized and taken for granted as they engage with environments, such as markets, stakeholders, and even their own vision to change. Meanwhile, IT infrastructure is mostly viewed in a context of technical perspectives that supports an innovation development, such as hardware and software.

Therefore, IT infrastructure is a multi-faceted concept (Byrd & Turner, 2000) and its meaning can be separated into technical and non-technical perspectives. From technical perspectives, infrastructure is understood as "*the enabling foundation of shared information technology capabilities upon which business depends*" (Weill, 1992, p. 3). This technical infrastructure includes "*the hardware, operating software, communications, other equipment and support required to enable business applications*" (Weill, 1992, p. 4). From a non-technical perspective, IT infrastructure is associated with human capabilities (Broadbent, Weill, & Neo, 1999; Broadbent, 1997; Weill et al. 2002), for example, a specific body of knowledge, skill sets and

experience “to provide the policies, planning, design, construction and operations capability necessary for a viable IT infrastructure” (Weill, 1992, p. 4).

This study, however, views infrastructure from a social system perspective (Van de Ven et al. 1999). The notion of this social system is that the innovators must not only be concerned with micro-development technical devices, or product, but they must also be concerned with the creation of a macro-system of infrastructures, which includes social, economic, political and institutional components that are required to sustain an innovation within a community (Van de Ven et al. 1999). As a result, this study does not only view infrastructure in a traditional context, where a group within an organization develop technical products, but also from a view that includes other actors who play key roles in the development of a social system for innovation (Van de Ven & Garud, 1993). This system includes institutional arrangement, resources endowment, proprietary activities and market consumption (Van de Ven & Garud, 1993; Van de Ven, 1999 & 2005).

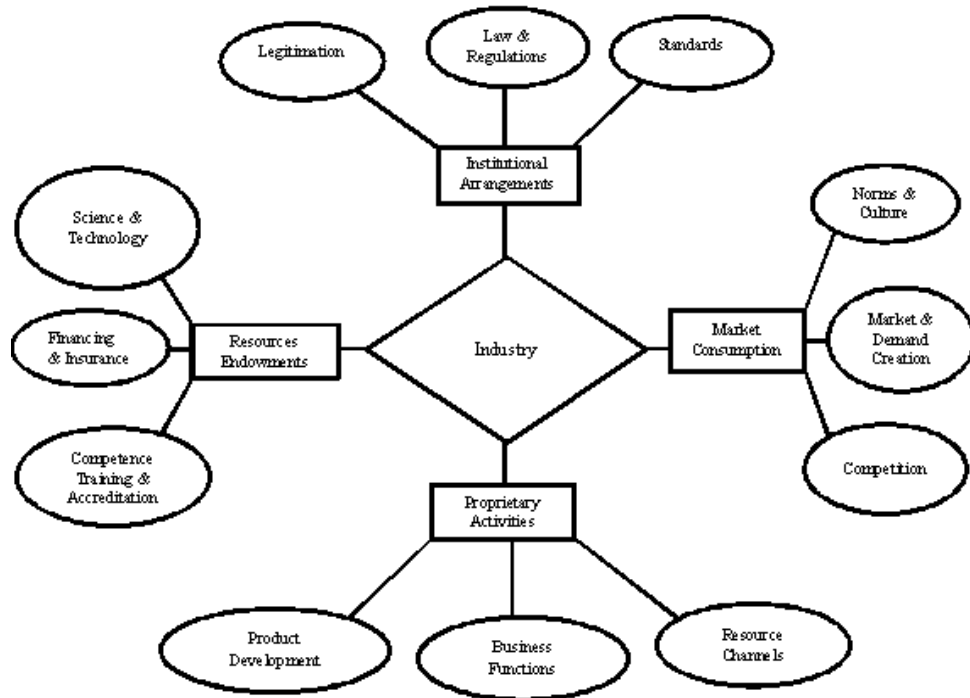
### **3.6 Social System Framework for E-government Implementation and Sustainable Use**

E-government is deployed and sustained within organizations “to change the structure and process of government organisations aiming at performance improvement” (Mofleh et al. 2009). However, e-government agenda faces a plethora of institutional, human, financial and infrastructure resource challenges (Ebrahim & Irani, 2005; Lam, 2005; Moon, 2002). These challenges are common when government organizations try to sustain their e-government implementation and use alone because they may not have enough resources, competency, and legitimacy. Van de Ven & Garud (1999 & 1993) argue that single actors seldom have sufficient resources, competency and legitimacy to produce change alone.

E-government implementation and sustainable use is understood as an activity of making information systems work over time within an organizational setting (Braa et al. 2004). This process requires a lot of resources, competency and legitimacy, which may not be possible if endowed by a single government actor. Government actors are required to build interaction and collaboration with other actors, such as public to public, and public to private collaboration (Dawes & Eglana, 2008; Luna-Reyes, Gil-

Garcia, & Cruz, 2007) to obtain the resources, competency and legitimacy. This inter-relationship building with other organizations is intended to mesh together as social system to attain a collective achievement and solve specific problems (Van de Ven, Walker, & Liston, 1979), such as lack of resources, competency and legitimacy, mentioned above.

This study has adopted the social system framework proposed by Van de Ven & Garud (1993); Van de Ven et al. (1999) (see Figure 3) to understand how e-government implementation and use is sustained. The original social system framework takes an augmented view of industry that incorporates various components of infrastructure for technology innovation, such as institutional arrangements, resources endowment, firms' proprietary activities and market demand. The infrastructure emerges through "*the accretion of numerous institutional, resource and proprietary events that influence each other over an extended period*" (Van de Ven et al. 1999). The social system framework believes that single actors are only able a limited set of actions and, therefore, rely on other actors to accomplish all innovation functions to emerge and survive (Van de Ven, 2005; Ven et al. 1999).



**Figure 3: Components for innovation development from Van de Ven et al. (1999)**

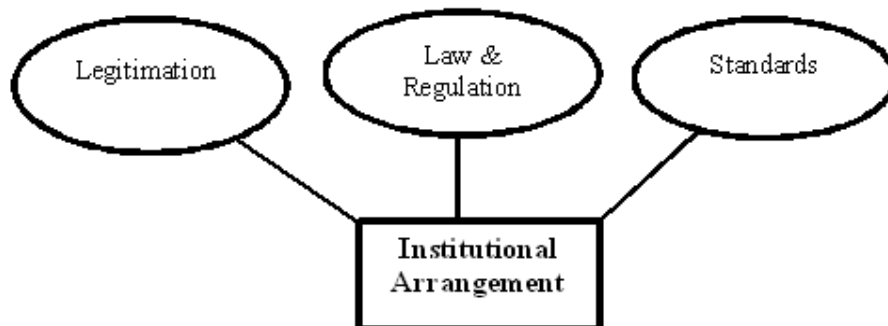
However, since this study is dealing with innovation sustainability within the public sector context, some of the social sub-systems do not fit and need adaptation. This adaptation is based on the consideration that *“the specific characteristics of an industrial infrastructure vary according to the technology on which it is based”* (Van de Ven, 2005, p. 367). This means the adaptation of the social system framework that consists of various institutional infrastructures is intended to fit the context where e-government innovation is based. The following subsections discuss social sub-systems for e-government implementation and sustainable use context.

### **3.6.1 Institutional arrangement**

Institutional arrangements are defined as administrative rules, norms, laws, and conventions that society uses to legitimize, regulate, and coordinate the actions and expectations of the individual, which make them predictable (Powell & DiMaggio, 1991; Van de Ven & Garud, 1993; Van de Ven et al. 1999). An organization’s behaviour, practices, and pattern of interactions within the technological field are



often governed and shaped by institutional arrangements (Garud et al. 2002). These institutional arrangements include: regulatory instruments, such as rules and regulation, (Hargrave & Van de Ven, 2006; Van de Ven, 1993; Van de Ven & Garud, 1989), legitimacy (Aldrich & Fiol, 1994; Dacin, Oliver, & Roy, 2007; Meyer & Rowan, 1977; Rao, 1998) and standards (David & Shurmer, 1996; Hargrave & Van de Ven, 2006; Van de Ven et al. 1999). Figure 4 summarizes the three components of institutional arrangements.



**Figure 4: Component of institutional arrangements**

The environments of institutional arrangements play a role in technology developments within organizations through direct and indirect interaction. The institutional environments enable and constrain the technological development and change through a continual, two-way interaction between organizations and its environment (Garud & Rappa, 1994). In most cases, the interactions are made through cooperation, with organizations collectively manipulating their institutional environment to legitimize and gain access to resources necessary for collective survival (Meyer & Rowan, 1977).

#### *3.6.1.1. Legitimation*

Organizations seek legitimacy from its stakeholders in performing their legitimate actions within their environment. The legitimacy, according to Van de Ven et al. (1999) comes from consumers who demand products. This causes organizations to practice legitimate action in response to the demands. This legitimacy is crucial for organizations survival (Sudabby & Greenwood, 2005). Mostly organizations use the legitimacy as “ *imperative*’ that is both a source of inertia and a summons to justify

*particular forms and practices*” (Selznick, 1996, p. 273). In building this justification, organizations tend to mimic or become isomorphic with their successful environment because they believe that such a successful environment might easily provide them with legitimation from their constituents.

The process to become legitimate or to maintain legitimacy is not a short and easy process, but requires organizations to take actions as required by the community. This process is understood as “*a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed systems of norms, values, beliefs, and definitions*” (Suchman, 1995, p. 574). This also includes the willingness of organizations to conform to their environment and to incorporate practices and procedures imposed by their environment (society) to gain the legitimacy (Meyer & Rowan, 1977). As a result, community (stakeholders) may perceive the legitimate organization as being more worthy, meaningful, predictable and trustworthy.

IT implementation and sustainable use for local governments’ best practices can be justified when local governments obtain legitimacy from their wider constituents or stakeholders (DiMaggio & Powell, 1983) such as citizens, companies and central government as a regulatory agency. When stakeholders perceive the local governments’ legitimacy, they are likely to supply resources to the organizations “*that appear desirable, proper or appropriate*” (Suchman, 1995). In contrast, organizations without legitimacy might be considered as negligent, irrational and unnecessary. In this context, legitimacy is not perceived as an operational resource, but as a set of constitutive beliefs where organizations not only extract legitimacy externally, but also perceive that external institutions construct and penetrate in every aspect of the organization’s life (Suchman, 1995).

Similarly, government stakeholders may perceive the legitimacy of their government when some desirable criteria, such as standards or norms, have been practiced by their government (Basu, 2004) in delivering e-government services. These criteria may be related to the government accountability (Wong & Welch, 2004) in providing services to the stakeholders. The communities (stakeholders) share knowledge about the innovation and generalized beliefs about its appropriateness (Wang & Swanson,

2007), which then become a source of government legitimacy. This type of legitimacy is also considered as political legitimacy (Aldrich & Fiol, 1994) where the community accept the innovation as “*appropriate and right*”.

### 3.6.1.2. Regulation

The terms regulation has become a confusing area that has been use interchangeably with other terms such as rules, regulation, and laws (e.g. Posner, 1976; Tobacco-Control-Legal-Consortium, 2011). This study, however, uses the term “regulation” to refer to other legal terms, such as rules and laws, as theoretical constructs. Regulation is important for an organization because it helps the organization gain legitimacy, resources, stability and enhance their survival prospect (Meyer & Rowan, 1977). Regulation, either formal or informal, is utilized by organizations to regulate actors’ behaviour (North, 1990) and it is also written to specify the roles (rights and duties) of actors, as well as to assign these roles to the actors such as individuals, firms, trade associations and government agencies (Van de Ven & Garud, 1993). Clearly, regulations function as guidelines or prescriptions for actors, such as managers, which enables them to adjust structure to new contingencies (Drazin & Van de Ven, 1985).

Organizations view regulation as an institutional element that constrains behaviour and regulates interaction (Geels, 2004). Scott (1995) refers to regulation as explicit and formal rules, which consists of “*explicit regulative processes: rule setting, monitoring and sanctioning activities*” (p.35). In the context of government organizations, regulations are explicitly and formally enacted to structure government institutions to behave in certain ways. Organizations may also develop rules to evaluate its products (Das & Van de Ven, 2000). For example, USA banks must conform to Federal rules and regulation regarding their electronic data processing (EDP) and IS practices (Ang & Cummings, 1997).

Geels (2004) stresses that rules or regulations are all about rewards and punishment backed up by sanctions. Similarly, government institutions are impelled by the rules to implement certain initiatives or policies such as e-government systems. Failure to abide to a regulation can lead to sanctions. This includes sanctions when the e-

government systems do not meet criteria or targets determined by regulations (Griffin & Halpin, 2005).

A regulation on freedom of information and transparency is one vivid example that imposes the requirement for government organizations, including local governments, to implement and use e-government systems. These regulations have been enforced in many countries such as in USA (Apfelroth, 2006) and Spain (Agusti, 2011). Agusti (2011) suggests that the diffusion of information through electronic means within the public sector in Spain was caused by the formulation of new regulations. The regulations cover the general principle of electronic means in providing information to citizens and their right to access the information. All public organizations must abide by this regulation.

Regulations may constrain government organizations in that they impose the implementation and use of e-government within their organizations (Devadoss, Pan, & Huang, 2003). This may imply that regulations can be a source of institutional pressure that has the ability to force government organizations to implement and sustain the use of e-government systems. In context of local government, regulations may force local government bodies to sustain their e-government systems' implementation and use for the local government organizational reform and stakeholders services (Ke & Wei, 2004; Rose, 2004). The regulations can not only mandate government agencies to sustain the e-government, but also force government agencies to adapt a new set of work processes, values, competencies and systems to fit with current technology (Heeks, 2005). Values, such as the new way of serving customers and quality, are consistently maintained by employees and managers within organizations to gain trust from internal and external (Van de Ven, 2001).

### *3.6.1.3. Standards*

Standards are often associated with uniformity, such as in IT products (e.g. Zhao, Xia, & Shaw, 2005), procedures (e.g. Olshan, 1993), and processes such as coordination and interoperability (e.g. Nelson & Shaw, 2005). An IT standard is understood as “*specific characteristics of an IT product that is consumed by end users*” (Zhao et al. 2005, p. 291). For this study's purposes, standard is understood as

the uniformity process and procedures in implementing and use of IT products within government organizations. Specifically, standards represent “*the rules of engagement*” that cover the details of form and function of actors (Garud et al. 2002, p. 198). Weill (2002) mentions that standards also include specific blue prints of how the technologies will be implemented and used in the future. The standards cover sets of policies that govern the implementation and use of IT within organizations. Garud, et al. (2002) argue that these technological standards comprise the key element of institutional space, which will enable or constrain the actors in using the technology.

The standards can be mandated by government regulatory bodies or they can be voluntarily established through cooperation and consensus among organizations (Van de Ven et al. 1999). The actions of actors within organizations are often shaped by standards to ensure all actors behave and act according to the organizations’ needs and environment. For example, individual actors need to act based on current social norms in completing their collective work within organizations. At organizational levels, organizational actors need to build a standard of action and relationship if they want to “run in a packs” or collaborate with other organizations to achieve certain goals (Van de Ven, 2005).

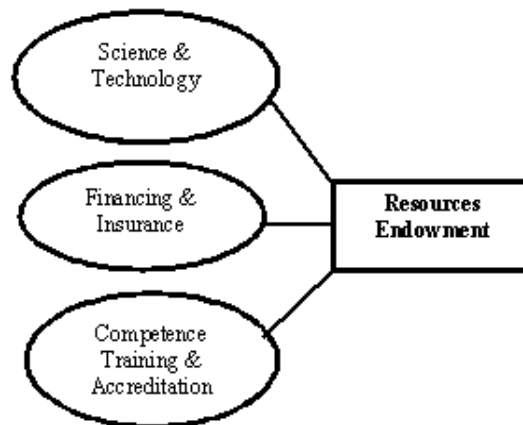
Yoo, Lyytinen, & Yang (2005, p. 345) argue that standards provide some benefits for individual and organization actors. First, standards enable different actors to align their interests so that they build effective actor networks that allow them to shape the context in which they can compete. Second, standards enable the alignment of conflicting interests of multiple actors during the early stages of its commercialization. Third, standards offer ways to integrate and generate technical knowledge that is critical for the successful implementation of the infrastructure. Fourth, standards help the actors shape their network configuration in performing actions (Arthur, 1989; David, 1985). Finally, the availability of “*standard rules and protocols also allow the innovation to reach a wider set of organizational actors, possibly even everyone*” (Mergel & Bretschneider, 2013, p. 4)

For government organizations to provide better services to their stakeholders, such as citizens, businesses, politicians, and other government agencies, standard procedures are required. Thus may include standards in technical and management to allow the

seamless flow of information across their organizations in providing the services. Technical and management standards enable the inter-operability and coherence of work across the government institutions (Borras, 2004). Standards are also important in helping organizations establish their network with other organizations and allow sharing of information among them, according to the code of conduct they have agreed (Clemons, Reddi, & Row, 1993). As a result, the organizations improve sustainability and stakeholders' relationships because their operations are based on what they expect (Waddock, 2008).

### 3.6.2 Resources Endowments

Resources are believed to be critical for most of the technological development and sustainability because it ensures the continual development and maintenance. Organizational resources endowments have been described as including elements such as assets, capabilities and competencies that are likely to enable organizations to outperform in their environment (Ray, Muhanna, & Barney, 2005). This is in line with Wade (2004) who defines resources as “*assets and capabilities that are available and useful for organizations*” (Wade, 2004). Van de Ven et al. (1999) and Van de Ven & Garud (1993) mention three critical resources that support the development of technological innovation: science and technology, financing and insurance, and competence training and accreditation.



**Figure 5: Three components of resources endowments**

The resources help organizations deal with their environment and enable them to defend themselves from external threats (Kraatz, 2001) and increase organizational ability to adapt and respond to environment demand and uncertainty. The correlation of resources availability with IS implementation and use has been addressed in previous IS studies. For example, Premkumar & King (1994) argue that organizational resources, such as personnel, are crucially important for IS implementation. The resources play roles in IS implementation from an early stage of IS implementation, such as when an IS at the planning stage, until post implementation such as maintenance and development stage.

Haveman (1993) argues that an organization with resources availability may successfully imitate the diverse actions of other successful organizations, because the resources enhance organization performance and help them to obtain the competency to model themselves as required by their environment (Kraatz & Zajac, 2001). Resources mentioned above are mostly available within established organizations. Organizations without these resources need to coalesce (gather/collaborate) with other organizations to obtain these resources (Delbeco & Van de Ven, 1971).

#### *3.6.2.1. Science and Technology*

Science and technology knowledge provide a foundation to support technological innovation and makes it available to the whole community (Van de Ven et al. 1999). However, science and technology knowledge is often expensive to produce. This causes an organization to experience difficulties when producing the science and technology knowledge alone. As a result, a number of strategies have been offered to obtain the science and knowledge, such as imitation of competitors (Zack, 1999), personnel transfers (Roberts & Hauptman, 1986) and building an IT training and education centre (Weill et al. 2002, p. 9).

Science and knowledge may also be obtained when organizational members interact with other organizations' members (Mizruchi & Fein, 1999) and through conferences, publications and organizational protocol (Zorn, Flanagan, & Shoham, 2011). It has been found that organization members' links to other organizations can affect their cognitive capacity (e.g. Haunschild, 1993). Also, organizational members who are often engaged in certain environments will be encouraged to copy other

organizations' activities. These engagements may help organization members to generate new science and knowledge about other organization actions. Most organization leaders also obtain their science and knowledge, e.g. managerial capability, through their engagement experience with their alliances over time (Rothaermel & Deeds, 2006), for example, the capability to allocate and maintain IT resources.

Participation in a professional association is considered another strategy to improve knowledge and technology science (Teo, Wei, & Benbasat, 2003). For example the adoption of Financial Electronic Data Interchange (FEDI) within Singapore-based organizations was encouraged by the Government-sponsored and interested associations (Teo et al. 2003). Professional groups and associations can function as a pool for individuals knowledge interchange across organizations and they become a vehicle to define and disseminate professional behaviour (DiMaggio & Powell, 1991).

Within the government technology implementation and use context, science and technology knowledge can also be obtained through organizational learning, such as learning from others failures or mistakes made during the adoption and implementation of an e-government initiative (Atkinson, 2000; Heeks, 2002a, 2005). Failure can be conceived as a value that provides opportunities to learn what is applicable and what is not applicable in a new system inside their organization. Government organizations, for example, can share information on technology providers for e-government implementation and use (Cook et al. 2002). The essence of looking at competitors as suggested by Zack (1999) is similar to looking at other local government organizations strategy in context of e-government science and knowledge development as suggested by Cook (2000). A local government can identify other local governments' best actions while developing and maintaining their own e-government innovation.

#### *3.6.2.2. Financial Mechanism*

Financial systems play important roles in private or public organizations because they relate to the adaptation and change within their environment. The availability of financial resources determines a government organization's capability to



continuously diffuse e-government innovation within community. For example, the Singapore government successfully implemented and diffused e-government across the country because it was well supported by financial arrangements (Ke & Wei, 2004). In contrast, when financial resources are not available, organizations are unlikely to develop and diffuse their innovation. Van de Ven, et al. (1999) give the example that when financial sources were not allocated, only a few biomedical innovations were commercially available to the public. This implies that without such financial resources, communities are unlikely to get access to government services and innovations.

Financial resources support a government's ability to build technology and human infrastructures that help government organizations transform basic knowledge in tangible innovations. Van de Ven (1999) suggests public institutions play important roles in financing the development of basic knowledge and technological innovation to support the transformation of the basic knowledge into commercial innovation. Financial resources can also be used as a means of communicating and coordinating strategies and priorities, as well as a reward system to facilitate human actors' commitment in achieving organizations' priorities in the development of the innovations (Abernethy & Brownell, 1999).

However, government organizations can build financial resources from annual budget allocation or cooperation with private organizations. For example, governments regularly allocate annual budget for higher institutions (Liefner, 2003). Also, government organizations can obtain financial resources from cooperation with private organizations such as NGOs (Bennett, Goldberg, & Hunte, 1996). However, building financial mechanisms within government organizations may face greater challenges. In most cases, political institutions can intervene in government budget allocation; government organizations, such as local government, are formal public organizations which are bound by a political system (March & Olsen, 1984).

As a result, any government organization's budgeting policy is guided by partisan politics, which means both executives and legislative actors are involved in the budgeting process (Lee, Johnson, & Joyce, 2012). In contrast, private organizations do not experience the political guidance in budgeting systems, but are constrained by

a relatively fixed set of available financial resources while government organizations have a variety of financial resources (Lee et al. 2012). Government actors (executives) often conflict with legislative actors in obtaining political approval for their budget allocation (e.g. Premchand, 1994). Therefore, actors within government organizations are required to cooperate and coordinate to reduce conflict in budget allocation.

### *3.6.2.3. Competence Training and Accreditation*

A group of competent human resources is an important resource for innovation development. Studies (e.g. Aiken & Hage, 1971; Bharadwaj, 2000) have found that the success of innovation within organizations is determined by competent staff. New technologies within organizations require competent human resources to implement, develop and maintain it for sustainable operation. This competence of human resources can be developed through a variety of ways. Van de Ven, et al. (1999) and Van de Ven (1993) suggest obtaining the human resources through professional recruitment; training them with the required innovation skills; diffusing innovation professional skill across organizations and providing educational training through formal institutions such as college and universities, and informal institutions, such as training centres. The interdependence of human competence development across institutional networks requires collaborative human resources development across the organization's networks, as suggested by Van de Ven (1993).

Competent IT human resources comprise technical and managerial IT skills (Bharadwaj, 2000). Competent human resources can be understood as organizational members whose knowledge and skills are acquired through education or experience. Organizations may provide their members with knowledge and skills through professional activities, such as training, or through their involvement with professional associations. Organization members' experience can be derived from an adaptive learning process across organizational hierarchies during an innovation's development (Van de Ven & Douglas, 1992). The professional activities in training staff are understood not only as instrumental in obtaining skills, but also increasing the commitment to the profession or person identified with the profession (Bartol,

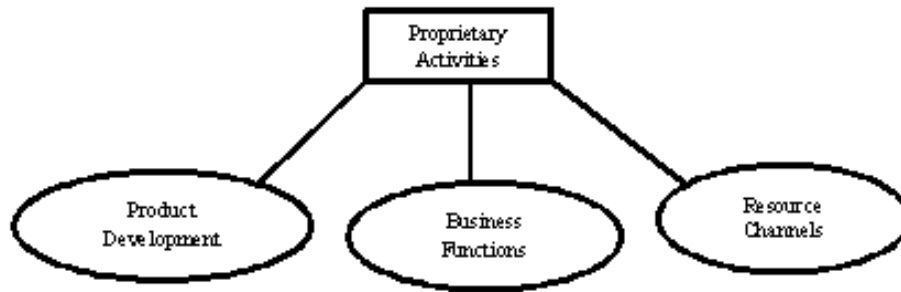
1979). Thus, professional activity covers both the acquisition of high quality skills, and the knowledge and willingness to apply it in daily organizational practices.

Higher human competence within an organization can increase both the organization's and its members' self-confidence to move beyond the current conditions and create a supportive environment for new innovations (Damanpour, 1987). Their commitment to be involved and participate in innovations is also increased (Daft, 1978). Thus, the opportunity for an innovation to be developed and diffused over the time across an organization network is also increased. The competence should be available at all levels within organizations from staff to managerial levels. Managers' competency in IT can provide government organizations with the ability to identify problems during implementation, maintenance and evaluation, and to find solutions for future IT development (Kamal, 2006)

### **3.6.3 Proprietary Activities**

The focus of proprietary activities is on the actions of firms in transforming basic knowledge into infrastructure proprietary activities such as technology development, resource channels, manufacturing, marketing, distribution and services (Van de Ven & Garud, 1989; Van de Ven, 1993 & 2005; Ven et al. 1999). Proprietary activities mostly belong to private firms "*which is one that a private entity can perform, and is not uniquely for the benefit of the general public*" (Richards, 2009). In addition, proprietary activities are concentrated on generating financial benefits from market activities.

The three proprietary activities (depicted in Figure 6) are understood as an organization's activities to develop product, build business functions and resources channels.



**Figure 6: Three proprietary activities**

However, since this study took place within government organizations, proprietary activities are not a significant focus of this study. Government organizations are mostly involved in governmental activities, such as such as restaurant inspection, animal control, health and safety permits and licenses, operation of traffic lights and other related activities, which do not involve monetary charges (Brown-Graham, 2007; Richards, 2009), rather than proprietary activities.

Government organizations can become involved in proprietary activities when they use monetary charges. Brown-Graham (2007) gives examples of government proprietary activities such as maintenance-by-fee of landfill, water and electricity distribution for profit, operation of an airport and a municipal golf course. As a result, the difference between governmental and proprietary activities can be more difficult to ascertain due to the characterization of government activities.

### *3.6.3.1. Product Development*

A product is understood as “a good, idea, method, information, object or service created as a result of a process and serves a need or satisfies a want” (Business Dictionary, 2013). A technology product can be made through innovation or imitation of a competitor (Norton, 1987). Examples of information system products are management reporting systems (Perrini & Tencati, 2006) and office information systems (Ellis & Naffah, 2012). Literature (e.g. Heeks & Bailur, 2007; Yildiz, 2007) suggests that e-government is a technology product within public organizations that is utilized for management reform and stakeholders services. Therefore, the term “product’ used in this study refers to e-government.

For product development, Van de Ven et al. (1999) suggest developing technology within the innovating firm or outsourcing to outside supplier. However, developing products within the innovating firms requires high investment and labour is limited. Jarvenpaa & Ives (1991) suggest the involvement of higher levels of employees within an organization, such as the manager and CEO, in an innovation development. Jarvenpaa & Ives (1991) suggestion can be strengthened by the six steps of innovation development: strategic planning, idea development, market opportunity analysis, technical development, testing and commercialization (Song & Montoya-Weiss, 1998). These processes of development can be carried out by a single actor, such as someone from the technical staff.

In the context of e-government development, Oostveen & Besselaar (2005) suggest the involvement of the users in a development to avoid resistance from the users such as employees and citizens. Alavi (1984) suggests building intensive communication between the developers and users during the information systems development. For the purpose of this study, e-government development activities are understood as the process of information system development from systems analyses through specification, design, development, installation and maintenance (Alavi, 1984).

IS project development cannot be handled by an IS or IT team alone; it requires team work and intensive collaboration. Three groups of stakeholders, IS staff, users, and management, should build dynamic interaction, communication, and coordination in the IS development project (Ewusi-Mensah, 1997). The involvement of those three stakeholders, due to the complexity of IS development, should span from planning to maintenance to ensure the IS sustainability. Doll (1985, p.17) argues that *“information systems are just too important to leave development in the hands of technicians”* only. Similarly, an e-government system development project requires the collaboration between IT staff, users and government leaders to ensure its sustainable operation. Torres, Pina & Sonya (2005) argue that political actors should also be involved in e-government systems project development. Political actors usually play important roles in supporting the implementation of government policies to provide legitimacy related to regulation and financial allocation.

Lack of engagement between the three stakeholders may lead to hindering further diffusion of e-government systems within the community. For example, Cho & Mathiassen (2007) found that REACH (the Remote Evaluation for Acute Ischemic Stroke Program) innovation did not diffuse well into rural hospitals due to lack of interaction and collaboration between innovators (the system developers) and users (neurologists) during the development.

### *3.6.3.2. Business Functions*

Van de Ven (1999) argues that a firm's proprietary function is related to the innovation of a product's development and its commercialization to the wider community. This process involves manufacturing, marketing and distribution to establish a profitable business. Government organizations also function to provide product and commercialize it to the public, but their activities are based on public interest, such as provide education services (Evans & Karras, 1994), rather than profit generation. Government organizations are collectively owed by political public (2002) and their business functions are utilized by citizens without involving commercialization of goods and services for profit as argued by Osburn (2009).

This study considers that government organizations are more focused on providing services for public interest through budget allocation, as opposed to market performance and making profit (IFAC, 2010; Rainey et al. 1976). This may be due to public organization actors' values, who show strong obedience to political superiors, regulations and the provision of services for public interests, rather than self-fulfilment and profitability adopted by private organization actors (Van der Wal, De Graaf, & Lasthuizen, 2008). This notion is supported by the fact that public sectors are populated by political, governmental and bureaucratic institutions, rather than market institutions; and their focus is more on public interest rather than self-interest (Lane, 2000). Therefore, this study concentrates on government business functions in providing service to citizens, rather than business function in the private sector perspective that focuses on improving market performances, profits, and competitiveness (Van de Ven et al. 1999 & 2005).

The services are provided through a variety of e-government systems to improve efficiency and provide benefits for citizens (Axelsson et al. 2013). Recent studies

(e.g. Kernaghan & Berardi, 2008; Soon et al. 2010) show that citizens and other stakeholders want government services to be available 24/7 (24 hours a day/7 days a week). The services should also be provided through multiple channels to enable citizens to make choices (Reddick & Turner, 2012). Government services that require multiple contacts and access points are transformed into a one-stop-shop access.

It is only possible to access this one-stop-shop service through the use of e-government systems across government institutions. For example, government organizations provide services through a variety of e-government applications. To sustain development and use of these e-government applications they should be supported by factors such as *“(1) strong top management support, (2) promise of large efficiency gains, (3) enough IT capability on the part of the government unit to identify key pieces of technology, (4) less burdensome outsourcing rules and procedures, and (5) a variety of high quality and reliable ASPs (application services providers) from which to choose locally”* (Chen & Gant, 2001, p. 343)

Better e-government services should also be supported by commitment from government institutions to deliver higher e-government services reliability and responsiveness. The government IS provides the services as promised and government employees are ready to respond to stakeholders' demand at any time (Kettinger & Lee, 1997). For example, the appearance of the website interface and the comprehensiveness of functionalities offered for completing governmental transactions that are fully functioned and can be accessed at all times by all stakeholders (Chee-Wee, Benbasat, & Cenfetelli, 2008). The websites should also allow citizens to access community-based and local government information with a more user-friendly, comprehensive and convenient way (Detlor et al. 2013). As a result, citizens can gain positive experiences and lead them to use the services continuously (Reddick & Turner, 2012). Types of e-government service products that are commonly provided by government institutions are depicted in Table 7.

**Table 7: Types of E-government services**

	<b>E-government services</b>	<b>Authors</b>
1.	Websites (provide and disseminate government information)	Chee-Wee et al. 2008; Cook, 2000; Detlor et al. 2013; Lambert, 2013; L. Wang, Bretschneider, & Gant, 2005
2.	Online tax	Hung et al. 2006; Moon, 2002
3.	Online payment	Hung et al. 2006; Moon, 2002
4.	e-procurement	Chu, Hsiao, Lee, & Chen, 2004; Moon, 2002; Panayiotou, Gayialis, & Tatsiopoulos, 2004; Teo, Lin, & Lai, 2009
5.	e-participation (e.g. political (E-Voting), filling online comments)	Fernandez, La Red, & Peláez, 2013; Medaglia, 2012; Moon, 2002; Powell et al. 2012; Sæbø et al. 2011; Susha & Grönlund, 2012
6.	Electronic data interchange	Moon, 2002; Scholl et al. 2012
7.	Online forms and documents	Carter & Belanger, 2005; Fang, 2002; Moon, 2002
8.	Tele centres	Gopakumar & Rajalekshmi, 2007; Harris, Kumar, & Balaji, 2003; Kumar & Best, 2006
9.	Mobile services	Hung, Chang, & Kuo, 2013; Ojo, Janowski, & Awotwi, 2013
10.	Management reform (budgeting information systems, e-reporting, and e-registration)	Heeks & Stanforth, 2007; Metzger, 2004; Puron-Cid, 2013

### 3.6.3.3. Resources Channels

A single organization seldom has enough resources to develop and commercialize an innovation (Van de Ven et al. 1999 & 2005). Van de Ven (1976, p. 24) argues that “resources and expertise are contained within autonomous organizations and vested interest groups”. Organizations are required to build a coalition to access these resources. This could be built based on a political coalition among organizations that have similar, collective interests (Van de Ven et al. 1999). Alternatively, organizations are encouraged to build wider affiliation within the local and national context to access the resources (McCarthy & Wolfson, 1996). In most cases, organizations are both independent actors and involved members of a larger



collective. Heeks & Stanforth (2007) suggest those independent actors should build a set of relationships to generate resources in the area where the innovation take place.

In another seminal study, Van de Ven (2004), found that lack of resources endowment, such as skilled labour and technical support, has become a major impediment for innovation within firms in developing countries and he suggests the firm to “run in packs” to access the scarce resources. Similarly, this problem has been found within the e-government development context (e.g. Dada, 2006; Heeks, 2003; Lam, 2005); a lack of financial and human resources has become a major barrier for e-government development within developing countries. Scarce resources for e-government development have become a real problem for e-government development, not only at national level, but also within the local government context. This requires actors to collectively take responsibility in providing the resources. For example, different actors ( e.g. Financial ministry, international banking institutions, supplier and civic society) took collective financial responsibility to develop the Integrated Financial Management Information System (IFMIS) and Public Expenditure Management (PEM) information systems in Sri Lanka (Stanforth, 2006).

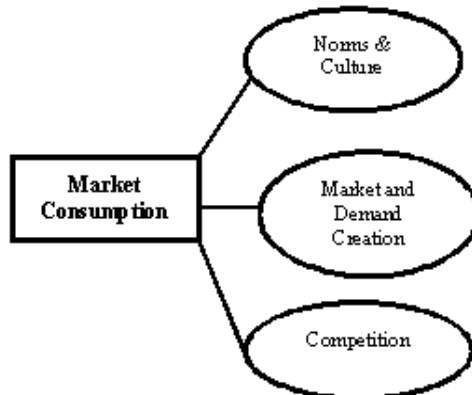
Limited resources within a single government organization can be solved through building inter-organizational relationships to gain more resources (Gottschalk, 2009). Van de Ven (2005) suggests a single organization to collaborate and build allies with other actors to provide resources such as public and private partnership. This can be done through cooperation with private agencies or between government organizations. Government not only functions solely as a regulator, but also as a partner to ease public to private partnership (Yang, Hou, & Wang, 2013). Public to private partnership can enhance the infrastructure’s development. For example government can cooperate with private sectors to finance, design, build, maintain, and operate infrastructures (Blöndal, 2005).

When a government views the private sector as partners, they are able to build cooperation. For example, a government can cooperate with private companies in building ICT facilities through sponsorship or a low cost scheme (Bovaird, 2004). Resources can also be mobilized through building channels between internal

government policy makers. For example, ministries' ICT team leaders in Rwanda built a close relationship with its financial directorate to consistently allocate 5% of their annual budget for e-government development (Mwangi, 2006). Rwanda also successfully mobilized financial resources from its wealth-refugee returnees and international communities for their e-government implementation.

### 3.6.4 Market Consumption

Market for a new innovation development is not naturally formed, but it should be developed, customers should be educated and demand should also be created (Van de Ven et al. 1999). The market demands come from responsible consumers that have been informed and educated about a new innovation. However, those informed, competent and responsible customers do not pre-exist, but they should be created (Van de Ven, 2004 & 2005). There are three components involved in the market mechanism proposed by Van de Ven (1999): cultural norms, market creation and demand, and competitions as depicted in Figure 7.



**Figure 7: Components of market consumption**

The term customer has been used in different ways in both private and public sectors such as customers, clients, stakeholders and users. However, private sector organizations mostly use the term “consumers” to refer to the users of their services or goods, while government organizations mostly use the term stakeholders (e.g. Heeks, 2003; Irani et al. 2005; Yildiz, 2007), clients (e.g. Ho, 2002; Reddick, 2005), and citizens (e.g. Layne & Lee, 2001; West, 2004). “Customers” in public sectors

have the ultimate rights and voices to determine what a government should produce, because they are collectively bound by political deliberation and representation; and the production of goods and service should also be based on a collective need (Alford, 2002). This collective right is not possessed by the private sector's "customers".

Alford (2002) and Altameem, Zairi, & Alshawi (2006) use the term citizens in referring to government "customers", but in most e-government studies the term "citizens" refers to individual communities. Meanwhile, e-government systems provide services not only to citizens, but also to other actors, such as employees, government agencies, businesses, and politicians. The term "clients", on the other hand, seems to only refer to external government "customers" (e.g. Reddick, 2005) without also referring to employees, such as IT users, as customers. Brignall & Modell (2000) use the term "stakeholders" in their study of public management performance to refer to all groups of "customers" such as funding bodies (e.g. political leaders, professional associations and trade unions), professional services providers (e.g. employees) and purchasers (e.g. citizens and businesses). Therefore, the term stakeholders becomes the most appropriate term to be applied in this study because it covers all "customer" types in this study's context. The three components of market mechanism in the social system are discussed in the following sections.

#### *3.6.4.1. Cultural Norms*

Van de Ven et al. (1999) say that "*multiple possible interpretations and uses for products that may be different from those originally intended*". This product-interpretive-flexibility could be caused by cultural norms within a wider community. Culture and norms have been found to play important roles in influencing stakeholders' perception on IT adoption in private sectors (e.g. Bagchi, Hart, & Peterson, 2004; Chatman & Barsade, 1995; Cooper, 1994) and public sectors (e.g. Carter & Weerakkody, 2008; Chen et al. 2006; Ke & Wei, 2004). Van de Ven et al. (1999) suggest harnessing learning-by-using processes of the product to match what a firm expects and what customers' value.

Similarly, e-government products acceptance is also determined by cultural norms of government organizations and their stakeholders. E-government infusion has been

found to be hindered by the norms and culture of government stakeholders such as employees, citizens, and businesses (e.g. Ali, Weerakkody, & El-Haddadeh, 2009; Hsiao, 2003). For example, Chinese bureaucrats tend to “*cloak themselves in their personal group ties to maintain personalized political and administrative power*” (Di & Mingus, 2013, p. 136). This cultural norm does not fit with the use of new technology to promote transparency.

To eliminate these cultural and norm barriers, there is a need to change the mindset of civil servants, businesses practice and citizens toward e-government (Chen et al. 2006). This cultural and norm mindset change can be done through educating the stakeholders to use e-government technology, as well as promoting e-government to the stakeholders. Culture and norms can also be adapted to people’s living environment (Dunivin, 1994). Supportive, organisational culture towards the use of technology within government organizations can mediate a government organization’s capacity on public outcomes such as improve participation, decision-making and democratic governance (Feeney & Welch, 2013).

The role of a country’s culture in viewing e-government has been addressed by previous studies (e.g. Aladwani, 2013). Citizens from different countries have different perceptions on their e-government systems. This impacts citizens’ demands on the way government communicates with them. For example, citizens from a high-context culture, such as Asian and African countries, have less reliance on verbal communication, while citizens from a low-context culture (e.g. European and North American citizens) prefer more formal communication to convey information (Hall, 1977). The Western Culture’s democratic and egalitarian position has also contributed to the development of open information culture; the standardized public information systems were created in response to the citizens’ freedom of expression (Martinsons & Westwood, 1997). This means governments need to understand citizens’ cultural preferences in developing e-government services, such as website services.

Norms and culture are often associated with the trust needed to engage and use e-government systems (e.g. Hung et al. 2013; Kim, Pan, & Pan, 2007). Kim, Pan & Pan (2007) suggest the need to increase positive information and experiences sharing

among stakeholders to increase their trust and commitment to utilize e-government services. The availability of laws to protect stakeholders from misconduct and illicit use of e-service (e.g. Ojo et al. 2013) can also increase stakeholders trust to engage in e-government services. When stakeholders gain positive perception on e-government systems, such as in case of Community Municipal Portals (CMPs) in Ontario, Canada (Detlor et al. 2013), it will increase their willingness to engage and use e-government systems.

#### *3.6.4.2. Market Creation and Demand*

Van de Ven et al. (1999) argue that the market for commercialization of innovations should be intensively created. Customers should be informed and educated about a new innovation product such as through promotion (Van de Ven et al. 1999). Customers' education is required because the introduction of an IT within an organization mostly requires the acquisition of new skills by the organization stakeholders. Markus & Tannis (2000) further suggest providing continuous end-user skills development after initial training for the adoption of an information system. This stakeholders' education can improve their competency and shape their preference to utilize the innovation continuously. Van de Ven (2005) and Van de Ven, et al. (1999) suggest that demand for an innovation should be created through developing competent stakeholders.

The need to understand the users' (stakeholders) situation to increase the innovation adoption within various stakeholders groups has been addressed. For example, the innovators (e.g. developers) need to consider the stakeholders situation such as activities, culture, and skills (Heeks, 2006). E-government systems are often challenging to use for both internal government stakeholders, such as employees, and external stakeholders, such as citizens and business. This requires government institutions to consider improving their stakeholders' skills to adjust to new e-government systems deployment within their organizations.

Stakeholders' education, on one hand, increases their technical skills to utilize the e-government services for their daily purposes; on the other hand, it facilitates social penetration of e-government services and deepens the stakeholders' relationship with the e-government systems (Stamoulis et al. 2001). As a result, the stakeholders' skills

to use e-government services may become a key success factor in sustaining their interest in using the services (Olphert & Damodaran, 2007) because they are able to engage with the technology over a period of time.

Lack of citizens' skills in IT can contribute to low adoption of e-government services by citizens and other stakeholders (Belanger & Carter, 2009; Dada, 2006). For example, the lack of the UK local authorities' skills has caused less than 40 per cent of them to be involved in the planning and development of e-government (Olphert & Damodaran, 2007). In a UK borough council, citizens did not provide significant response to web-based discussion forum due to lack of skills (Damodaran, et al. 2004). Similarly, online systems for tax payment using credit cards, offered by some other councils, were not utilized by citizens even though the system was working smoothly (Damodaran, et al. 2005). As a result, an early intention to increase citizens' participation in government decision-making was not achieved.

Government stakeholders can also be informed of the emergence of e-government services through assimilation activities. Assimilation is understood as *"the process within organizations stretching from initial awareness of the innovation, to potentially, formal adoption and full-scale deployment"* (Fichman, 1999, p. 1). E-government assimilation is the diffusion of e-government systems into all stakeholders groups across government institutions. This is intended to increase their awareness regarding the presence of this technology. When they are aware of e-government arrival, their demands to use the technology may also increase. Van de Ven, et al. (1999) and Van de Ven (2005) argue that market demand on new innovations come from informed customers, and publicity and promotion are often used by firms to shape the customers demand. This implies that stakeholders' demand for e-government services is determined by how well they are informed by governments.

Assimilation of e-government can be carried out through a number of strategies by considering the government's and stakeholders' context. For example, the UK government launched a media campaign to spread awareness of e-government services and to encourage citizens to connect to their local council websites (Carter & Weerakkody, 2008). Stakeholders' demand in rural areas can be created and

stimulated through distributing technology in those areas. For example, the demand for Tele-centre services in Tumkur district India (Naik, Joshi, & Basavaraj, 2012) was created through the building of the Tele-centres in village areas to bring the services closer to stakeholders. The services could be accessed with lower cost and used by variety groups of stakeholders in the rural areas.

Partnership and collaboration with private agencies, establishment of task forces and providing awards are another strategy to assimilate e-government (Whitson & Davis, 2001). Providing awards to government institutions that use utilize e-government may also enhance the dissemination. For example, the US Department's Office of Scientific and Technical Information (OSTI) was awarded best practice in re-inventing government in 1996 for their success in their Scientific and Technical Information Program (STIP) (Whitson & Davis, 2001). Awarding an institution for utilizing e-government systems might encourage other institution to practice similar action.

However, in the context less developed countries, such as in Kenya (Rees et al. 2000), the most effective way to disseminate e-government systems is through the extension of government staff to rural areas, involving NGO, and religious institutions (e.g. the Church), and private companies (e.g. agriculture companies) to spread information regarding how to utilize the systems, such as agricultural information systems.

Meanwhile, Agarwal & Prasad (1998) argue that dissemination and creating awareness of innovation is relatively effective if it is carried out through mass media, development of user friendliness systems and interpersonal channels. Mass media can reach a wider range of stakeholders and promote the e-government innovation. User-friendly systems can encourage stakeholders to engage with the systems because they may perceive the systems easy to use. While government staff interpersonal relationships with stakeholders can facilitate the spread of e-government systems in a person-to-person relationship. Information about e-government can also be disseminated through newsletters, discussion forums, blogs, and e-mail (Linde & Karlsson, 2013) which are provided on government websites.

### *3.6.4.3. Competition*

Van de Ven et al. (1999) argue that firms engaged in emerging innovation is the paradox of cooperation and competition, which means each firm competes to establish a distinctive position, but at the same time they must cooperate to establish the innovation infrastructures. However, public sectors absence from the market mechanism that provides choices for individuals in consumption of goods and services (Rainey et al. 1976). Government entities tend to engage in a coercive and monopolistic environment as mandated by laws or regulations, such as in providing services to the public. Private organizations (e.g. firms) are owned by entrepreneurs or shareholders, whereas public agencies are owned collectively by members of political communities (Boyne, 2002). This causes private organizations to focus more on gaining profit to satisfy their shareholders through high competitive market. Meanwhile, public sectors focus more on serving their political communities.

In addition, as public organizations belong to collective political communities, they tend to collaborate through cooperation rather than competition. Profit is not the main goal for public organizations; rather the goal of public organizations is fulfilling community demands and regulation mandate. Also, public sector organizations are not controlled by market forces but by political forces (Boyne, 2002). As a result, this study considers “competition” is not a reason for market emergence in e-government innovation, but markets may emerge as a result of government cooperation to promote and educate their stakeholders, as suggested by Van de Ven (1999). Markets within public sector might also emerge as public organizations apply marketing concepts in promoting government services (Laing, 2003) and funding public services provision, where a set of fees to access the services might be charged (OECD, 2008).

Cooperation can be understood as inter-organizational cooperation (e.g. Bensaou, 1997; Clemons & Knez, 1988; Kumar & Van Dissel, 1996; Williams, 1997) in which an organization exerts a collective effort with external organization(s) to achieve a specific objective. For example, government organizations can practice public to private partnership, such as with non-profit organizations, to access alternative resources to support their services provision (Greiling & Halachmi, 2012; Martin & Halachmi, 2012; Xu & Morgan, 2012). Alternatively, the cooperation can be



practiced between units within an organization. Within an organization, cooperation can be understood as a collective action of all units to achieve the organization's common interests, where each unit may cooperate in learning or knowledge sharing to achieve the interests (Tsai, 2002; Zetland, 2008). A unit or department may require support from other departments to help them cope with a lack of resources that may be required to create stakeholders' demand for e-government services.

### **3.7 Summary**

This chapter has discussed the social system constructs that contribute to e-government sustainability. These constructs are used in the research analyses that are discussed in the following chapter. The theory is built based on a social system framework from Van de Ven et al (1999). The four dimensions of the social system framework include institutional arrangements, resource endowments, proprietary activities, and market consumption. All components emerge and play roles through coordination and cooperation to leverage resource to support e-government implementation and sustainable use.

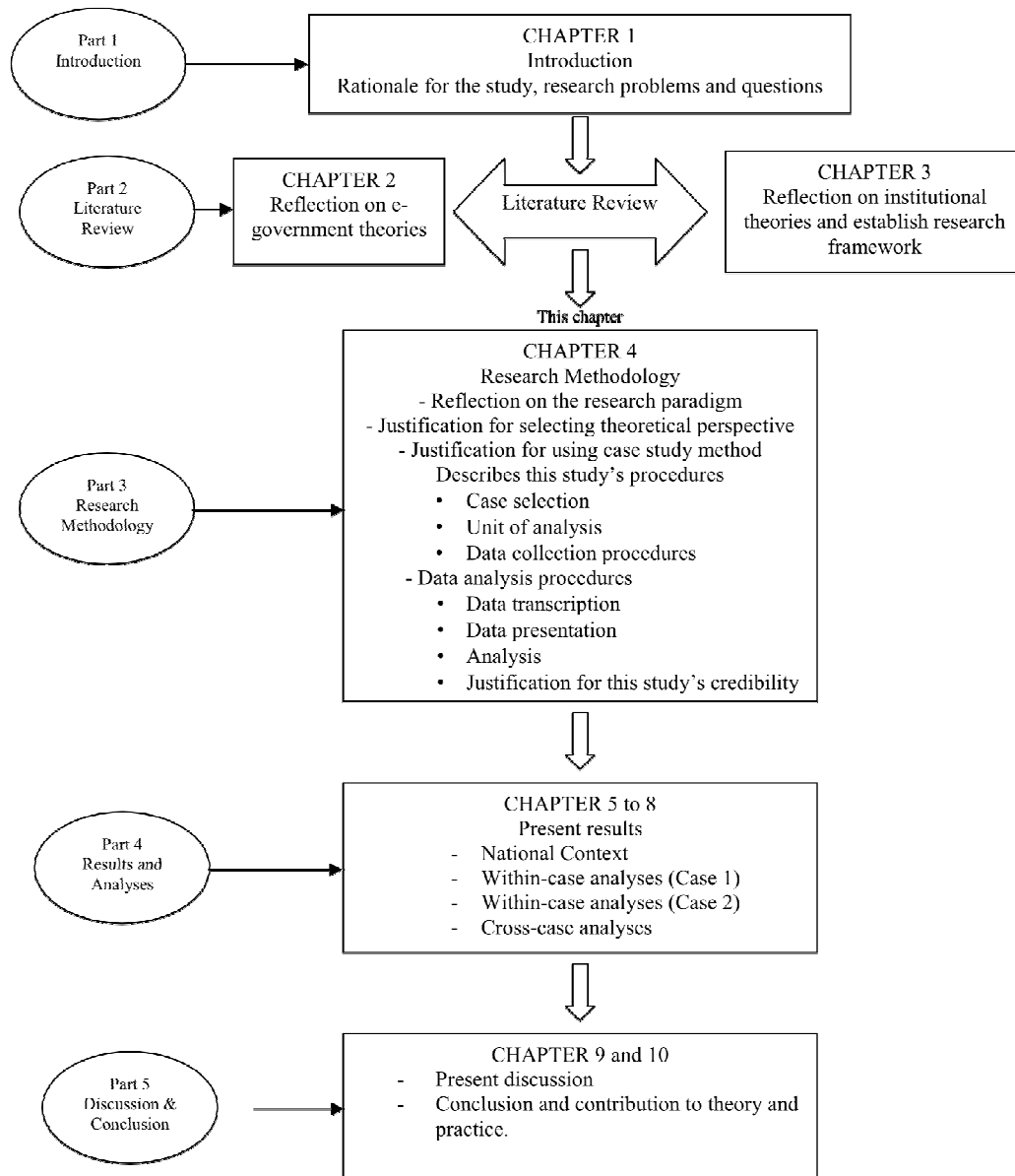
## CHAPTER 4: Research Methodology

### 4.1 Introduction

In Chapters two and three, a literature review was carried out to build a theoretical framework. The theoretical framework is used as a “sensitizing device” (Klein & Myers, 1999, p. 75) for this study. In this chapter the methodology is discussed. For the purpose of this study, methodology is understood as “*the research design that shapes our choice and use of particular methods and link them to desired outcomes*” (Crotty, 1998, p. 7). The research design for this study is understood as follows:

*“Research design involves deciding upon all the various components of a research project: your philosophical assumptions, your research method, which data collection techniques you will use, your approach to qualitative data analysis, your approach to writing up”* (Myers, 2009, p. 19)

The components of this research are incorporated in the research design as depicted in Figure 8. The research design involves five main parts. The first part is the introduction, which consists of research background, problem statements, motivation, research questions, key terms, and research outline. Second part is the literature review, which includes reflection on e-government and social system theories, and an initial theoretical framework to inform the topic and approaches for this study, as suggested by Walsham (1995). Methodology is discussed in the third part, while the results and analyses are presented the fourth part. The discussion, conclusion, and contribution to theory and practice are presented in the final part. Even though this study’s process is structured in sequential order from part one to five, the actual process of research activities can be started at any point and move onward or backward, as suggested by Peffers (2007).



**Figure 8: Research Design**

## 4.2 Research paradigm

A research paradigm is a researcher's basic belief system based on ontological, epistemological, and methodological assumptions (Guba & Lincoln, 1994). The terms ontology and epistemology tend to merge together. Ontology is related to a certain way of understanding *what is*, while epistemology is associated with a certain way of understanding *what it means to know* (Crotty, 1998). Orlikowski & Baroudi (1991) associate ontology with assumptions about social and physical reality. Guba

and Lincoln (1994, p. 108) suggest to address the ontological assumptions through questions such as “*what is the form and nature of reality and, therefore, what is there that can be known about it?*”

For the purpose of this study, epistemology is understood as “*beliefs about the way in which knowledge is constructed*” (Cavaye, 1996, p. 232). This study’s epistemological understanding is that the nature of knowledge is broadly divided in two views; objectivism and constructivism/subjectivism (Crotty, 1998). Crotty (1998) argues that reality is assumed to exist outside the mind (objectivism) or it is constructed by the human relationship between one another, or with their world (constructivism/subjectivism).

Objectivism is often associated with positivist research paradigms where researchers “*treat the social world as if it were the natural world*” (Burrell & Morgan, 1979, p. 7). This logic leads positivist researchers to separate the belief that the observer is separated from the phenomenon being studied. In contrast, constructivism/subjectivism considers that humans and reality are not separated, even “*humans construct and reconstruct the reality*” (Morgan, 1983, p. 396). This constructivism/subjective philosophical paradigm is often employed by interpretive or critical researchers to understand phenomena (summarized in Table 8).

**Table 8: Paradigm of this study**

<b>Ontological beliefs on realities</b>	<b>Explanation</b>	<b>This study’s position</b>
Objectivism	Realities exist outside of the mind and hence independent of it.	Constructivism/ Subjectivism
Constructivism/ Subjectivism	Reality is subjective and constructed as humans interact with one another and with their world, and each human is considered to construct his or her own reality.	
Knowledge Epistemology Methodology	Criteria for constructing and evaluating knowledge.	Interpretivist Hermeneutic
	Which research methods are appropriate for generating valid evidence	Case study

Adapted from Crotty (1998) and Orlikowski & Baroudi (1991)

As this study's epistemological assumption is constructivism/subjectivism, the way to understand the reality should be carried out with an appropriate theoretical perspective. This study uses an interpretive theoretical approach as a suitable theoretical perspective to understand the case of e-government implementation and use sustainability. By applying an interpretive perspective the researcher was able to understand the complex "*relations among information technology, individuals, and organizations*" (Orlikowski & Baroudi, 1991, p. 6).

The majority of studies in information systems (IS) have been carried out in two broad paradigms; positivist and interpretive (Orlikowski & Baroudi, 1991). Positivist IS studies assume "*an objective physical and social world that exists independent of humans, and whose nature can be relatively easily apprehended, characterized, and measured*" (Orlikowski & Baroudi, 1991, p. 9). In this paradigm, humans are not considered as active actors that create and recreate the reality of IS within organizations. For example, government organizations may have structure and reality beyond the actions of their employees. A researcher needs to *discover* the government organizations' physical and social reality through creating precise instruments for measurement. In other words, understanding phenomena by positivist, IS researchers is about modelling, measurement, building constructs, and developing a set of accurate measurement instruments (Orlikowski & Baroudi, 1991). As a result, positivist researchers are able "*to remain sufficiently detached so as to be objective*" (Paré, 2004, p. 259).

Interpretive IS studies, in contrast, assert that the "*social world is produced and reinforced by humans through their action and interaction*" (Orlikowski & Baroudi, 1991, p. 14). This paradigm suggests that reality and humans cannot be separated as independent identities in understanding the phenomenon because meanings are cooperatively produced by humans and their world. The implementation and use of IS within government organizations, for example, involves the complex relationship between government employees, the technology, and other social institutions (Heeks & Bailur, 2007). This complex reality cannot be *discovered*, but should be constructed and reconstructed through the interaction of humans and each person

within the government organization, who should also construct his or her own reality (Walsham, 1995). The paradigm differences between positivist and interpretive IS studies are depicted in Table 9.

**Table 9: Information System (IS) Research Paradigm differences**

<b>Philosophical Assumption</b>	<b>Positivist</b>	<b>Interpretive</b>
Ontology	IS researchers assume that an objective physical and social world exists independently of humans, and whose nature can be relatively easily apprehended, characterized, and measured.	IS researchers assume that the social world (that is, social relations, organizations, division of labour) is not “given”, but it is produced and reinforced by humans through their action and interaction.
Beliefs about knowledge (Epistemology)	IS studies are concerned with the empirical testability of theories and whether they can be “verified” or “falsified”.	Understanding social process involves getting inside the world of those who generate it.
Beliefs about the relationship between theory and practice	The relationship between theory and practice is primarily technical. If the general laws are known and the relevant initial conditions can be manipulated, a desired state of affairs, natural or social, can be produced.	Researchers can never assume a value-neutral stance, and are always implicated in the phenomena being studied. Researchers’ prior assumptions, beliefs, values, and interests always intervene to shape their investigation.

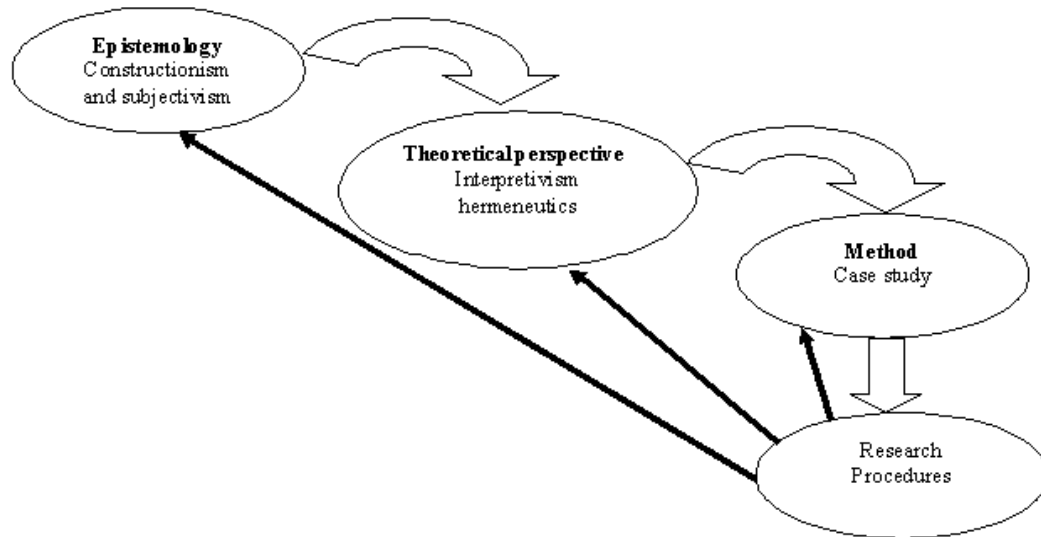
Based on Orlikowski & Baroudi (1991, pp. 9-15)

In conclusion, positivist IS studies are better employed for research that requires objective measurement in gathering the evidence (Chen & Hirschheim, 2004). Such studies are unable to bring understanding of the phenomena through the meanings that people assign to them, because ontologically, positivist research assumes that the realities are separated from human experiences. On the other hand, interpretive research considers that human and social interaction constructs and reconstructs reality, which produces subjective meaning. This subjective reality can only be understood through interpretive study (Walsham, 1995); because a researcher has the

opportunities to engage in a real social context by experiencing how the interaction between a human and context take place.

This study employs interpretive hermeneutics to understand the reality of government organizations in sustaining their e-government systems implementation and use. Interpretive research enables this study to make sense of the world through the understanding that knowledge and reality are shaped by relationships and interactions between humans and context (Brey, 1997; Walsham, 2006) within local government organizations.

This study's justification of interpretive hermeneutics is discussed in the following sections. The justification is followed by the selection of a research method and other research procedures in the gathering and analysing of data. All the research procedures are informed by the epistemological assumption, the selected theoretical perspective, and method as depicted in Figure 9.



**Figure 9: Research paradigm and procedures (Adapted from Crotty, 1998)**

Thus the axiology of this research is related what the researcher valued and considered right (Minger, 2001) regarding the procedures employed and results obtained from the study. These values are embedded in this study paradigm which I believe that the knowledge-producing procedures may only suit for this research project as stated by Hill (1984). In this context, the researcher's position is that

knowledge is better obtained through constructivism/subjectivism which then shapes the procedures and approaches as described in the following sections. The axiology is informed by the philosophical assumption and the cultural context of this research (Carter & Little, 2007). As a result, this research believes that the research may produce a not-value free output because it is created through interaction among the researchers and participants which biases and values might influence the outcomes (Guba & Lincoln, 1994). However, the biases and values were reduced through deployment appropriate procedures and analysis as suggested by Guba and Lincoln (1994). Therefore, even the findings may not be generalised to a broader population, this indepth study of the cases and the results can potentially contribute valuable theoretical and practical knowledge to the community (Myers, 2000).

### **4.3 Justification for interpretive research**

The majority of information systems studies are “*concerned with the ongoing relations among information technology, individuals, and organizations*” (Orlikowski & Baroudi, 1991, p.6). Most studies are dominated by positivist paradigms. Since many IS researchers position themselves in positivism, with its roots in natural sciences, their studies can provide valuable outcomes, but they are less helpful in providing an explanation behind the outcomes (Kaplan & Maxwell, 2005).

This has led to IS scholars gaining a partial view on the IS phenomena being studied as the “*quest for universal laws leads to a disregard for historical and contextual conditions as possible triggers of events or influences on human action*” (Orlikowski & Baroudi, 1991, p. 12) in IS implementation and use within organizational contexts. The implications of this limitation are that there is a lack of theory development and understanding of work practices in IS studies (Orlikowski & Baroudi, 1991). As a result, Orlikowski & Baroudi (1991) suggest alternative philosophical assumptions in IS studies. This includes the use of an interpretive paradigm to increase understanding of how the social world is constructed by human actions and interactions.

This study is positioned in the philosophical paradigm of constructivism/subjectivism which posits that reality is subjective and constructed by human interactions



(including researchers) and the environment. The only appropriate way to understand this reality is through the use of an interpretive theoretical perspective. This perspective is considered as an essential paradigm in interpreting subjective meaning produced by humans (e.g.: Goldkuhl, 2012). In this study, the understanding of interpretive study is that “*People create and associate their own subjective and inter-subjective meanings as they interact with the world around them. Interpretive researchers thus attempt to understand phenomena through accessing the meanings that participants assign to them.*” (Orlikowski & Baroudi, 1991, p. 5).

Interpretive study assumes that social construction, for example language, consciousness, shared meaning, documents, tools, and other artefacts, produce knowledge of reality and they produce different meanings for different people as well as to researchers (Klein & Myers, 1999; Lee, 1991). As a consequence, this study argues that understanding the social construction requires knowledge on how practices and meanings are constructed and informed by humans through an interpretive paradigm rather than a positivist one. This requires the researcher to engage closely in obtaining valid evidence of knowledge about the phenomenon without requiring defining dependent and independent variables prior to research.

This study is concerned with the complex world and making sense during the situations that emerge instead of pursuing research questions as argued by Kaplan & Maxwell (2005) and Walsham (2006). However, research questions are still needed to guide the exploration of the central phenomena or concepts of this study, as suggested by Cresswell (2008, 2009). The research questions function as general issues and do not to limit the inquiry while other sub-central phenomena might also emerge during study. The study also uses a theory to “*create an initial theoretical framework which takes account of previous knowledge, and which creates a sensible theoretical basis to inform the topics and approach of the early empirical work*” (Walsham, 1995, p. 76) rather than to use the theory as an instrument to predict the phenomena being studied as in positivist research.

The interpretive paradigm also provides opportunities to understand human interaction in social and organizational context and is able to reveal a deep understanding into information systems phenomena (Darke, Shanks, & Broadbent,

1998; Klein & Myers, 1999; Walsham, 1995, 2006) within the two local government case study organizations. In addition, an interpretative paradigm assists this study to understand phenomena from the point of view of the participants being studied (Cavaye, 1996; Johnson & Onwuegbuzie, 2004) through involving and interacting with the context. As a result, the “*existing meaning systems shared by the actor*” (Orlikowski & Baroudi, 1991, p. 15) were experienced directly and were able to be interpreted through the interaction.

#### **4.4 Justification for using hermeneutics**

Hermeneutics “*emerged as a concern with interpreting ancient religious texts and has evolved to address the general problems of how we give meaning to what is unfamiliar and alien*” (Boland, 1991, p. 439). For this study, hermeneutics is understood as theory or philosophy of interpretation of meaning (Bleicher, 1980; Lee, 1994), which is used as a basis of interpretation in understanding pieces of the world and how they are put together. Ontologically, hermeneutic paradigm “*posits that realities are constructed from multiple, intangible mental construction that are socially and experientially based, local and specific in nature, and dependent on their form and content on the individual persons or groups holding the construction*” (Butler, 1998, p. 294).

Even though the classical point of view of hermeneutics is broadly concerned with interpreting written text, current understanding of hermeneutics has been expanded beyond the written document. Contemporary hermeneutics argues that the meaning of the texts “*include organizational practices and institutions, economic and social structures, culture and cultural artefacts, and so on*” (Prasad, 2002, p. 23), and social action and situation (Butler, 1998).

The texts are entities that must be interpreted as “whole”, but in understanding this “whole”, according to Butler, (1998), we must start from understanding the “part” of the text. The “part” is constructed through language to form the “whole” meaning of the world. In the context of this study, government organization practices in e-government implementation and use, institutional arrangements, regulation, employees’ practices, government documents and other phenomena were considered “part” of texts. By using a hermeneutics paradigm, this study gained room to

interpret “*an affinity of some kind between text and reader (researcher) – a commonality that provide a basis for the interpretation that is to emerge*” (Crotty, 1998, p.91)

This study understood the interpretation as follows:

*“Interpretation, in the sense relevant to hermeneutics, is an attempt to clarify and to make sense of an object of study. Therefore this object must be a text, or a text-analogue, which is in some way confused, incomplete, cloudy, unclear, or, in one way or another, seemingly contradictory. The interpretation aims to bring to light an underlying coherence or sense”* (Taylor, 1976, p. 153).

Research with an interpretive paradigm can be carried out with symbolic interaction, phenomenology, and a hermeneutics approach (Crotty, 1998). Among those approaches, Boland (1985) identifies hermeneutics as a valid approach for research in information systems. This is supported by the advantages of using a hermeneutics approach, such as: *“it allows for the inherent prejudices of the researcher to be recognised and used to improve understanding through the interpretation process... it allows the researcher to critically examine conflicts and contradictions within the complexity of social, cultural and political systems from many perspectives within the organisation”* (Stockdale & Standing, 2006, p. 1098 and 1099), and *“a phenomenon interpreted according to the possible social processes that occur about the phenomenon, but the understanding is enhanced about possible meanings of existential human experience of the phenomenon”* (Annells, 2006, p. 58)

Some seminal IS studies have adopted hermeneutic philosophy in their IS studies within organization contexts. For example, Davies et al., (1992) used interpretive hermeneutics to understand IS failure within organizations. In their study, Davies et al., (1992) applied the logic of hermeneutics and interpreted that “text” was presented in the form of people, the behaviour they render, and the organizations they created. Meanwhile, Myers (1994) studied IS implementation failure in organizations through understanding the wider social and historical context of the organizations. Their conclusion of IS implementation failure and success within an organization was a matter of their interpretation of texts as discussed above.

This study is dealing with e-government systems implementation and sustainable use within local government organisations. This involves understanding the relationships between information technology, people and organizations, as stated by Orlikowski and Baroudi (1991), as well as the social-political environment of organization (Stockdale & Standing, 2006). This study understands the term “texts”, in the classical hermeneutics paradigm, to include government scripts, such as annual reports, regulation, and annual planning documents and other documents. All these separate “texts”; such as technology, people, organization, social, political, and written documents; need to be constructed to give “whole” meaning of a phenomena being studied (Butler, 1998). As this study positioned itself with a constructivism/subjectivism paradigm, which believes that reality is constructed and reconstructed by the “texts” interaction, so the use of hermeneutics in this study is suitable.

#### **4.5 Justification for case study method**

The case study method has been growing in the field of Information Systems for the last three decades (Benbasat, Goldstein, & Mead, 1987; Lee, 1989). Scholars have defined a case study according to their field of interest, but in general a case study refers to a close investigation of a case, or cases, in a real-life context to acquire deep understanding. The most well-known definition of the case study is proposed by Yin (1981, p.59; 2003, p.13) who defines a case study as *“an empirical inquiry that investigates a contemporary phenomenon within a real-life context, especially when the boundaries between phenomena and context are not clearly evident”*.

Other scholars defined a case as *“an account of an activity, event, or problem”* (Dooley, 2002, p. 337), or an individual object (Liamputtong, 2013, p. 200). Meanwhile, Cresswell (1998, p. 61) defines a case as *“an exploration of a “bounded system”* which is bounded by time and place, such as a program, an event, an activity, or individuals. These definitions imply that a case study can be understood as a method of enquiry (e.g.: Cresswell, 1998; Yin, 1981), or as a unit of analysis of the enquiry such as individual, groups, and organizations (e.g.: Dooley, 2002; Liamputtong, 2013).

Case studies have some characteristics (see Table 10) that offer a researcher more flexibility in doing research. The flexibility includes: diversity in the data collection method, deeper exploration because the case is studied in natural settings, also the researcher does not need to control or manipulate research variables.

**Table 10: Case Study Characteristics**

<b>Benbasat, et al., (1987, p. 371)</b>	<b>Cavaye (1996, p. 229)</b>
<ul style="list-style-type: none"> <li>- Phenomenon is examined in a natural setting</li> <li>- Data is collected by multiple means.</li> <li>- One or few entities (person, group, or organization) are examined.</li> <li>- The complexity of the unit is studied intensively.</li> <li>- Case studies are more suitable for the exploration, classification and hypothesis development stages of the knowledge building process; the investigator should have a receptive attitude towards exploration.</li> <li>- No experimental controls or manipulation are involved.</li> <li>- The investigator may not specify the set of independent and dependent variables in advance.</li> <li>- The results derived depend heavily on the integrative powers of the investigator.</li> <li>- Changes in site selection and data collection methods could take place as the investigator develops new hypotheses.</li> <li>- Case research is useful in the study of "why" and "how" questions because these deal with operational links to be traced over time rather than with frequency or incidence.</li> <li>- The focus is on contemporary events.</li> </ul>	<ul style="list-style-type: none"> <li>- Does not explicitly control or manipulate variables;</li> <li>- Studies a phenomenon in its natural context;</li> <li>- Studies the phenomenon at one of a few sites;</li> <li>- Makes use of qualitative tools and techniques for data collection and analysis</li> </ul>

Multiple data collection methods can be generated from one or few cases (Benbasat et al., 1987; Cresswell, 1998; Miles & Huberman, 1994; Robert K. Yin, 2003) such as observation, document, interview and artefact. The data can be quantitative, qualitative or a combination of both of them. By using a variety of data collection methods in case study research, the richness of the knowledge of the case being investigated can be provided, particularly as context-based knowledge. It is considered that social sciences have failed to produce this type of knowledge and the case study is considered to be an answer to produce such empirical knowledge (Flyvbjerg, 2006).

Since the focus of this study is on information systems within organizations, case study research is a better choice. This view is strengthened by the phenomena that the focus of IS research “*interest has shifted to organizational rather than technical issues*” (Benbasat et al., 1987, p. 382). In addition, employing case study research can provide many benefits (see Table 11) in the understanding of technology implementation and use within the real context.

In addition, prior major research on technology issues at an organizational level employed mainly case study , which was mainly used to study technology issues at individual level (Chouddrie & Dwivedi, 2005). A case study of technology implementation and use at an organizational level require in-depth and close examination from a researcher because the complexity of the phenomena which involve technology, organizations and people. A case study method is able to provide explanations on the complexity of the phenomena, understanding and description of people’s personal experience, and provide data based on the participants’ own categories of meaning (Johnson & Onwuegbuzie, 2004).

**Table 11: Benefit of using case study**

<b>Benefits</b>	<b>Authors</b>
The case study is able to deal with multiple types of evidence and combines several qualitative data collection methods such as documents, artefacts, questionnaires, interviews and observations	(Dube & Pare, 2003; Eisenhardt, 1989; Yin, 2003)
The case study can involve more than one case in a research project	(Miles & Huberman, 1994; Stake, 1978, 1995; Yin, 2003)
The case study can be used to collect qualitative data, quantitative data or both.	(Eisenhardt, 1989; Yin, 1981; Yin, 2003)
It provides opportunity for a researcher to experience and understand the context of action	(Benbasat et al., 1987; Johnson & Onwuegbuzie, 2004)
A researcher is able to explore phenomenon through empirical analysis that result in epistemological advantages	(Stake, 1978, 1995)
In the IT field, a case study allow researchers to <i>“keep up with rapid change in IT world and organizations, and understand the complex and ubiquitous interaction among organizations, technologies, and people”</i> (Dubé & Paré, 2003, p. 598) and provide sufficient information to help researchers make judgements on information technology and organizations.	(Dubé & Paré, 2003, p.598; Kitchenham, Pickard, & Pfleeger, 1995)
It allows for flexibility and individual variation	(Cavaye, 1996; Johnson & Onwuegbuzie, 2004)
It allows for more analytical rigor and rich detail because a phenomenon is closely examined in its context	(Johnson & Onwuegbuzie, 2004; Lee, 1989)
It provides detailed examination for a research with a single case	(Flyvbjerg, 2006; Johnson & Onwuegbuzie, 2004)
At organizational levels, a case study <i>“provides the opportunity to ask penetrating questions and to capture the richness of organizational behaviour”</i>	(Gable, 1994, p.16)
A case study provides opportunity to build theory from researching reality	(Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Locke, 2007)
Data or phenomenon can be directly generated from participants’ point of views	(Cavaye, 1996; Johnson & Onwuegbuzie, 2004)
Case study findings can be used to develop the concepts identified from the literature and where appropriate to draw implications from the data	(Stockdale & Standing, 2006, p.1099)



## **4.6 This study's method (procedures)**

Method, in this study, is understood as the set procedures or techniques that are planned to be carried out (Crotty, 1998; Strauss & Corbin, 1998). This section addresses the procedures used to select the case studies, gather data, coding, presentation and analysis.

### **4.6.1 Case selection**

Selecting a case study is a difficult process because there are no standard guidelines to select a case. Selecting a case is not similar to sampling strategy in quantitative research because a qualitative case is not primarily used to understand other cases (Stake, 1995), but it can be designed to make possible analytic generalization through the understanding of how the selected case is applicable to wider theory (Curtis et al. 2000). Case study research focuses on gaining maximum understanding and in-depth learning of certain phenomenon, such as a small collection of people, activities, policies, strengths, problems, or relationship (Stake, 1995, 2006). As a result, a case study's selection should support this in-depth learning and it should also provide information richness, as suggested by Miles and Huberman (1994).

In the selection of a case, Stake (2006, p. 23) suggests researchers should consider answering questions; such as *“Does the case provide diversity across the context? And, does the case provide good opportunities to learn about the complexity and context?”* This implies that a case should provide opportunities for a researcher to gain key knowledge and experience based on a new, or existing, theory being studied. Stake (2006) adds that most case selection is partially identified in advance or pre-specified because of research questions.

This study selected two local governments, the Jembrana regency and the Luwu Utara regency in Indonesia, as a basis to understand how e-government implementation and sustainable use within both local governments are achievable. These two local governments had been initially identified as they have both received e-government awards by the Indonesian central government for their e-government success in terms of implementation and sustainable use. The two cases are expected

to provide new insight in technology implementation and sustainable use within a local government context. This insight may benefit other government organizations in similar situations. The researcher's consideration was also based on Dooley's (2002) suggestion that a case must represent bad and good practices, failure and success.

The reason to select two cases is aimed at understanding how a "*phenomenon performs in different environments*" (Stake, 2006, p. 23). This study had the opportunity to examine similar e-government initiatives within two contexts of local government organizations. Both of the local governments have implemented various e-government systems transferred by Indonesian central government and voluntarily built by the local government IT teams. Other than obtaining different perspectives from different contexts, the selection of two cases was also based on convenience regarding times, cost, and effort without jeopardizing research credibility as suggested by Miles & Huberman (1994).

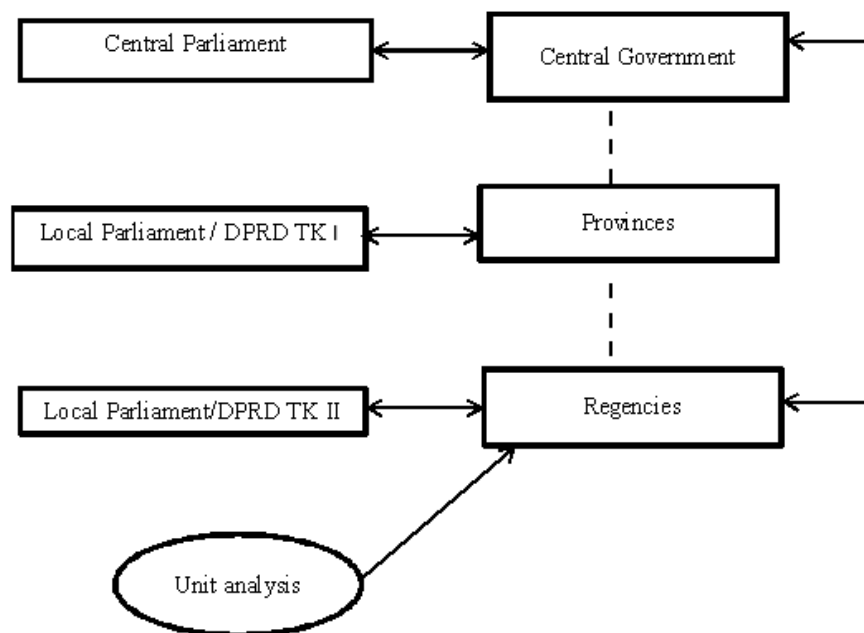
#### **4.6.2 Unit of Analysis**

Determining a unit of analysis in a research project depends on the research focus, and whether there are fixed guidelines; a research project's unit of analysis should be determined before embarking on the research. Benbasat, et al. (1987) mention that a unit of analysis in a research project can be individuals, groups, or the entire organization. However, within the organization itself, there are multiple levels of hierarchy, each of them having their own unique characteristics and deserving to be a research unit of analysis regarding understanding a specific issue. Research in information systems (e.g.: Pitt, Watson, & Kavan, 1995), also suggests to use a particular information system as a unit of analysis.

This study used the local government organization as a unit of analysis. Local government here is understood as the democratically-elected, multi-purpose institutions and their bureaucratic organizations, which exist through the statute at a sub-national level (Wilson & Game, 1998). In the Indonesian context, there are two levels of local government: provincial and regency. The Indonesian central government transfers power to the regency level but not to the provincial level. Provincial levels function as coordinators of the regencies rather than as policies'

implementer. As a result all government policies with regard to local development are directly implemented at the regency level, such as e-government systems, to improve local government services and citizens welfare.

This study was carried out within regencies, the second level of local government (Figure 10). Within the regencies there are a number of departments and lower levels of government, such as districts and villages; however those organizations are controlled by the head of the regency (Regent).



**Figure 10: Unit of Analysis**

The research was focused on the role of social infrastructures in sustaining local e-government systems implementation and use at organizational level, and was carried out within the entire local government organization. The research activities were mainly carried out within the regencies' departments of Transportation, Communication and Information (DINHUBKOMINFO), where the IT teams are located. However, infrastructures also exist at different levels, such as departments, districts, villages and other institutions. Phenomena, artefacts, and documents also exist within the entire local government organizations.

### **4.6.3 Data Collection Procedures**

In studying social system roles in local e-government implementation and sustainable use, the researcher needs to understand how the meaning of the technology is created and what relationship is perceived by the people in the government organizations (Heeks & Bailur, 2007). This led the researcher to collect data through multiple means: written, material, archival records, physical artefact, websites, observation and interviews (Benbasat et al., 1987; Kaplan & Maxwell, 2005; Walsham, 2006; Yin, 2003).

This study considers all sources of evidence that supports the credibility and richness of research findings, since they provide the opportunity for triangulations (Cresswell & Miller, 2000; Miles & Huberman, 1994), as well as capturing contextual complexity (Benbasat et al., 1987). For example, the use of observation and interview strategies permit the researcher to understand local government organizations through the “sense” of intuition rather than measurement (Denison, 1984). The researcher believes that “human sense making” can be gained through gathering information in a variety of different formats (e.g., written documents, pictures, numbers) from a variety of sources (e.g. individuals, organizations, departments, websites) (Dennis, Fuller, & Valacich, 2008; Weick, 1985). The use of various data formats and sources can help the researcher to capture the tacit and non-verbal elements of the interviews that could not be gained otherwise (Walsham, 2006).

Field visits were started with on-site observation that aimed to get a better understanding of the local government organizations, the e-government systems, and the social setting of its people and organizations. Observation was also used to facilitate interviews with the participants inside the local government organizations. After this initial stage, interviews were conducted by using semi-structured interviews. Other data (e.g. written material) were collected during the field visit. The data collection methods are discussed in the following sub-sections.

#### *4.6.3.1. Observation*

Observation is one characteristic of qualitative research (Kaplan & Duchon, 1988) and it is about “*hanging around*” (Markkula & Sormunen, 1998, p. 4) and

(Dingwall, 2007, p. 53) watching everything happening within the local government, in particular the IT department, or other contexts. Observation helped the researcher to gain relatively “*incontestable description*” to fashion the story and description of the cases being studied (Stake, 1995, p. 62). The observation supported the researcher to formulate further cases of analysis and reporting. Observation included absorbing and noting details of the research field environment (Benbasat et al., 1987). In this study, the details included the physical setting, events, situation and activities of the local government actors in e-government use at the time of the field visit.

Prior to the field visit, there was a preliminary observation of the local governments’ official websites to familiarize the researcher with the cases’ contexts. During the field visit, participant observations were carried out before the interview was started, to gain close familiarity with all participants. This was done, for example, by asking and finding out information about the participant who would be interviewed. Some of the participants held high positions in the local government that required the researcher to understand the situation and the context before an interview took place.

Other observation activities included understanding the political and physical context of the cases. For example, the researcher was invited to the IT team meetings between IT staff and the local government leaders, to the IT teams’ staff-rooms, and to the help-desk rooms, where IT staff communicate with other IT staff and users in different departments and local government levels, such as districts and villages. The researcher was also shown the e-government infrastructures within both local governments. The observations have significantly supported the researcher’s view and knowledge of the two cases being studied, as well as enhancing other data gathering, such as interviews and written materials. The results of the observations were recorded in the form of field notes and were then analysed together with other data.

#### *4.6.3.2. Interview procedures*

Interviews were important for gathering primary data for this research and it is a key way to examine the participant interpretation in the cases being studied (Walsham, 2006). The interviews for this research were carried out as semi-structured interviews

using open-ended questions as suggested by Yin (1981, 2003). Semi-structured interviews allow participants the freedom to express their views in their own terms, such as opinions about certain events (Stangor, 2010), and provide freedom for the researcher to develop questions in the context of the interview (Lindlof & Taylor, 2002). Face-to-face interviews are believed to encourage the participants to share intrinsic opinions and to dredge up previously un-thought memories from the unconscious (Cavana, Sekaran, & Delahaye, 2001). As a result, unique opportunities to uncover rich and complex information from the participants were gained.

An interview protocol (Appendix B) was prepared prior to the interviews, as suggested by Cresswell (1998, p. 127). The interview protocol was aimed to provide guidelines for the researcher when asking questions related to the phenomena being studied. It contains a list of broad questions that were also given to the participants prior to the interviews. This helped the participants to anticipate the situation and prepare relevant answers. Since this study was carried out in Indonesia, the interview protocol was translated into Indonesian and the interviews were also carried out in Indonesian. The interviews involved 21 participants from both cases comprising 12 participants from Case 1 and 9 participants from the Case 2. The participants were recruited from different levels of the local government organizations hierarchies.

During the interviews, the participants were given freedom to express their ideas and feelings regarding issues raised by the interviewer to “*allow respondents to tell their own story in their own terms*” (McCracken, 1988, p. 34). The researcher considers that each interviewee has unique experiences and a story to tell (Stake, 1995) relating e-government implementation in both local government organizations. The freedom to speak is considered as a democracy process in an interview. For example, Curato (2012) argues that a democracy in an interview “*not only gives participants access in a dialogic process but also allows them to take part in cooperatively ascertaining the validity of a particular opinion*”(p.578). As a result, the participants within both cases voluntarily and freely express their ideas and opinions related to e-government implementation and use.

All interviews were recorded with the consent of all informants. The interviews lasted between 45 minutes to one hour. Each interview was reviewed prior to

commencing the next interview, so as to develop a deeper understanding and appreciation. During this step, margin notes were made on the transcripts and documents and other notes made in the researcher's journal. The results of interviews were then transcribed in written form and shown to the informants to get their verification of accuracy of the interview. Some informal interviews were also conducted to gain further valuable insights. Informal conversations (e.g.: Galliers & Huang, 2012) were carried out during lunch time, coffee break, follow-up telephone interviews, email communications and online chats.

#### *4.6.3.3. Written Material*

Studying written material from the local government was important in finding more data to support the primary data. The written material can produce valuable sources of qualitative data (Benbasat et al., 1987; B Kaplan & Maxwell, 2005) and it can enrich data that cannot be gathered through interviews. The written material includes annual reports, memoranda, agendas, announcements, administrative documents, texts, pictures or photographs, local government official websites and artefacts. The written material is "*important to corroborate and augment evidence from other sources*" (Yin, 2003, p. 81) such as to verify information that has been mentioned in interviews.

Some written material that was gathered during field visits is listed in Table 12. The written materials were gathered with the consent of all authorized persons within the local government.

**Table 12: Written Document Sources**

<b>No.</b>	<b>Types of Documents</b>	<b>Description</b>
1.	Websites	Official websites content of both local government
2.	Annual reports	Annual reports mostly relating to e-government implementation and use that were produced by IT team and Department of Transportation, Communication and Information (DINHUBKOMINFO)
3.	Regulations	Central government regulations relating to e-government implementation and use policy (e.g. Presidential decree No.3/2003), mandatory e-government systems implementation (e.g. E-ID), and Local government regulation (e.g. Local government leader decrees)
4.	E-government implementation Strategies	Documents used for e-government long-term implementation and use in local government (e-government Blue Print and e-government implementation and maintenance manual)
5.	Inter-organizational relationship documents	Documents that were used to establish coordination and cooperation (e.g. Memorandum of Understanding (MOU) between the local government and central government agencies, between the local and other local governments, between local government and private companies, and between departments within the regencies).
6.	Other written material	This written material related mostly to administrative activities within IT teams, such as charts, figures, and pictures.

The written material was treated as equally as other data (interviews and observations) to complement each other. The written material was considered to be a beneficial source to strengthen the findings and, in particular, for triangulation purposes, where the researcher had the opportunity to critically review what is being studied across the data (Stake, 2006). A large quantity of written material was sorted and reduced during data analysis.

#### **4.6.4 Additional Data Collection Procedures**

Since information that was collected during the site visits required further confirmation during analysis, some follow-up interviews were also carried out. More information was required to complete the analysis and understanding as new insights



emerged. Since the initial field visits, from early March to July 2011, the researcher has made another three field visits to complete data collection.

Furthermore, some information given during interviews needed more verification due to some limitations in the transcripts and terms used. Consequently, the researcher employed some additional data-collection techniques: telephone, e-mail, online chats, and observation of social media content used by participants who were connected with the researcher. E-mails helped the researcher to reduce cost and time for transcription (Meho, 2006) because the participant responses were in written formats. Some telephone calls were also made to clarify parts of the information in emails and interviews.

Use of social media for content observation allowed the researcher to draw “*content from posted materials in online settings*” (Salmons, 2012a, 2012b). Some of the participants’ conversations could be found on social media (Facebook). For example, a case of e-government implementation and use (Case 2) was debated during May and June 2012 (example of discussion thread is attached). The Social media content observation helped the researcher gain a deeper understanding of the pressures from businesses on the IT team (Case 2) when a system was not working properly. For example, when the IT team mistakenly identified documents submitted by companies on the system (e-government procurement system). The companies then posted complaints on a Facebook page, including a regulation statement that supported their complaints, on 28 and 31 May 2012, and 07 June 2012. This led the IT team to revise the announcement and clarify that the problem was system input.

#### **4.6.5 Participant Recruitment**

The participants were selected based on purposeful sampling (Marshall, 1996) by considering their knowledge and roles within the local governments and e-government policy implementation and use. Qualitative research sampling is concerned with information richness (Kuzel, 1992) rather than on certain sample size as in quantitative research. As a result, there is no guidance regarding sample size in qualitative study, but the number of participants should be at least adequate to answer research questions and inform the study (Fossey et al. 2002; Meho, 2006), or have achieved either information redundancy or theoretical saturation (Cresswell,

2012; Sandelowski, 2007). The participants in this study came from different levels of organization and work units.

Table 13 describes the organisational positions of participants. The recruitment of the participants from different levels of the local organization’s hierarchy and functions, contributed to drawing a more informed conclusion to this study (Scheepers & Scheepers, 2003) and established research credibility (Walsham, 1995) because the information was gathered from different perspectives, experiences and relevant, credible sources.

**Table 13: Participants characteristics and roles**

Participants’ Role	Case 1 (Jembrana Regency)		Case 2 (Luwu Utara Regency)	
	Number of participants	Participant’s code	Number of participants	Participant’s codes
Management level	4	J1, J2, J3, J4	3	L1, L2, L9
IT/ IS Team Members	5	J5, J6, J7, J8, J9	3	L3, L4, L5, L6
Operational IT/IS staff	3	J10, J11, J12	3	L7, L8,

#### **4.7 Sequence of data collection**

The initial field visits were carried out from early March to the end of June 2011, but several contacts, such as emails and phone calls, were made until 6 August 2012 to gain additional data. Some of the e-government systems were implemented just before the first visit so a subsequent second, third and fourth round of field visits were conducted during November 2011, March 2012, and September 2012 to gain more understanding of e-government systems implementation and sustainable use in both cases. During field visits, field notes were made and other written materials that supported the data analysis were also collected. The sequence of data gathering is depicted in Table 14.

**Table 14: Sequence of data gathering**

<b>No.</b>	<b>Date of Data Collection</b>	<b>Procedure</b>	<b>Activities</b>
1.	16/03/2011 to 11/07/2011	Field visits to both cases	Observation Document gathering Interviews with 20 participants
2.	November 2011	Field visit Case 2	Observation Interviews 3 participants (2 previous participants and 1 new participant)
3.	March 2012	Field visit Case 1	Observation Interviewed 1 key participant (re-interviewed)
4.	September 2012	Field visit Case 1 and 2	Observation Informal interview 2 key participants (from each case)
5.	15 June, 10 July 2011	Telephone interviews	Telephone interviews with a key participant from Case 1 (about 20 minutes)
5.	08 October, 17 October 2011	Telephone interviews	Interviews with a key participant from Case 2 (about 16 minutes)
6.	20 October 2011	Online chat	A key participant from Case 1
7.	02 August 2012	Online Chat	A key participant from Case 1
8.	02 August 2012	Online chat	A key participant from Case 2

Online chats were made both with prior appointment and spontaneous with relevant participants. Examples of online chats are attached (see appendices) but the participants' profiles and real names were deleted to maintain confidentiality. The average chat time was between 20 to 30 minutes. Chatting was more comfortable due to direct responses from the participants and the time saved.

#### **4.8 Data transcription and translation**

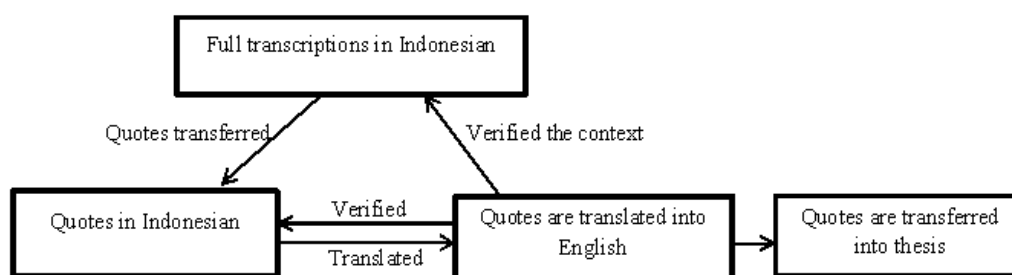
The interviews were transcribed and were made available in hard and soft copy. The full transcripts were also made available to the participants as suggested by Mays & Pope (1995) to get confirmation. The transcripts were in Indonesian during the

analysis process to maintain original meaning and sense. However, the quotes were translated into English then used in the thesis. The researcher used the parallel translation format (Nikander, 2002, p. 142) in which the data is presented in a side-by-side column (Nikander, 2008) when the quotes were translated as depicted in Table 15.

**Table 15: Example of data translation**

<b>Indonesian</b>	<b>English</b>	<b>Sources</b>
<p>Pengalokasian anggaran untuk keperluan penerapan IT kan tidak mudah karena kita juga memiliki banyak prioritas pembangunan lainnya. Kami harus meyakinkan anggota dewan daerah dan juga Jakarta. Namun karena penerapan e-government ini sudah ada dasar hukumnya maka kami tinggal merujuk aja kesitu jadi mereka tidak bisa nolak lah</p>	<p>Allocation of annual budget for IT implementation is not easy because we have so many development priorities in this regency. We have to convince local parliament members and central government. However, since e-government implementation has been regulated in the President Decree, we just refer to the regulation so they can not reject it.</p>	<p>Participant J.1. from Page 1 of the transcript document</p>
<p>Yang melatar belakangi ini tadi berangkat dari kerisauan dan ketidakmenentuan tahun 2007, itu ada beberapa pejabat dibeberepa Dinas yang bermasalah dengan hukum, ada kurang lebih tiga dengan panitianya itu bermasalah dengan hukum pengadaan barang dan jasa itu. Mereka di laporkan oleh rekanan pihak ketiga melaporkan ke POLRES atau KEJARI bahwa di dinas ini ada penyimpangan-penyimpangan dokumen tender, karena waktu itu kan dilaksanakan secara manual pak, kalau manual bapak bisa bayangkan ini bisa diatur, diatur bisa dia yang tadinya kalau ada mau diarahkan, sementara yang mau diarahkan itu tidak memenuhi persyaratan dokumen. Kemudian kalau ada perusahaan yang punya uang dan dia mendekati pejabat pembuat komitmen (pembuat kontrak) untuk menggururkan perusahaan lain dan dia dijadikan pemenang, padahal ada persyaratan dia yang tidak cukup dan dia dilengkapi dengan dokumen yang tidak asli. Nah itu kemudian ketahuan, ketahuan sehingga dilapor bahwa ada pemalsuan dokumen, pemalsuan tandatangan, apa dan sebagainya... sebagainya</p>	<p>There were some department leaders who had problems with the law. There were also approximately three members of the auction committee who had been arrested due to auction fraud. They were reported by the firms to the police officers or the court that there were deviations in this department relating to tendering documents, because it was carried out manually. You can imagine, with this manual system, it can be set up. For example, there are those who've been set up to win a project, but they didn't meet documents' requirements. Then, another firm that has money may also approach a project leader to disqualify another firm; but that firm does not have the qualifications to win a project contract. As a consequence, the firm prepared fake documents and fake signature, and so on. Then, other firms or businessmen get know about it and make a complaint.</p>	<p>Participant L.1. From Page 2 of the transcript document</p>

The quotes were transferred into a table and then the codes were translated into English and then placed in another column of the table. The translation was verified with the Indonesian quotes and with the context where the codes came from (full transcription texts). This was intended to prevent mistranslation of the quotes as well as preserve meaning and sense. The process of quotes translation is presented in Figure 11.



**Figure 11: Quotes translation process**

#### **4.9 Data analysis**

Data analysis is about evaluating data using various strategies to find relationships that may exist related to the research questions (Dooley, 2002). However, the researcher’s perspectives were open to the possible emergence of new issues during the data analysis, as suggested by Strauss & Corbin (1998). Qualitative data are “*sources of well-grounded, rich descriptions and explanations of process in identifiable context*” (Miles & Huberman, 1994, p. 1) which requires the researcher to treat the data “*as the ground on which the findings are based*” (Polkinghorne, 2005, p. 138). This provides an opportunity to gain more understanding regarding case phenomena being studied.

Data analysis was also a challenging process in this research due to the wide range of data types and characteristics. The challenges of data analysis in qualitative research have been addressed by Golden-Biddle & Locke (2006). Data consist of evidence, empirical data and examples (Attride-Stirling, 2001) in a variety of forms such as interviews, field notes, documents from various government sources, artefacts, and memos. This requires a lot of effort from the researcher to structure the data in a

proper manner to enable analysis. Kaplan & Maxwell (2005) suggest to analyse data as soon as the research begins and to continue to the end of the research. Through the early analysis, the researcher was able to gain insights at an early stage and generate and revise the conceptual framework (Miles & Huberman, 1994).

In an interpretive case study, analysis of the data requires consideration of the breadth of the data collected and the need to identify themes, which can be uncovered through an inductive and iterative approach. This leads to the transcription of the data soon after interviews and asking for confirmation of the content from the informants as necessary. The transcripts were analysed to grasp the major understanding of social system roles in local e-government implementation and use sustainability. The aim was to generate general ideas and give a particular name to the ideas.

The analysis of the data from this research was based on a grounded-theory approach, where stages of coding were followed by iterations of reflection, conceptualization and review. The data analysis was done in three iterations (open coding, axial coding and selective coding) broadly following Strauss & Corbin's (1998) coding stages and Urquhart et al. (2010) conceptualization process.

Firstly, initial open coding was used to enable the semi-structured interview data to be coded into a broad range of categories based on the conceptual framework in Chapter 3. This initial coding provides a general idea about the participants meaning and actions and improves analytic insights and thinking in looking at statements and actions (Charmaz, 2006) in the transcriptions. By doing this, different ideas in the text of each interview transcript were broken into segments and named, as suggested by Jin & Robey (2008) before continuing to the next transcript.

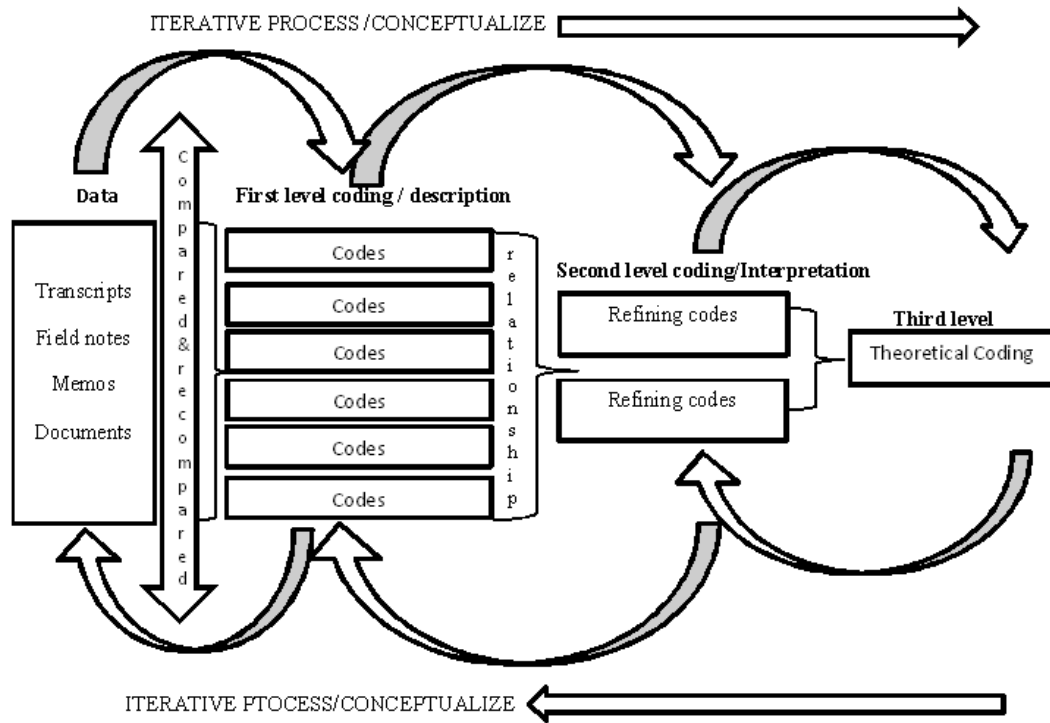
In the next iteration, axial coding was carried out by making a connection between categories and codes (Corbin and Strauss, 1990). Categories from the open coding were again refined to a smaller number against the conceptual framework to identify existence of social system components in sustaining e-government in the data and also to find new categories from the open coding.

In the third iteration, selective coding (Corbin & Strauss, 1990) assists a more in-depth examination of the second stage categories by “*refining their meanings, and articulating relationships among them*” (Jin & Robey, 2008, p. 183) to enable theoretical categories that inform the findings of the research and contribute to outcomes. At this stage the theoretical perspectives were established. The analysis also focused on how the social system play roles manifested in the participants opinion and experiences.

This strategy helped the researcher to derive thematic categories from the data by constantly comparing and re-comparing the data from the various sources and regions (Cresswell, 2012; Galliers & Huang, 2012; Urquhart et al., 2010). In addition, this process offers more insight and understanding of the phenomena being studied.

The researcher also took into consideration Urquhart et al.’s (2010) data conceptualization strategy in gaining in-depth insight and understanding. The conceptualization process was started from a simple process (description) where the researcher began initial understanding of the concepts at the level categories and properties through open coding. Conceptual saturation was reached when no new categories were generated from the open codes and the gaps in emerging concepts were filled (Kendall, 1999). The categories and properties were then interpreted during selective coding process to refine conceptual constructs. At this stage, the researcher was able to build relationships between those categories and properties that guided the subject area being studied. The highest level of conceptualization was at the third level of analysis, where a theory was formulated and the interpretive constructs’ explicit relationship determined. This relationship might be influences or causal (Urquhart et al., 2010). The data analysis process of this study is depicted in Figure 12.





**Figure 12: Data analysis process**

Adapted from Strauss & Corbin (1998) and Urquhart, et al., (2010)

Because this research employed two case studies, the data analysis required two stages of analysis. First, each case was analysed within the case itself as an independent unit. A within case analysis was intended “*to gain familiarity with data and preliminary theory generation*” (Eisenhardt, 1989, p. 533). The cases analyses were presented in thick and rich description to generate validity and rigour (Creswell & Miles, 2000). Then, a cross-case analysis from the data of each case was combined. The case study analysis was reported based on Walsham’s (1995) suggestions, where the analysis (results) was not presented as the facts, but it covered the people’ interpretation, institutional and social phenomenon and artefacts within local governments’ organizations.

#### **4.10 Data presentation**

The data was organized and presented in a matrix table (Miles & Huberman, 1994). The matrix table was built based on the creativity of the researcher because “*there are no fixed canon for constructing a matrix*” (Miles & Huberman, 1994, p. 240). However, Miles & Huberman (1994) suggest building a helpful matrix display that

assists the researcher to obtain reasonable answers to the research questions. This included the consideration of data entries into the matrix. The researcher can input “thin” (e.g. words or phrases only) or “thicker” data (e.g. direct longer quotes).

To display the data into the matrix, the researcher used a thematic network model (Attride-Stirling, 2001, p. 397) where the data displayed in the matrix table were organized based on three, theme levels (*basic themes, organizing themes, and global themes*) in the matrix columns. The *Basic theme* was the lowest theme that was derived from textual data and it represented very little about the text as the whole. The *Organizing theme* arranged basic themes into specific clusters that represented similar issues, or summarized the principal assumption about a group of basic themes. The *Global theme* was the super-ordinate theme that represents the principal metaphor of the data as a whole. This strategy was in line with the three-level iterative coding (Strauss & Corbin, 1998) and conceptualization (Urquhart et al., 2010) concept as described in data analysis section above. This helped the researcher to develop understanding of the relationships between data presented in the matrix table as depicted in Table 16.

**Table 16: Data presentation examples**

<b>No.</b>	<b>Data Example</b>	<b>Basic Themes</b>	<b>Organizing Themes</b>	<b>Global Themes</b>
1	<i>E-Identification (E-ID) is the central government policy and we have to support the implementation and use. Now we have successfully implemented the system in eleven district offices and all the hardware that was provided by central government and are now located in the district offices. We are here as coordinators who monitor the implementation and use within the districts (L.9)</i>	Imposed by central government	Seeking central government legitimacy	Institutional arrangements
2	<i>The system is mandated by the financial department in Jakarta and in this office. All departments must use SIADINDA because all financial data must be put into the system with similar format, otherwise our financial reports will be rejected by central government (J.10)</i>	Imposed by central government	Seeking central government legitimacy	
3	<i>Today citizens are smarter, and they expect a responsive and efficient government that is able to provide better services for them. In response to their expectations we have an ambition that we must use technology in our daily work; it is e-government (J.2)</i>	Citizens demand	Seeking citizens' legitimacy	
4	<i>The J-Net was funded by local government and supported by districts, villages and schools. They took responsibility for the J-Net budget implementation voluntarily, for example each district donated 60 million Rupiah, villages 40 million Rupiah, and schools 30 million Rupiah ( 1 million Rupiah approximately equal to US \$100) (J.1)</i>	Sharing financial burden	Financial mechanism	Resource endowments
5	<i>We also have got outsource workers to help us in implementing and operating the systems, but within this department there have also been recruited employees with 80% of them, or about 40 employees, have a bachelor degree in computing. The employees are working together with outsource workers to support our online auction (L3)</i>	Human resources recruited from universities	Competence human resources	
6	<i>When I started working with this department I did not know how to use the system. Then BBPT staff in coordination with IT team held short training courses on the system operation. I and other employees were involved in that training until we knew how to use and operate the systems (J.6)</i>	Training through cooperation	Training to provide IT skills	

## 4.11 Research credibility and Trustworthiness

Credibility was an important element of this research and it has been taken into account through a rigorous research process. One way to establish credibility is by employing detailed research procedures from beginning to the end, as suggested by Walsham (1995, p.79), who states that the case study analysis should include “*the research sites chosen, the reasons for this choice, the number of people who were interviewed, what hierarchical or professional positions they occupied, what other data sources were used, and over what period the research was conducted. With respect to data analysis, reporting should include how the field interviews and other data were recorded, how they were analysed and how the iterative process between field data and theory took place and evolved over time*”. In the report, direct quotes from participants were also used (Walsham, 2006) to justify the researcher’s arguments and views.

Research credibility was also established by the triangulation of various data sources throughout the length of the researcher’s engagement with the cases, as well as through the maximum data saturation, as suggested by Cresswell & Miller (2000). The means of data collection for this research was well diversified (observation, interview, written material, artefact, email, telephone interviews, online chats and websites) so as to establish the credibility of the cases’ information that were being studied. The researcher’s engagement with the cases was sufficiently long enough to support the research findings’ credibility: four field visits were made during period March 2011 to September 2012, along with follow-up telephone calls, online chats and emails (see Table 14 above). Multiple site visits were also targeted to establish reliability through “*the degree of consistency with which instances are assigned to the same category ...by the same observer on different occasions*” (Hammersley, 1992, p.67). Those multiple visits and follow-up contacts were the researcher’s efforts to establish reliability through active involvement in the research process, as suggested by Long & Johnson (2000).

This research also reduced bias through building trustworthiness from early research processes. This was carried out through neutrality and objectivity in research procedures and result analysis (Krefting, 1991). Neutrality was built through the

functioning of the findings as the product of informants and research conditions not the researcher biases, motivation, and perspectives as suggested by Guba (1981). Objectivity was built through maintaining proper distances between the researcher and informants as suggested by Krefting (1991), but the distance did not reduce the researcher's engagement in obtaining a depth insight of the informants' views. In achieving this, the researcher prolonged contact with the participants (Cresswell & Miller, 2000) through various follow up contacts and multiple sites visits to allow longer cases observation to compare and recompare interviews data with field observation data as suggested by Cresswell and Miller (2000).

#### **4.12 Ethical issues**

This research has been carried out with full ethics compliance. The research ethics have been approved by the Swinburne University Human Research Ethics Committee (SUHREC) before the research proceeded in February 2011. Also, access permission was also obtained from both local governments before the field visits. As well as for the subsequent, extensive contacts made to administrative staff from both local governments to arrange the field visits.

Regarding participants' involvement in interviews, both confidentiality and anonymity were strictly applied so as not to disclose their identities, as suggested by Walsham (2006). The participants' roles and positions were not identified in the transcripts and reports. Instead, they were assigned with unique codes as identities. An invitation to participate was given to potential participants. They were invited personally via identification from the local governments' websites, which shows their roles and responsibilities in the government organization. Consent Information statement(s)/letter(s) and consent form(s) for signature were given to each participant.

Participants' confirmation of the interview transcripts were obtained before analysis. Signed consents and any printed transcripts are kept in a designated, secured storage space. Electronic data was shared with the supervisors only and the data is kept securely in password-protected drives on the researcher's desk top. File names were coded to ensure anonymity and participants' names only appeared on the signed consent forms that indicated the privacy codes used during the research. Participants'

names and roles are not identifiable in any further publication of this research such as journal and conference papers.

### **4.13 Summary**

This chapter has addressed methodological issues to provide information on how this study has been carried out. The methodology covers the research paradigm of this study, the theoretical perspective and the method and procedures to gather data. This study's paradigm was constructivism and subjectivism which considers that humans and reality are not separated. Meanwhile, theoretical perspective of this study was interpretive hermeneutic, which posits that the relationship between those humans and reality can be understood and constructed through interpretation of multiple sources.

This study's research method is case study. Meanwhile the procedure to select a case was based on the opportunity to gain key knowledge and experience. The unit of analyses was two regencies in Indonesia. Data were gathered through sites' observations semi-structured interviews and documents. The data was transcribed and translated into English before transferring into this thesis. Coding procedures were addressed to provide insight on how the analyses were carried out. The data presentation procedures were also shown using a matrix table. Finally, the credibility and ethical issues of this study have also been addressed.

## **CHAPTER 5: Case Studies – Indonesian Context**

### **5.1 Introduction**

The aim of this chapter is to discuss and provide information about Indonesia as it relates to this study. The information is important because it links to the analyses in Chapter 7 and 8. Some of the components within the proposed social system relate to national context and play roles in local e-government implementation and sustainable use. For example, local governments must abide by national regulations and standards in sustaining their e-government implementation and use.

Section 5.2 discusses Indonesian demographic situation. Sections 5.3 and 5.4 discuss issues at central Indonesian government level and local government context. Indonesian legal and standard issues are presented in section 5.5. History of e-government emergence and the current state of e-government at local level in Indonesia are discussed in section 5.6 and 5.7 respectively. The roles of central government institutions in e-government are discussed in section 5.8 and the final section.

### **5.2 Indonesian demographic**

Indonesia is an archipelagic nation with about 13,466 islands (MENKOMINFO, 2012). Indonesia covers of an area of 2.3 million square kilometres with a coastline of about 84,000km (Heileman, 2011). Indonesia is also a multi-ethnic nation with about 1300 ethnic subdivisions (Badan-Pusat-Statistik, 2010b) and 742 languages (Kompas, 2008). However, only few of islands are well-known and inhabited such as: Sumatra, Java, Borneo (Kalimantan), Celebes (Sulawesi), Irian, Maluku, and Bali. According to the Ministry of Interior Affairs (MENDAGRI), the Indonesian population had increased to 259 million by the end 2010 (Fauzi, 2011). The majority of the population is concentrated in Java with 59% of 224,000,000 Indonesians living on this island, while another 41 % of the population occupies 93% of the other Indonesia lands (Badan-Pusat-Statistik, 2010a). Indonesia is surrounded by Malaysia and Singapore in the west and Papua New Guinea in the east as shown in Figure 13.



**Figure 13: Indonesian Map**

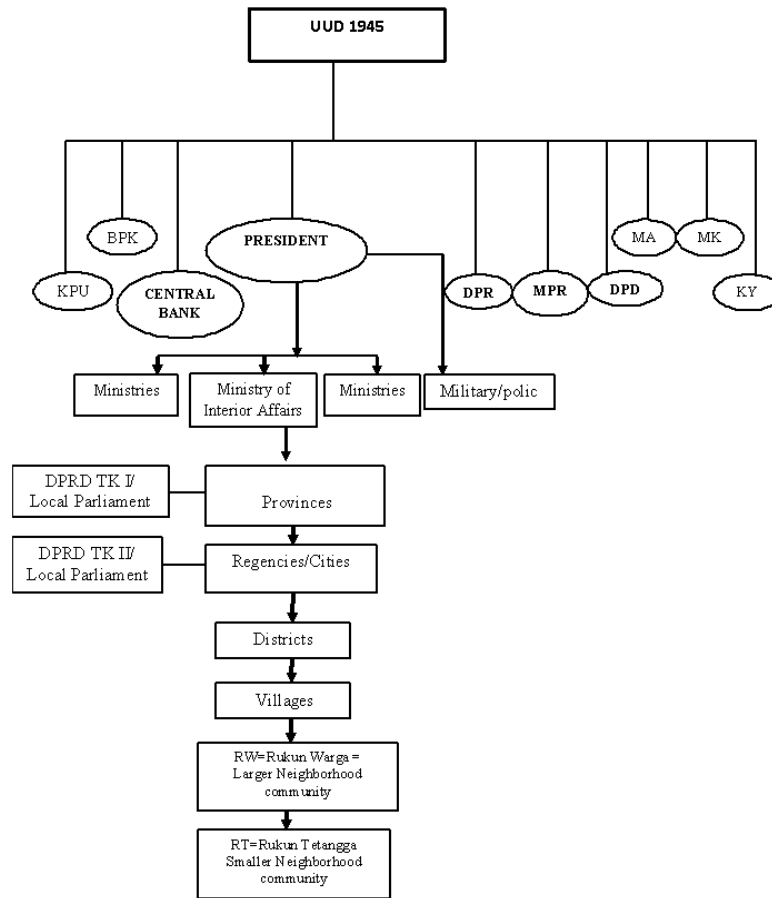
About 12 % of the Indonesian population live in poverty (Badan-Pusat-Statistik, 2012) and about 7% of the population are illiterate (Badan-Pusat-Statistik, 2011). However, Indonesia is a country with high economic development from year to year. According to World Bank, Indonesia economic growth was about 6.1 per cent in 2012 and about 6.3 per cent in 2013 (Cabinet-Secretary, 2013). This indicates that Indonesia is likely to achieve a high improvement in many aspects of its development. A significant impact of this high economic development is the increase of technology penetration within the Indonesia population.

The impact of high economic development has been the increase of internet users in Indonesia. In 2010 and 2011, Indonesian internet users numbered 42 million and 55 million respectively (Kompas, 2011) and it jumped to 63 million, which is 24 per cent of the population in 2012 (Tempo, 2012). The numbers of citizens who have access to internet and telephones also increased. According to Sarwoto Atmosutarno (2012), the head of Indonesia Mobile Phone Association, the number of mobile phone users in Indonesia has jumped to 240 million and internet broadband users was up to 70 million in 2012. This number may exceed the Indonesian population in 2015 because it is possible for individuals to have more than one mobile phone number.



### 5.3 Governmental

The Indonesian government has many hierarchies, but the greatest power is held by the constitution (UUD 1945). There are 10 higher government institutions that have similar power levels as depicted in Figure 14.



**Source:** based on Indonesia’s constitution (UUD 1945) and Law No. 32/2004

**Figure 14: Indonesian Government Structure 1**

However, the institutions are broadly divided into three power holders:

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<sup>1</sup> UUD 1945 is the Indonesia constitution, KPU is the election commission, and BPK is the Bureau for Government Financial Audit. DPR is the parliament members come from political parties. MPR is senate members. DPD is the parliament members that represent certain regions without affiliation to certain political parties. DPRD TK I is the parliament members at provincial levels and DPRD TK II is parliament members at regency or city level. All parliament and senate members at central and local level are elected every five years.

1. Judicative institutions that hold law enforcement power (e.g. Supreme Court (MA), Constitutional Court (MK), and Judicial Commission (KY)).
2. Executive institutions that hold power that relates to governance (e.g. election commission (KPU), Auditor Bureau (BPK), Central Bank, and President).
3. Judicative institutions that hold power relates to constitution and other laws (e.g. parliament members (comprises of DPR, DPD) and senate members (MPR)).

The President is the highest governmental power holder in Indonesia and is responsible for all ministry departments and local government levels. The President runs the country according to mandates given by Indonesian constitution and laws enacted by both parliament/senates and the President. The constitutions and laws provide general guidance for the President to run its government. This requires the President to translate the mandates into more details through enactment of other regulations, such as President Decree and President Instructions. The President Decrees and Instructions are then translated into specific details by each ministry according their responsibilities. For example: the Ministry of Interior Affairs may enact regulations related to policy implementation within their boundaries responsibility.

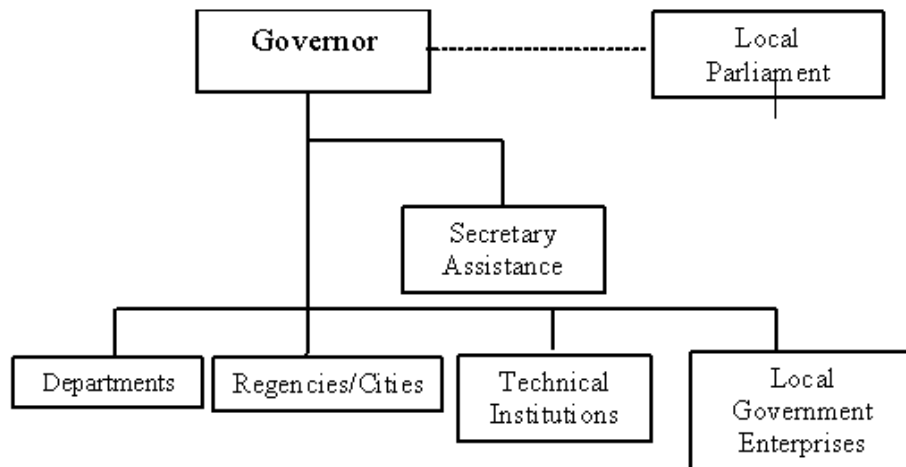
Central government power is distributed across local government in Indonesia to effectively implement all government policies. Since 2004, local governments have been granted greater autonomy to implement their policies according the local needs. However, even though central government power has been decentralized, as mandated by Regional Autonomy Law No. 32/2004, local governments are still controlled by central government through the Ministry of Interior Affairs regarding certain issues. For example: even though local leaders, such as Governors (provincial leaders) and Regents (regency's leaders), are directly elected by local citizens, final endorsement comes from Ministry of Interior Affairs. This also applies to other policies such as the local annual budget and development planning.

Most of central government power is transferred to the second level of local government (regencies and cities) not to provincial levels (Depdagri, 2004).

According to Regional Autonomy Law No. 32/2004, central government has granted full autonomy to the regencies and cities to manage their development (except law, monetary, defence, and foreign affairs). Based on this regulation, governments at provincial level do not have the power to impose or mandate regencies or cities to adopt certain policies and regulations. Regencies and cities have a direct relationship to central government and can adopt new policies from central government directly without involving the provincial level.

#### 5.4 Local Government in Indonesia

There are two levels of local government in Indonesia. The first is provincial and the second level is regency/cities. Currently, there are 33 provinces and 530 from the second level of local government, which comprises of 497 regencies and 98 cities (Depdagri, 2012a). According to the Law No. 32/2004, governments at provincial levels function as a coordinator and a supervisor to the lower levels (see Figure 15 for provincial government organizations structure). Provincial responsibilities and authorities have been described in more detail by Ministry of Interior Affairs regulation No.66 year 2012 (Depdagri, 2012b), which includes coordination and supervision of local government development. Provincial, regencies and cities' government are operated in accordance with central government regulation and policies.



**Figure 15: Provincial government organizations structures**

Source: DEPKOMINFO (2004, p.14)

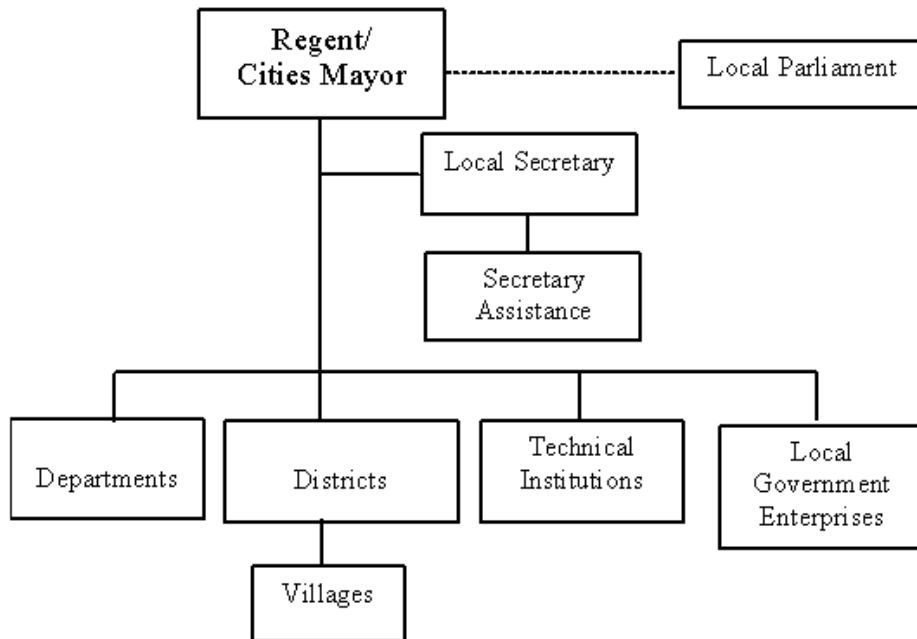
Governments at regencies and cities level have greater power in managing themselves for better development. They can implement any of the policies and regulation according to their own need including using the budget allocated by central government. The characteristic of regencies and cities government organizations structure might differ from one to another depending on the geographic and demographic condition. Some regencies and cities with high populations and wide areas might have more departments and complex organization structure than other local governments. A local government with low a population may have a department with combination of multiple responsibilities to make their organization more efficient. For example: a local Department of Transportation, Communication, Information, Culture and Tourism is a department within a small regency, but can be two different departments within a bigger regency.

Under regencies or cities government, there are two more levels of government which are named “kecamatan” (districts) and “kelurahan/Desa (villages). Inside the villages there are another two levels of hierarchies; RW = Rukun Warga and RT= Rukun Tetangga (neighborhood association). All of those government hierarchies are recognized by regulation No. 32 year 2004, but their functions are mostly as administrators in the local government<sup>2</sup> policies’ implementation.

However, the presence of hierarchies under regencies/cities levels often creates more red tape in policies’ implementation. For example when citizens are willing to obtain an ID card they have to start the process of obtaining the document from the lowest level of government in their villages - RT. After a citizen has got approval from the head of RT, they must get another approval from the head of RW, and then they continue seeking approval from the head of the villages. All documents are then submitted to the regencies Civilization and Civic Services department after they get another approval from district offices. The complete hierarchy of regencies or cities government structure can be seen in Figure 16.

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<sup>2</sup> RT or Rukun Tetangga and RW or Rukun Warga is a neighbourhood association in a village. RT may consist of 10 to 20 households, while RW may consists of 5 to 10 RT. The number of RT and RW in a village is determined by the density of population and the area of the village. The head of the RT and RW are elected by the community and then endorsed by the head of the village.



**Figure 16: Second Level Government Organization structure**

Source: DEPKOMINFO (2004, p. 15)

The benefits provided by the regional autonomy law are that the second level of local government obtains more chances and power to manage their territory. Regencies and cities have more power to design their own development planning and implement them based on their stakeholders' needs. They also have power to establish their own legislations based their own context, but all the legislations should be relevant to central government legislations. Sometimes, the legislations might be overlapped with central government legislation, which results in long procedures or high cost in obtaining certain documents.

### **5.5 Regulations and Standards Issues**

Regulation and standards are produced by many institutions to regulate policies implementation within the national and local institutions context. These multiple regulation producers often cause overlapping in policy implementation within government institutions. The regulation overlapping is often found within the technology arena (Nugraha & Tiben, 2009). For example, Indonesian Department of

Communication and Information (DEPKOMINFO) and Indonesian Telecommunication Regulation Bureau (BRTI) have the power to regulate telecommunication operations in Indonesia. These multiple regulatory bodies often cause conflict in telecommunication practices due to lack synchronization between those institutions (Nugraha & Tiben, 2009).

For the purpose of this study, some regulation terms in the Indonesian context are explained in Table 17. The objective is to provide clear understanding regarding regulation terms as they relate to the emergence and development of e-government as discusses in the next chapters.

**Table 17: Indonesian regulation terms**

<b>No.</b>	<b>Regulation Terms</b>	<b>Explanation</b>
1.	Law	Law is a legal product of the cooperation between executive (President) and legislative (parliament) institutions. For example, regulation No.14/2008 public information disclosure.
2.	Presidential instructions /decisions <sup>3</sup>	Presidential decree is a legal product produced by the President without involving the parliamentary institution. It aims to translate or describes more detail the operational Law. For example, Presidential instruction No. 3/2003 regarding Indonesia e-government development and implementation strategy.
3.	Ministerial decisions	A ministerial decision is a legal product produced by a ministry to regulate a certain policy within a ministry department. For example, Ministry of Communication and Telecommunication No.28/2006 regarding government institutions website names.
4.	Other central government non- department regulation	A non-department often issues a regulation for their own policy purposes but it is applicable nationally. For example, Agency for Government Goods and Services Procurement Policy (LKPP) issued the regulation on electronic tendering activities.
5.	Local government	Local government regulations refer to

<sup>3</sup> A Presidential Decision has stronger power compared to a Presidential Instruction because the decision is functioned to “regulate” while a decision is related to “policy rulers” which aims to implement a policy (Asshiddiqie, 2010)

	regulation	provincials, regencies and cities regulations, which are produced through the cooperation of local parliaments and leaders of local institutions.
6.	Governor regulation (such as governor decrees and governor decisions)	Is a legal product produced by a head of a province to operationalize other greater legalities in a provincial context, but it may also establish new regulations by a province to accommodate their own interests.
7.	Head of regencies/cities regulations (such as Regent or Mayor decrees and decisions)	Is a legal product produced by a head of a regency or city to facilitate other greater regulations in a regency or city context, but it may also establish new regulations by a regency and city to accommodate their interests.

Adapted from Farida (2010) and Indonesia (2004; 2011)

There are many regulations and standards that relate to the emergence and developments of e-government that have been enacted since 1999, when the Indonesian government started introduce the technology across government institutions. The regulations and standards were produced by different central government actors such as President, ministries, and non-department. Table 18 describes some of the regulations and standards enacted since the early emergence of e-government in Indonesia. The regulations shown are ordered, based on power hierarchies. This means that the highest regulation and standards are presented earlier and then followed by lower level of regulations that were enacted by lower level of government institutions, such as local government leaders.

**Table 18: Regulations and Standards relating to the Emergence of E-government**

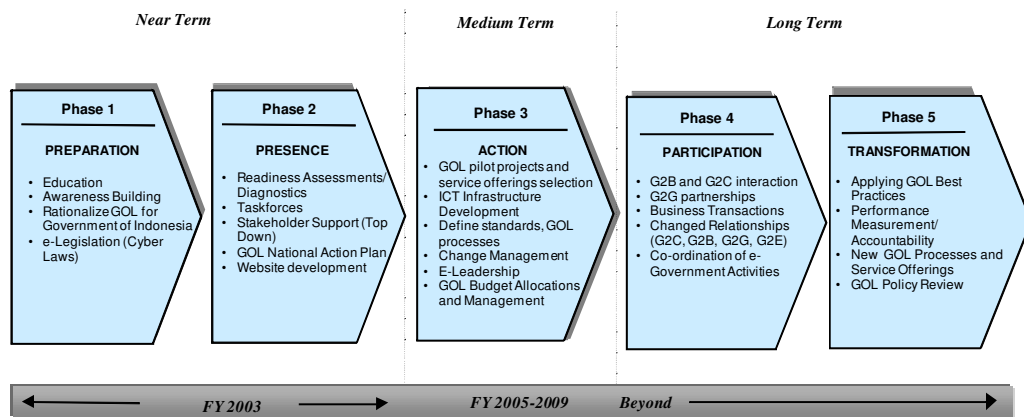
<b>No.</b>	<b>Regulation Title</b>	<b>Number</b>	<b>Institution enacting the regulation</b>
1.	Telecommunication's Law	UU No.36/1999	President and parliament
2.	The Electronic Information and Transaction Bill	UU No.11/2008	President and Parliament
3.	Public Information Disclosure (KIP) law	UU No. 14/2008	President and Parliament
4.	Presidential Decree on Coordinating Team for ICT Development (TKTI)	Presidential Decree No. 50/2000	President
5.	Guidelines for the development and empowerment of ICT in the society	Presidential Decree No.6/2001	President
6.	National strategy and policy for e-Government development	Presidential Instruction No.3 /2003	President
7.	Guidelines on government services and goods procurement	Presidential decision No.80/2003 and No. 95/2007	President
8.	Guidelines on infrastructure standard for government portal	No.55/KEP/M.KOMINFO/12/2003	MENKOMINFO
9.	Guidelines on management electronic document system	No.56/KEP/M.KOMINFO/12/2003	MENKOMINFO
10.	Guidelines on master plan e-government institution development	No.57/KEP/M.KOMINFO/12/2003	MENKOMINFO
11.	Guidelines for government information system network development	69A/KEP/M.KOMINFO/10/2004	MENKOMINFO
12.	Guidelines information system development for central-government	69A/KEP/M.KOMINFO/10/2004	MENKOMINFO
13.	Guidelines information system development for Province	69A/KEP/M.KOMINFO/10/2004	MENKOMINFO
14.	Guidelines information system development for municipality /regency	69A/KEP/M.KOMINFO/10/2004	MENKOMINFO
15.	Guidelines for data, information and government information system organization management	69A/KEP/M.KOMINFO/10/2004	MENKOMINFO
16.	E-government applications standard quality development	M.KOMINFO/VIII/2004	MENKOMINFO
17.	National e-government Blueprint	2004	MENKOMINFO
	Instruction to use legal software within government institutions	SE/MENKOMINFO No.5/2005	
18.	Standardization for go.id domain for central and local government institutions	No.28/PER/M.KOMINFO/9/2006	MENKOMINFO
19.	Guidelines LAN network security in government institutions	SE/MENKOMINFO No. 4/2010	MENKOMINFO
20.	Guidelines for implementation web-based government services and goods electronic procurement	SE/MENKOMINFO No.6/2005	MENKOMINFO
21.	Guideline for providing public electronic services within government institutions	SE/MENKOMINFO No. 01/2011	MENKOMINFO
22.	E-Tendering regulation	Head LKPP decision No.18/2012	Head of LKPP
23.	E-Purchasing regulation	Head LKPP decision No.17/2012	Head of LKPP
24.	Government goods and services tendering document standard	Head LKPP decision No.15/2012	Head of LKPP



## 5.6 The Emergence of E-government

The emergence of Indonesian electronic government (e-government) was started when the Indonesian government enacted Presidential Decree No. 50 in 2000 concerning Indonesia Telematics Coordination Team (TKTI = Tim Koordinasi Telematika Indonesia) (Bapenas, 2003). The team coordinates and encourages the development of information and communication technology (ICT) in government and private sectors. The team also encourages improving commitment of those actors to empower the use of ICT for better Indonesian development. Some government institutions have started to adopt and implement ICT in their organizations during this period.

An early Indonesian e-government road map was proposed by the National Development Planning Agency (BAPPENAS) as depicted in Figure 17. Some activities proposed in the roadmap have been achieved, such as regulations preparation and websites development, but long term agendas such as participation and transformation are still only partially achieved.



Adopted from Harijadi & Satria, 2000

**Figure 17: Indonesian e-government road map**

To strengthen and provide guidelines for the team's operation, the central government issued Presidential Instruction No. 6/2001 concerning Indonesia's five-year National Information Communication and Technology Action Plan in 2001 (Haryono & Widiwardono, 2003). The regulation states that information

communication technology should be used to empower citizens, increase their welfare, reduce poverty, and eliminate the digital divide. To achieve these aims, the government launched the concept of “Wartel” (telecommunication shops) and “Warnet” (internet shops) to reduce the digital divide and improve citizens’ access to information. Early Indonesian national strategies for ICT adoption and implementation were also covered by this regulation.

In the following years, all the above legislations have triggered government institutions at central and local levels to use ICT to support good governance. The legislation is crucial to the nation-wide development of future e-government in Indonesia because it is the first legal basis for ICT infrastructure development. Central government institutions, such as National Development Planning Agency (BAPENAS), The Agency for the Assessment and Application of Technology (BPPT), and local government institutions, such as Sragen and Takalar regencies through the implementation integrated public services (SIMPTAP), are some of the earlier implementers of ICT.

However, e-government in Indonesia was formally adopted when the government enacted Presidential Instruction No.3/2003 concerning the National Policy and Strategy of e-government implementation and use. The main objectives of the Presidential Instruction relating to the implement and use of e-government are to: improve public services, establish interactive communication between government departments and businesses, enhance communication among government departments, improve efficiency and transparency, and facilitate communication between central and local governments. As a result, government institutions, including local governments, are able to improve their competitiveness in global development. Citizens also have the opportunity to participate in local development policies.

The regulation was followed by the launching of the e-government implementation Blue Print by the Minister of Information and Communication in 2004 (DEPKOMINFO, 2004). The Blue Print provides objectives, guidelines, and standardization for local governments in implementing and use of e-government. The

objective of e-government implementation within government institutions are re-stated in the Blue Print and are:

1. Improve public service delivery through the use of technology in government administration.
2. To support clean governance, improve transparency and response to change.
3. Improve government organizations' performance, management, and work process. (DEPKOMINFO, 2004, p. 21)

A number of policies have been implemented since 2004 to speed up the emergence and development of e-government within government institutions. These include allocating specific budgets to encourage institutions to implement and use e-government. In the last ten years of e-government implementation, the central government has invested more than a hundred trillion Rupiah (about US\$10 billion) across regencies, cities, and departments (Falahuddin, 2011) to support e-government implementation and use, and sustainability across government institutions. However, the facts show that majority of Indonesian institutions, in particular local government, have yet to successfully implemented e-government initiatives. Only some regencies and cities are considered to have successfully implemented and sustained the e-government for services provision. The following section discusses the current state of e-government in Indonesian local government.

## **5.7 Current state of e-government at local levels**

Since the launching of the Presidential Instruction No.3/2003, many local governments have implemented and used e-government. The implementation and use of e-government is supported by the availability of information and communication infrastructure such as telephone lines and Internet. The numbers of citizens in Indonesia who have access to the Internet and telephone lines has also increased. According to current study conducted by Nurdin, Stockdale & Scheepers (2012) from 489 of second level of Indonesian local governments, 424 of the local governments have websites of which 353 are accessible. Based on their analysis of the 353 active local government websites, using United Nations e-government development criteria, it was found that Indonesian local e-government has been

developed to the fourth phase of the road map. The findings show that even though the Indonesian government has formally launched regulations to adopt and implement e-government at local level since 2003, most local e-government (55%) is still at the emerging stage. A further 28% of the local e-governments have achieved an enhanced stage, while only 17% have progressed to the interactive stage. One local e-government has achieved the transaction stage, but none have moved to the final stage of e-government

Even though the data show that the majority of local e-governments have yet to achieve transactional level as expected by the central government Blue Print, some of local governments have successfully utilized e-government for administration and management reform. In the roadmap and the Blue Print of e-government implementation, local governments are targeted to achieve full implementation of e-government where local governments transform their services and integrate front and back-office systems to support G2G, G2, and G2C online services.

Central governments are actively involved in developing and sustaining e-government at local levels. Their involvement is mostly related to resources provision and development, regulation and strategies for e-government development, and research. Three central government institutions which play main roles in e-government emergence and sustainability at local levels are discussed in the following sections.

## **5.8 Central Government Institution Roles**

There are three government institutions that play significant roles in the emergence and the sustainability of e-government within local government in Indonesia. These three institutions are:

- The Ministry of Communication and Telecommunication (MENKOMINFO)
- The Ministry of Interior Affairs (MENDAGRI)
- The Agency for the Assessment and Application of Technology (BPPT).

Other ministries are also involved in e-government implementation such as Ministry of Health Affairs and Ministry of National Education, but their involvement is

incidental and is merely in delivering specific systems and hardware when they get a project.

Currently, the three institutions are consistently active through their involvement in regulation and strategy development, resources and training provision, and research and development. The three institutions are discussed in the following sub sections:

### **5.8.1. The Ministry of Communication and Telecommunication Affairs (MENKOMINFO)**

The Ministry of Communication and Telecommunication Affairs (MENKOMINFO) is the main actor in technology implementation in Indonesia. The main task of MENKOMINFO is:

*“Conducting affairs in the field of communication and information technology in the government to assist the President in organizing the state administration” (MENKOMINFO, 2011).*

Their other tasks also include:

- Formulation, determination, and implementation of policies in the field of communication and information technology;
- Management of property/state assets which is the responsibility of the Ministry of Communications and Information Technology;
- Supervision of the implementation of tasks within the Ministry of Communications and Information Technology;
- Carry out of technical guidance and supervision to the implementation of the Ministry of Communications and Information Technology matters in the region, and
- Implementation of technical activities at the national scale.

In the e-government arena the Ministry of Communication and Information plays various roles in enacting some regulations to standardize and legitimize e-government implementation and operation within government institutions. The

ministry also provides Indonesia's e-government development and implementation strategy. For example, the ministry established the Blue Print for Indonesia's e-government implementation, use and development in 2004, which covers all aspects of e-government implementation and use strategies, such as human resources, infrastructure, website names, etc.

### **5.8.2. The Ministry of Interior Affairs (MENDAGRI)**

The Ministry of Interior Affairs (MENDAGRI) is a central government department, which is responsible for Indonesian internal affairs. The main task of the ministry is to support the President in running affairs, which includes formulation, adoption and implementation of policies in the field of domestic governance, such as local government (KEMENDAGRI, 2010). Local government organizations, provinces, regencies and cities, are under the control of this ministry.

The Ministry of Interior Affairs plays a significant role in determining some local government policies. For example, local governments are required to obtain endorsement in their annual development strategies and budget planning. The ministry may also have power to impose certain policies to be adopted and implemented by local government institutions. However, in most cases local government policies are bottom-up policies.

Regarding e-government implementation, the Ministry of Interior Affairs is involved in providing some systems and infrastructures. The ministry's involvement in e-government implementation and use mostly relates to a national policy to reform public sectors. For example, in 2010 there was a national policy to transform citizens' manual identification card (ID) into electronic identification card (E-ID). This policy caused the ministry to develop an e-electronic identification system (E-ID system). However, prior the implementation of E-ID system, the ministry had earlier started with the launching of Population Information System Administration (SIAK) in 2006. This system was then imposed on local government levels accompanied with resources support, such as regulations, human skills, systems, and hardware.

Similarly, other national policy-based e-government systems, such as e-procurement and local government departmental financial information system (SIADINDA), were

also transferred to local government with a similar strategy. Some of the key national policy-based e-government systems imposed by the Ministry of Interior Affairs are shown in Table 19.

**Table 19: Key e-government systems from the Ministry of Interior Affairs**

<b>No</b>	<b>E-Government Systems</b>	<b>Year</b>	<b>Description</b>
1.	SIAK (it is a demographic information system for population management which provide single identification number for each family)	2006	The system was transferred by Ministry of Interior Affairs (DEPDAGRI) to the regency Department of Civilization and Civil Services (DISDUKCAPIL) based on central government regulation no. 23 year 2006. It was used to manage population data and link with a data base in DEPDAGRI.
2.	Departmental Information System (SIADENDA)	2008	It was mandated by central government regulation No. 58 year 2005 and strengthened by Ministry of Interior Affairs No. 55 year 2008, and No. 21 year 2011. The regency departmental financial information system may be supplied and maintenance by a vendor.
3.	E-ID (E-KTP) is the national version of electronic identification which was developed based on the SIAK system	2009	Central government issued Presidential Regulation No. 26 year 2009 to mandate local government adopt E-ID, but after almost two years delay the project was started in early 2011. Policies details are controlled by the Ministry of Interior Affairs.

### **5.8.3. The Agency for the Assessment and Application of Technology (BPPT)**

The Agency for the Assessment and Application of Technology (BPPT) is a non-departmental government agency under the coordination of the Ministry of Research and Technology, which has the task of carrying out government duties in the field of research and application of technology (BPPT,2008). The technology research and development includes not only information and communication technology, but also other technology such as transportation, marines, agriculture, etc.

In the context of e-government implementation and use, BPPT is responsible for e-government research and development to support government institutions administration and management reforms. Also, BPPT is involved in the development of e-government systems that suit a government institution, transfer technological skills and knowledge, and assist a government institution to develop their e-government implementation and use strategy. In some cases, BPPT also assists government institutions with resources such as systems and hardware and the sustainability of the systems and hardware operation that are maintained by the target institution.

BPPT has greatly cooperated with local government institutions to support e-government implementation and sustainable use. Their cooperation with local government started at the early e-government implementation in 2001. BPPT cooperated with local government to mostly focus on e-development activities, which includes e-infrastructure, e-government, e-society, e-business, and e-leadership (BPPT, 2011). For example, BPPT cooperated with Jembrana and Cimahi regencies in developing an Information Technology Master Plan. BPPT was also involved in transferring technological skills and knowledge to local government through a number training programs.

One of the e-government systems developed by BPPT that has been widely implemented and used in many local governments is KANTAYA (virtual office system). This information system has been transferred to a number of local governments since 2001 such as Jembrana and Sragen regencies. KANTAYA is an intranet system, also called virtual office, which allows government employees to share data among local government departments (BPPT, 2001). Each local government department and work unit has a folder where they can save all information and document from their department. Another department can access the folder when they need the information and documents. At the beginning KANTAYA system was implemented in regencies central offices, but since 2008 some regencies and cities have linked the KANTYA to district offices to enable the sharing of data and documents between regencies and districts office (Sinombor & Tjahjono, 2008).



## **5.9 Other central government institutions**

Other government institutions have also been involved in e-government implementation and development in local government. Their involvement has not been as intense as the three institutions mentioned above, but their involvement relates to policies implementation within local government. For example, the Ministry of National Education had a policy to build schools electronic databases and they cooperated with local government to establish an information system for this purpose. This policy was followed up with transfer of a grant and an information system application to the local government, but the continuity of the policy depended on the local government. Similarly, the Ministry of Health was also involved in transferring health information system to local government.

The Agency for Financial Supervision and Development (BPKP) and the Agency for Government Goods and Services Procurement Policy (LKPP) are two independent institutions, which are responsible for financial and development supervision, and government goods and services procurement. These two institutions developed systems to support their policies implementation within local government. BPKP developed the SIMDA system (local government management information system) and LKPP developed the Electronic Procurement System (SPSE). Both systems have been implemented and used by most local governments. The agencies prepared human resources and skills at the beginning of implementation and provide ongoing maintenances.

SIMDA is an information system that can be used to manage local government financial and inventory (BPKP, 2011). SIMDA was introduced on the 29 August 2006. It was developed in accordance with the Law No. 24/2005 concerning government accountancy standards and the Ministry of Interior Affairs No. 13/2006 concerning local government financial management guidance. The system has number facilities including annual budget planning, management, expenditure, reporting, and local government inventory management. Local departments and work units are also able to use the system to share their inventory data.

SPSE is an electronic procurement system implemented and used by government institutions in the tendering process. Early e-procurement was initiated when the

central government enacted Presidential Decree No. 80 in 2003. The Presidential decree allows government institutions, such as central government departments and local governments, to tender government projects, goods, and services through technology means. This strategy was aimed at cutting government bureaucracy, to combat corruption, and improve efficiency in government procurement. However, this regulation did not mandate government institutions to adopt and implement the technology, but it was a breakthrough in the government procurement system.

In a later period, the Indonesian government issued Presidential Instruction No. 5 in 2004 to strengthen the corruption combatant policy. This regulation was initiated by BAPPENAS (Agency for National Planning and Development) by establishing an electronic procurement services unit (LPSE). In 2007, the BAPENAS and Indonesia Ministry of National Education started using e-procurement system in their tendering process. In the same year, the Indonesian President issued another regulation (Presidential Decision No.106 in 2007) to establish a non-government department called the Agency for Government Goods and Services Procurement Policy (LKPP).

The responsibilities of LKPP include:

- a) To establish government policies, norms, standardization, and procedures for government goods and services procurement within all government institutions.
- b) to develop human resources development for government procurement
- c) to provide consultation, help, legal assistance, and recommendation regarding government procurement
- d) to formulate monitoring strategy, assessment and evaluation in government procurement process as well as coordinating with other government institutions.

The LKPP has since taken over the BAPENAS responsibility regarding e-procurement services and development of the SPSE system.

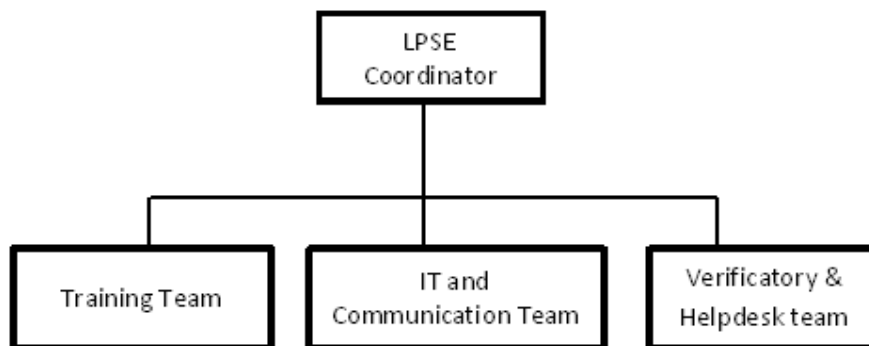
The LKPP has also established an electronic procurement services unit (LPSE), which is responsible for managing e-procurement system (SPSE). LKPP also encourages all government institutions to establish an LPSE unit within their organization to manage the e-procurement process. Before the LPSE was established, the tendering process was not integrated. Each department within a government

organization did their own tendering. For example, if a local government has 20 departments, the tendering was carried out within 20 different departments. However, after the LPSE was established, all tendering processes within a government institution were integrated in the LPSE system.

In 2010, the Indonesian President issued Presidential Instruction No. 54 in 2010 to mandate all government institutions at central and local level to establish a LPSE unit. The regulation also mandates government institutions to integrate their goods and services procurement. As a result, each government institution, such as local government, has a non-departmental unit called ULP (procurement service unit) that manages the tendering process. This means that within a local government there is a LPSE unit and an ULP unit to support government procurement activities but with each of them having different functions.

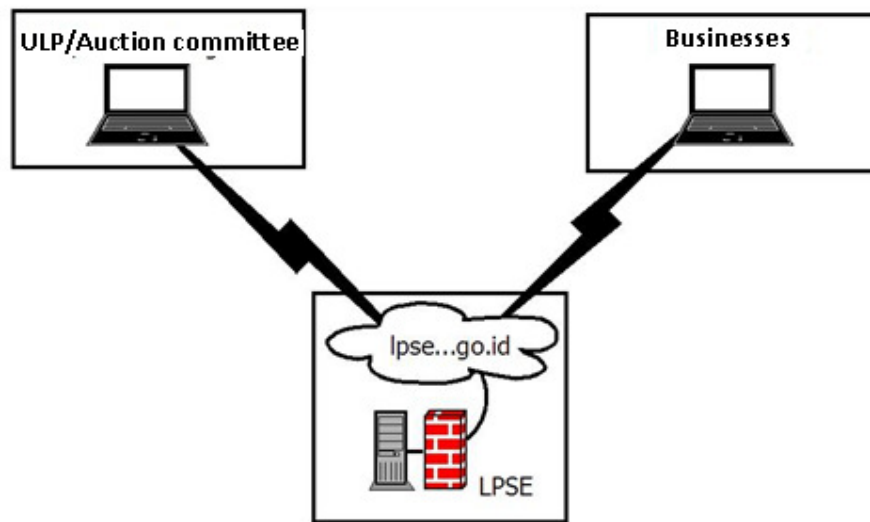
ULP is responsible for all government procurement regardless whether the government goods or services are tendered manually or electronically. The unit's responsibility includes all of the tendering process from start, such as making announcement, to finish, such as making the decision as to which company wins a tender. Meanwhile, LPSE is responsible for providing information systems and technology infrastructure and the ULP tenders for government goods or services through an electronic system. LPSE is also responsible to provide e-procurement technology skills for government employees, ULP staff, and companies that are involved in government e-procurement.

The structure of LPSE is depicted in Figure 18



**Figure 18: LPSE unit structure**

The SPSE system is accessed by two main actors; the ULP unit and businesses as depicted in Figure 19. The LPSE unit is mainly responsible to serve both by providing technology, system, infrastructure, training, assistance, etc. as required. If the system can only be accessed by ULP members and businesses who have obtained an access code, the whole auction process is available on the LPSE website.



**Figure 19: SPSE work mechanism**

Source: <http://www.lkpp.go.id/v2/content.php?mid=2580235452>

By the end of 2011, there were 281 government institutions that had adopted and implemented LPSE and the e-procurement system within their organizations as depicted in Table 20. However, by the end of 2012 all local government must have adopted and implemented the e-procurement system. One of the unique features of the LPSE is that all LPSE in Indonesian local government is decentralized. This means even though local government and other government institutions use the same e-procurement system (SPSE which was developed by LKPP) they are not connected in a centralized system. The system (SPSE) is installed in different servers within each local government. However, the LKPP is able to provide online assistance for systems' malfunctions.

**Table 20: Government institutions implemented e-procurement system**

<b>Regencies / Cities</b>	<b>Ministries</b>	<b>Universities</b>	<b>Government owned companies</b>	<b>Hospitals</b>
245	8	22	4	2

LPSE (2012)

Even if a local government has adopted and implemented the e-procurement system, it is still allowed to make manual tendering in a particular case. Presidential Instruction No. 54 in 2010 states that government projects costing less than 200 million Rupiah (approximately US\$20,000) can still be tendered manually. However, the latest Presidential Instruction (No 17 in 2011) states that 40 per cent of the local governments procurement budget must be tendered through an electronic system. Both of the regulations seem to have caused ambiguity in e-procurement process due to the difference in budget value that should go through the e-procurement process.

## CHAPTER 6: Analysis of Case Study - Jembrana Regency

### 6.1 Introduction

This chapter presents the analyses of case one of e-government implementation and sustainable use in Jembrana regency, Indonesia. The analyses include the description of the case, current e-government usage in the regency and the role of social system. The analyses are based on data gained from documents, three field visits, field notes, memos, formal and informal interviews, and observations. The framework developed in chapter 3 was used to guide the analyses of this chapter. However, since this study applied grounded theory data analyses, the possibility of new themes emerging during analyses was considered.

### 6.2 Participant roles

Interview data was gathered from 12 participants. The participants were recruited from different levels of the local government organizations who are policy makers, implementers and users. The participants' roles are presented in Table 21.

**Table 21: Participants' Roles**

<b>Participants</b>	<b>Participants' Roles</b>
Participant J1	He is a leader of a department. He is a decision and policy maker within the department. There are three divisions under his leadership; transportation and traffic, transportation infrastructure and vehicle testing, and communication and information. He is mostly dealing with management and political issues including coordinating with other departments and external institutions.
Participant J2	A decision maker within a division of communication and information. His responsibilities include leading postal services and telecommunication, technology and information dissemination and supervising the division. He mostly deals with internal management issues.
Participant J3	A decision maker within section of technology and information dissemination within the regency. He leads the regency IT teams.
Participant J4	A coordinator of the IT team. He bridges coordination and cooperation among IT team groups (planning, implementation, maintenance, services and evaluation section).
Participant J5	He is responsible for IT implementation within the regency.
Participant J6	An IT staff member within the department of licencing

	services
Participant J7	An IT staff member within the regency library
Participant J8	He is responsible for IT planning within the regency
Participant J9	He is responsible for IT development within the regency.
Participant J10	He is responsible for IT services and maintenance
Participant J11	He is responsible for evaluation and supervision
Participant J12	An IT staff member within local department of Civil and Civilization Services

## 6.2 Jembrana regency descriptions

Jembrana regency is one of five regencies in Bali province, Indonesia. It occupies about 84.180 square kilometre, or about 15% of Bali province (IANN-NEWS, 2011) and the population is about 307, 804. The regency consists of five districts and 51 villages (Jembrana, 2011). Most of the population are farmers, while the rest are small-industry workers, government employees, traders and labours. This regency does not have mining or big industries to support local government income. Most of the industries are home-industries and small-to-medium industries such as handicraft and religion-related arts. As a result, most of the local government's annual budget (about 94 % in 2011) is transferred by Indonesian central government (see Table 22).

**Table 22: Jembrana regency annual budget and revenue (Indonesian Rupiah)**

<b>Year</b>	<b>Annual budget</b>	<b>Local revenue</b>
2008	451 billion	16 billion
2009	473 billion	34 billion
2010	551 billion	42 billion
2011	574 billion	36 billion
2012	729 billion	52 billion

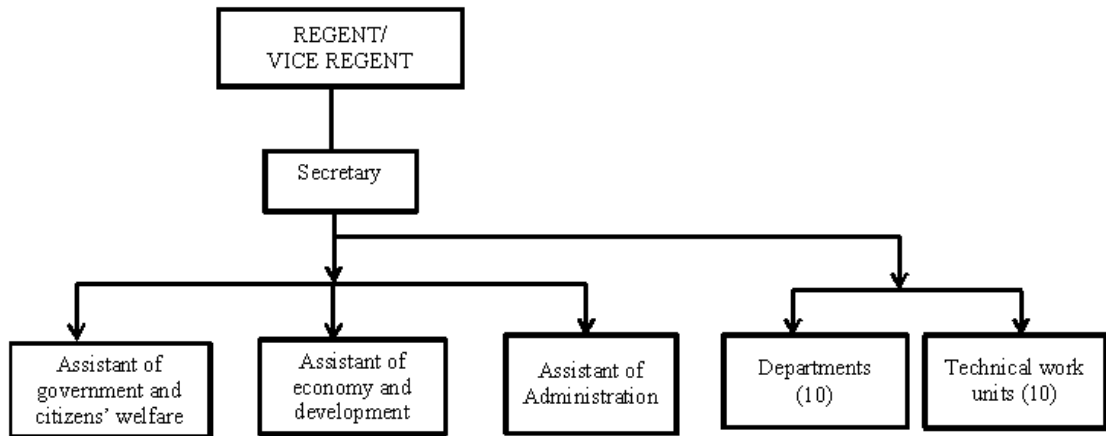
Source: Jembrana (2012a)

(One billion Rupiah is equal to approximately US\$100,000.)

Despite Bali's popularity in the tourism industry and its generation of more income for the province, Jembrana regency is not a main destination for tourists. The tourism development in this regency is slower than other regencies. Consequently, unlike other regencies in Bali, the main source of this regency's income is not from tourism but from farming. However, farming does not produce sufficient income to support the regency's development since the farming relies on traditional methods. As the

regency income is low, it is unable to support the regency development. Therefore, the local government budget is mostly supported by central government.

The regency is led by a Regent (the head of regency) and supported by a local parliament (DPRD). The Regent is assisted by a Vice-Regent and leads 10 departments (DINAS) and 10 technical work units, as depicted in Figure 20.



**Figure 20: Jembrana regency organization structure**

The regency's main office has three assistants who concentrate on specific regency management affairs such as citizens' welfare, economic development and administration. The assistants mostly support the Regent and Vice-Regent office in daily operations. Meanwhile, the regency development and policies implementation are managed by each relevant department and technical work units as presented in Table 23.

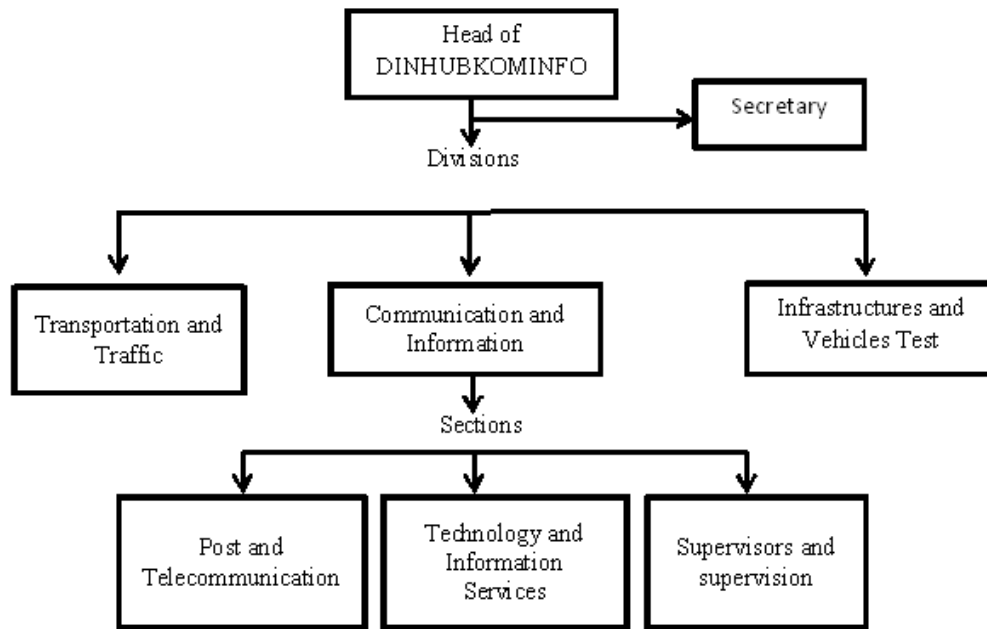


**Table 23: Jembrana regency departments and technical work units**

<b>No</b>	<b>Department's name</b>	<b>Technical work unit</b>
1.	Department of Education, Youth and Sport, Tourism, and Culture	Unit of Local Development Planning and Investment
2.	Department of Health	Unit of National Unity and Politics
3.	Department of Transportation, Communication, and Information	Unit of Environment, Sanitation, and Parks
4.	Department of Civil and Civilization Services	Unit of Local Libraries and Archives
5.	Department of Trade, Industry, and Cooperation	Unit of Citizens and Villages Empowerment
6.	Department of Public Infrastructures	Unit of Women Empowerment and Family Planning
7.	Department of Agriculture and Farming	Unit of Licences Services
8.	Department of Forestry, Fishery, and Marine	Unit of Civil Service Police
9.	Department of Social Welfare, Employment and Transmigration	Unit of Agricultural and Farming Seeds Research
10.	Department of Local Revenue	Unit of Community Training

Source: Jembrana (2012b)

E-government implementation and use policy is under the local Department of Transportation, Communication, and Information (DINHUBKOMINFO). The department has three divisions: transportation and traffic, communication and information, transportation facilities and vehicle testing. The department organization structure is depicted in Figure 21.



**Figure 21: Department of Transportation, Communication and Information organization**

### **6.3 History and current situation of e-government in Jembrana regency**

The implementation and use of e-government in Jembrana regency was started in 2001 when the former local leader began cooperation with Indonesian Agency for the Assessment and Application of Technology (BPPT). The leader had just finished his second period of leadership one month before this research field-visit was carried out. He initiated cooperation with the BPPT to implement information technology within the regency in 2001 in the first year his leadership.

During his ten year leadership, he was considered a successful local leader in e-government implementation and use. More than 400 other local government and other institutions have visited Jembrana to learn and undertake comparative studies (Winasa, 2009). The regency has twice been awarded the Best E-government Implementation Award in 2008 and 2009, and the best local government for implementing e-voting system, which was developed by a local IT team in 2010.

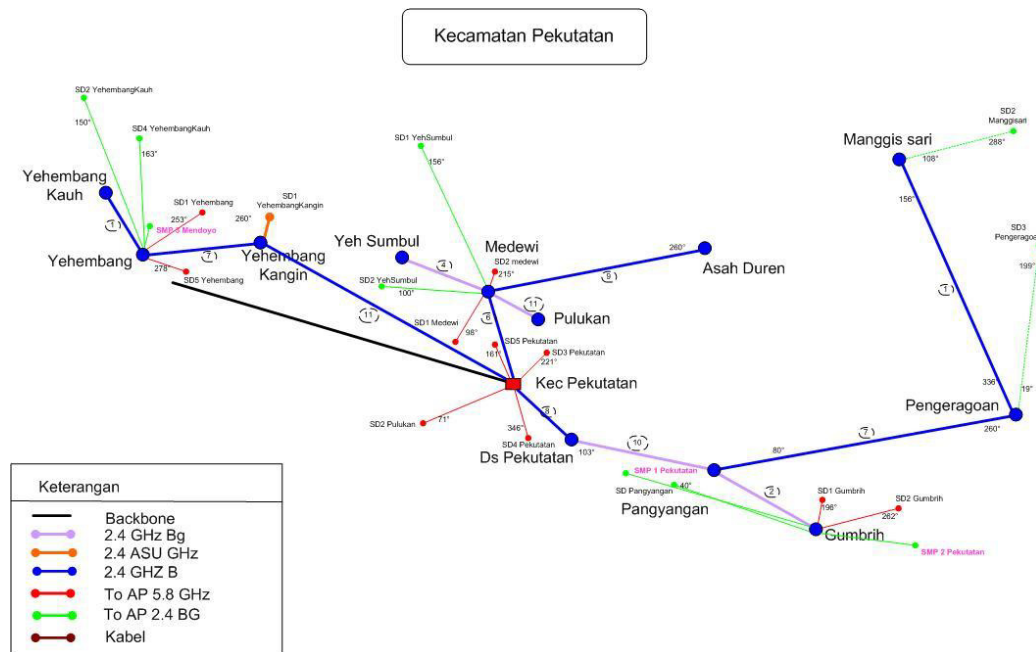
During early cooperation between the regency and BPPT, the former Regent was asked to introduce IT in the central regency office to improve their services' performance. This was followed by the introduction and provision of computers to districts offices. This initiative was followed by the introduction of PABX technology that allowed citizens and government employees to communicate on a free-of-charge basis.

Jembrana regency's cooperation with BPPT was extended to broader aspects, which included system and human resources development. The BPPT started training the regency employees to utilize computers for daily task performance. The training was carried out as a part of human resources preparation for future e-government systems' implementation and use. At the same time, BPPT also implemented an intranet system which is called KANTAYA (a virtual office system). The KANTAYA allows local government employees to share data and documents among departments and employees. Employees can also post their enquiries and opinions through a chat forum in the system.

In 2002, the local government expanded their IT implementation to reach their citizens through the construction of a formal website. The local government tried to provide their citizens with government information and policies through the website. The website also allows the citizens to post their comments regarding the local government policies. The local government at that time expected that the information posted by the citizens on the website could be used in their policies' development and implementation. However, citizens' response was low at that time because most citizens were technology illiterate.

In order to support e-government systems implementation, the local government constructed a regency internet network by building J-Net (Jimbarwana Network) in

2004 (see Figure 22 as an example). The J-Net links all villages and districts in an internet network. The implementation of J-Net has led to the improvement of e-government systems implementation within the regency. About 34 e-government systems have been implemented and used (Suinaya, 2010).



**Figure 22: J-NET in Pekutatan district**

Key e-government systems that have been successfully implemented and used are presented in Table 24.

**Table 24: Key e-government systems in Jembrana**

No	Information system name	Year implemented
1.	KANTAYA = It is an intranet system which is also called a virtual office system	2001
2.	SIMDA = It is the regency office information system that integrates other information systems such as e-library and SMS centre)	2002
3.	e-JKJ = It is an electronic Jembrana Health Insurance system	2006
4.	J-NET (Jimbarwana Network) = It is a network that connect all institutions within the regency	2007
5.	SIAK = It is a demographic information system for population management which provide single identification	2007

	number for each family	
6.	SIADENDA = It is a departmental financial information system	2008
7.	J-ID = It is an electronic identification developed by local IT team	2009
8.	E-ID (E-KTP) = It is the national version of electronic identification which is also developed based on SIAK system	2009
9.	e-Voting = It a system used for villages' leaders election	2010

To smooth the process of e-government implementation, the local government created a strategic initiative. The local government established an e-government implementation and use Blue Print that helped the local government maintain the direction of e-government development for a long period. Also, the local government recruited about 78 human resources in IT. An IT team was also established to manage the e-government systems implementation. Since then, the IT team has been extended to 5 divisions, from 2 divisions in 2009. In addition, the IT team is rewarded with better payment compared to other employees in this local government.

In 2009, to consolidate e-government systems implementation and use within the regency, the local government established a task force. This task force (E-development Committee) coordinated e-government systems' implementation and use across the regency's institutions. However, the local government did not have resources, competence and legitimacy to sustain their e-government implementation and use alone. The local government made a collaborative engagement with internal and external actors to legitimate, regulate and standardize the e-government implementation and sustainable use.

Internal engagement was practiced by actors within the local government such as among departmental offices, districts, villages and schools. Meanwhile, engagements with external social actors were practiced with external agencies such as with central government departments, other regencies and private companies. The actors engaged in a social system that incorporated e-government infrastructures to support e-government implementation and sustainable use within the local government.

In the following sections, the roles of social systems in the sustainable use of e-government within Jembrana local government are presented. The analyses are

presented in four sub social systems dimensions based on theoretical framework in Chapter 3. The social system dimensions are:

1. Institutional arrangements to legitimate, regulate and standardize the local e-government;
2. Resources endowment of technological knowledge, financing mechanism and human competence to support the e-government sustainability;
3. Governmental activities in development and functioning of e-government and resource channels;
4. Stakeholders demand creation through change of norms and culture, stakeholders' education and e-government assimilation.

The roles of each sub-social system are presented based on their roles in the interaction to sustain the e-government use. All analyses are informed from an institutional perspective.

#### **6.4 Institutional arrangements**

This section presents analyses of the role of institutional arrangements in the sustainable use of e-government within the regency. As discussed in chapter 3, institutional arrangements are defined as administrative rules, norms, laws and conventions that society uses to legitimize, regulate, and coordinate the actions and expectations of the individual, which make them predictable (Powell & DiMaggio, 1991; Van de Ven et al, 1999; Van de Ven & Garud, 1993). An organization's behaviour, practices and pattern of interactions within technological field are often governed and shaped by institutional arrangements (Garud, Sanjay, & Arun, 2002). These institutional arrangements include: regulatory instruments (Hargrave & Van de Ven, 2006; Van de Ven, 1993; Van de Ven & Garud, 1989), legitimacy (Aldrich & Fiol, 1994; Dacin, Oliver, & Roy, 2007; Meyer & Rowan, 1977; Rao, 1998) and standards (David & Shurmer, 1996; Hargrave & Van de Ven, 2006; Van de Ven et al. 1999).

The roles of those three components of institutional arrangements are discussed based on insight gained during data analyses. The emergence of new themes was also considered during analyses. The analyses of those institutional arrangements follow.

#### **6.4.1 Legitimacy**

As argued by Van de Ven et al. (1999), organizations develop innovation to gain customers' legitimacy. The legitimacy is important to legitimate practices and actions taken by organizations for their survival (Selznick, 1996; Sudabby & Greenwood, 2005). In context the sustainable use of e-government, the consumers can be defined as citizens or businesses that demand services' provision through the e-government technology. Citizens and businesses may demand better services than they experience from private sectors.

However, the analyses also suggest that central government was also a source of legitimacy for a local government. The local government made hard efforts to respond to the central government expectation regarding the sustainable use of e-government. As a result, this study argues that legitimacy to sustain e-government use within local government comes from consumers (citizens & businesses) and central government. The discussion is presented in the following sub sections.

##### *6.4.1.1 Central government legitimacy*

The literature (e.g. Beynon-Davies & Martin, 2004; Mofleh, Wanous, & Strachan, 2009) indicates that central government as a public policy regime, plays roles in public policies' implementation across government institutions. This study also found that Indonesian central government has become a source of legitimacy for Jembrana regency in sustaining their e-government use. The central government has legitimated the sustainable use of e-government since the early emergence of e-government within the regency's institutions. Analyses indicated that the early initiatives of information technology (IT) use within the regency, was directly and indirectly driven by the central government authorities.

Indonesian central government started imposing on local governments to implement and use of e-government systems for local government management reform in 2003. This policy was imposed by the Ministry of State for Internal Affairs, which is the

main body responsible for policy implementation at local government levels. This caused Jembrana regency to enter into engagement with central government authorities to sustain their e-government. For example, this engagement was started when the Agency for the Assessment and Application of Technology (BPPT) introduced the use of computers in the regency to improve the local government work performance. One of the participants said:

*Regarding e-government, we started working with BPPT. It happened in 2001, right after the Regent served one year of his leadership.... After that, we were introduced to computers to support local government performance. (J.9)*

Early IT introduction within the central regency office led to the introduction of computers to district levels in the following year (2002). Each district office was provided with computers to perform their work and provide service to their citizens.

An early e-government application, KANTAYA - a virtual office system that was initiated by the BPPT, supports the online job accomplishment and data sharing. The importance of this initiation is highlighted by the following participant.

*Then an application which is called KANTAYA (virtual office) was implemented in 2004. This was an embryo for the development of e-government in the regency of Jembrana. (J.3)*

The presence of the KANTAYA system enabled the implementation and use of other central government mandatory systems such as SIADINDA (local department financial information system). SIADINDA is a compulsory system to manage finance within all departments in the regency. One participant addressed this issue as follows:

*“The system is mandated by the financial department in Jakarta and in this office. All departments must use SIADINDA because all financial data must be put into the system with similar format, otherwise our financial reports will be rejected by central government.” (J.10)*

SIAK (demographic information systems) is also a system transferred from the Ministry of State Affairs in Jakarta. The system implementation has been mandated



by central government to improve local population administration since 2007. As the system implementation is transferred and mandated by the Ministry of State Internal Affairs, the regency IT team members did not have skills to maintain the system. As a result, maintenance was supported by the Ministry of State Internal Affairs, as addressed by the following participant:

*“The SIAK system was transferred from Ministry of state affairs office in Jakarta... Actually, the system is a bundled system which is ready to use. We do not know what is behind the system, we just operate it. If we encounter system malfunction, we just contact them.” (J.11)*

The mandatory use of SIAK system within all regency levels is due to the central government policy's to implement E-ID (electronic identification) in 2011. All databases for E-ID system come from the SIAK data base system. From early 2011, E-ID has been a mandatory system from central government to be implemented and used within the regency levels in Indonesia and must be fully used by early 2013.

The regency compliances were shown through their close engagement with the central government authorities to sustain the e-government use. In the engagement, the central government not only exerts their power to force the regency to sustain the e-government systems use, but also provides support to the regency. For example, central government authorities provided human skills and facilities, maintenance and a Blue Print for e-government implementation and use. As a result, the regency was able to sustain their e-government systems implementation and use, as was expected by central government authorities.

#### *6.4.1.2 Citizens and businesses legitimacy*

Seeking legitimacy from the local stakeholder was a significant reason for the regency to sustain their e-government use. The stakeholders put pressure on the regency to use e-government systems for their management, administration and services reform. This caused the local government to act, based on the expectation of the stakeholders. As the result, the regency committed to strong efforts to sustain their e-government use so as to gain legitimacy from those stakeholders.

The analyses show local citizens and businesses demanded the regency services through e-government systems. The citizens and businesses demands might be caused by their experiences of interacting with other local governments and private firms that provided online services. The local citizens and businesses demand is reflected in the following comment:

*Today's citizens are smarter, and they expect a responsive and efficient government that is able to provide better services for them. In response to their expectation, we have an ambition that we must use technology in our daily work; it is e-government. (J.2)*

In response to the citizens and to business demands, the regency uses a SMS (short message services) centre system that is able to accommodate and absorb their enquiries. The SMS centre has been considered as an important e-government system that helps the regency to respond quickly to their complaints related to local development, as well as to accommodate their participation in local development planning. One participant said:

*This application (SMS centre) is really important to be implemented and used by responsible employees every day because it consists of complaints and suggestions from citizens that need to be followed up quickly. (J.2)*

All the messages from citizens come to the system and then each relevant department (SKPD) must respond to citizens' enquiries. For example, if the complaints or suggestions relate to education, the response and actions should be provided by the Department of Education.

Similarly, another participant from the Licensing Department indicated that citizens and businesses pressured to have a system able to improve efficiency in the licensing process.

*The system was implemented due to increased demand in the licensing process from citizens and business. Previously, it took a long time to process a license and the processes were not in order. Sometimes people who applied earlier did not get their*

*licenses first and it caused tension between us and the applicants because they thought we had done something negative. (J.12)*

The implementation of e-library system that allows citizens to find library collections quicker and easier was also as a result of citizens' demand. Participant from the library said:

*The visitors want to find books quickly, while the existing system does not allow visitors to use the system because it is only for staff log in. (J.10)*

The previous e-library system was integrated with the KANTAYA system, which allows only government employees to use the system and search a library collection based on a citizens (visitors) enquiry. However, when more and more citizens visited the library and wanted to find library collections, the local library staff was unable to respond to the increasing demand. Library IT staff then developed the e-library system that allows visitors to do self-retrieval.

#### **6.4.2 Regulation**

E-government implementation and use in the Indonesian context is regulated with Presidential Instruction no. 3 year 2003. The Presidential Instruction states that all government institutions from central to local levels must use e-government. The analyses show that the regency's efforts to sustain e-government use are mostly determined by regulations. Some documents also show how regulations have played roles in e-government implementation and sustainable use within the regency. For example, the Presidential Instruction must be used as a legal basis for e-government implementation and use, and also for annual budget proposal negotiation with local parliament and central government. For example, one participant indicated:

*Allocation of annual budget for IT implementation is not easy because we have so many development priorities in this regency. We have to convince local parliament members and central government. However, since e-government implementation has been regulated by the Presidential Instruction, we just refer to the regulation so they cannot reject it (J.1)*

In addition, the Presidential Instruction has also contributed to the enactment of other government regulations at ministry levels that mandate all local governments to implement and use certain e-government systems. Even though some of the e-government systems were implemented by regency initiative, most of the key e-government systems that improve the local government bureaucracy, administration and citizens services, were strongly mandated by the regulations. SIMAKDA (Local government budgeting and financial information system management), for example, was implemented based on Central Government Regulation No. 58 year 2005, Ministry of State Internal Affairs No. 55 year 2008, and Ministry of State Internal Affairs No. 21 year 2011. Meanwhile, E-ID (electronic identification) was mandated with Presidential Decree No. 26 year 2009 and No. 32 year 2010.

Central Government Law No. 14 year 2008 imposes all government institutions to provide information to citizens. This regulation is a well-known regulation regarding government information disclosure, which must be published through the local government websites. A participant referred to the regulation as follows:

*There is a regulation of public disclosure which mandated government institutions to be transparent and IT will help government institution to be transparent....for example, the information associated with the budget or local government regulations must be published (J.2)*

Similarly the implementation of E-ID was also mandated by central government regulation as stated by the following participant:

*This (E-ID) system was implemented based on regulation mandate. The head of department knows that if there is a delay in the implementation process and they do not use it, each regency and city will be sanctioned (J.11)*

The E-ID is mandated by Presidential Decree No. 26 year 2009, which was then revised with Presidential Decree No. 32 year 2010. The Presidential Decree that imposed local governments to use E-ID was followed by support provision from central government at early implementation and use. For example, hardware and software were provided by the central government. Human resources were trained and budget was also provided during the first year implementation in 2011.

The role of regulation in local e-government use, has contributed to enactment of local regulation to impose all local departments to use the e-government systems to improve services performance. A participant mentioned this local regulation in the following statement:

*There is also local regulation that regulates e-government systems implementation. The regulation controls the implementation and use of e-government as an instrument for this local government transparency and accountability in providing information to citizens. The regulation also imposes all departments to implement and use IT within their organizations. The local regulation was enacted in response to Presidential Decree No 3/2003. (J.3)*

The regulations play roles by imposing the local government to use the e-government continuously in their daily services provision. This caused the local government to sustain all mandatory e-government systems. In the context of regulation's pressure, resistance might not be possible because resistance to the policy may result in a punishment such as their financial reports may be rejected. Institutions within local government have to comply with the regulation by continuously maintain and use the e-government systems.

#### **6.4.3 Standards**

There are a number of standards that have been produced by central government and Jembrana regency to standardize the sustainable use of e-government. The standards relate to broader and more specific e-government development strategy such as the standard for the government electronic document management system. National standards were followed and practiced by the regency in using e-government within their institutions. However, the regency also developed their local standards for internal institutional use. Some standards that have played roles in the sustainable use of e-government are shown in Table 25:

**Table 25: Standards to support e-government sustainability**

<b>Name of standards</b>	<b>Purposes</b>	<b>Produced by institutions</b>
National Standard for e-Government development	To standardize e-government development across local government	President
Guidelines on government services and goods procurement	To standardize government goods and services procurement within local government	President
Standard for government portals development	To standardize local government portal and websites development	Ministry of Communication and Information
Guidelines on management electronic document system	To standardize government electronic document management	Ministry of Communication and Information
Guidelines for government information system network development	To standardize network development within local government	Ministry of Communication and Information
Guidelines information system development for municipality /regency	To standardize e-government systems development	Ministry of Communication and Information
Standardization for go.id domain for central and local government institutions	To standardize local government website names	Ministry of Communication and Information
Guidelines for LAN network security in government institutions	To standardize the development and use of local area network within local government	Ministry of Communication and Information
Guidelines for implementation web-based government services and goods electronic procurement	To standardize web based services provision for local government goods and services tendering	Agency for Government Goods and Services Procurement Policy (LKPP)
Government goods and services tendering document standard	To standardize tendering document submission for local government tendering	Agency for Government Goods and Services Procurement Policy (LKPP)
Guidelines for e-government use within Jembrana regency	To standardize the use of e-government systems within Jembrana regency institutions	Jembrana regency department of Transportation, Communication, and Information
Jembrana regency e-government Blue Print 2008-2013	To standardize e-government development, implementation, use, and maintenance across Jembrana regency institutions	The Head of Jembrana Regency

Jembrana regency has to comply with these standards in sustaining their e-government use to ensure uniformity with national policy. However, Jembrana regency developed their own standards to ensure e-government use within their own institutions such as district and village levels. In developing the standards, the regency cooperated with central government institutions. For example, the development of the local government e-government Blue Print was supported by BPPT. The Blue Print was used by Jembrana IT team in supporting the implementation and use of e-government within all local institutions as stated by the following participant:

*Today we still cooperate with the BPPT in e-government implementation by following their Blue Print and improving it (J.5)*

The local e-government Blue Print was designed for a five year period with the first version of the Blue Print designed for period 2004 and 2008. The second version was designed for local e-government implementation and use guidelines from 2009 to 2013. It covers the integrated local government information systems planning, implementation, use, continual development and maintenance.

Jembrana regency also developed a standard procedure for employees IT knowledge and skill management, which includes knowledge and skills transfer. This was aimed to sustain IT skill among IT team and other employees. A participant said:

*The procedure, which was made during former regency leader time, was proposed to the manager of communication and information. It has been endorsed and used in this IT team. We applied in information system use activities. One of the points is to educate and train people in information system implementation and self-learning habit....Sometimes, new skills are required soon due to issues emerged in managing the systems. This needs our friends to teach us soon, or we have to be creative to find information such as from internet or books by ourselves (J.5)*

Regarding e-government services provision, Jembrana regency provided standards for all institutions to assist them on how to provide standard electronic services. For

example, standards procedure on how citizens and businesses apply for a licence can be found on the website and data screens as stated by the following participant:

*In terms of standard procedure on how applicants deal with us, we put information on the data screen in our front office, such as standard cost for a licence and time for a licence to be issued J.6*

Another participant also said:

*If citizens want to apply for a building construction permit they can see the procedures to apply for the permit and the process of application, such as where they should start first, what should be prepared and when they can get the permit J.4*

The availability of the standards has ensured that the local government is able to manage their sustainability of e-government use because they have guidelines to follow. Internal institutions also have local standards that standardize their actions in engaging with e-government.

#### **6.4.4 Economic limitation**

Jembrana regency is relatively poor compared to other regencies within Bali province. Their revenue relies on farming, small and medium enterprise and central government annual budget transfer. In 2010, the regency's annual budget comprised 84.5 % central government transfer, 10.4 % from provincial tax sharing and grant, and only 5.1 % of the budget came from the local government revenue. The regency limitation in budget is understood by all actors in the regency, as stated by the following participant:

*The main problem is lack of funds. We get a small budget allocation because our regional budget is relatively small compared to other regions. Everyone knows about it (J.4)*

This situation has encouraged local leaders and employees to think innovatively by implementing e-government as a tool to cope with local budgeted hardship. One participant said:



*Since we don't have money, so we think of innovation. If we are continuously poor, we'll be rejected by people. Then we think what we can do with IT to improve our region (J.2).*

As the regency does not have reliable industries, tourism, or natural resources that can support their annual budget, the regency uses IT as a solution to minimize their operational cost in serving citizens and promoting their regency through their website. A participant expressed his comment as follows:

*You know we have limited budget because we do not have many industries, tourism or natural resources like other regencies in Bali. We only rely on farming and some small natural resources. I think implementation IT within our office is one way to save our operational cost and time (J.3)*

Another participant expressed similar concern as follows:

*Our basic principle is that "we are not rich, but we are creative and innovative". You know this regency is not as rich as other regencies. By implementing IT we also expect that citizens get benefits from it... Local government implement a policy to manage the government effectively and efficiently by using e-government system in daily works and services. The economic motive emerged when there was a consideration that e-government supports government activities efficiently (J.1)*

The importance of e-government use to reduce the regency budget expenditure and to cope with the regency budget limitation has caused Jembrana regency leaders and its IT team to think creatively. The IT team designed a variety of e-government systems to support the development of the regency and to improve service delivery to citizens. For example, they created cheaper communication application systems that allowed citizens and local government to communicate on free of charge basis, such as J-Net (Jimbarwana network), VOIP (voice over internet protocol), and SMS centre.

*Summary of institutional arrangement roles:*

As suggested in the literature, there are three components of institutional arrangements that play roles in the social system. They include: regulatory instruments (Hargrave & Van de Ven, 2006; Van de Ven, 1993; Van de Ven &

Garud, 1989), legitimacy (Aldrich & Fiol, 1994; Dacin et al. 2007; Meyer & Rowan, 1977; Rao, 1998) and standards (David & Shurmer, 1996; Hargrave & Van de Ven, 2006; Van de Ven et al. 1999). However, this study's analyses surmise that the institutional arrangements are not only limited to the three components proposed by the literature, but also include economic limitation.

The economic limitation is considered as an organization environment that play roles as sources of pressures for the regency by imposing or demanding the organization to implement certain policies (Delmas & Toffel, 2004) such as to sustain use of e-government systems. The economic limitation, in one hand, limits the local government innovation because of lack finances, but at the same time it also forces the regency to creatively innovate to reduce expenditure and improve performance and service delivery.

This study also suggests that legitimacy is not only derived from consumers, as stated by Van de Ven et al. (1999), but also gained from central government. Local government is the formal institution of a government at the local level (Pratchett, 1999), which implies local activities should be legitimated by central government. As a result, this study argues that local government sustains the e-government use by seeking legitimacy from central government and local stakeholders.

## **6.5 Resource endowments**

Resources are utilized to support organizations to out-perform in their environment (Ray, Muhanna, & Barney, 2005). Van de Ven & Garud (1993) mention three critical resources that support the development of technological innovation: advances in basic scientific or technological knowledge, financing mechanism and a pool of competent human resources. Basic scientific or technological research activities build the foundation of knowledge that supports the emergence of innovation (Van de Ven et al. 1999). This study analyses indicate that the basic scientific was not carried out within local government context, but it was carried out by central government institutions. The local government focused on practical technology knowledge and skills development, financial mechanisms and a pool of competent human resources. The three resource endowments were collaboratively endowed with central government institutions, other local governments, private sectors and

between the regency's internal institutions. The analyses are presented in the following sub-sections.

### **6.5.1 Technology knowledge and skills development**

The Jembrana IT team and employees' technology knowledge and skills were developed through training programs provided by central government institutions, the regency training centre and engagement with other local governments and private companies. The local government also develop their employees' technology knowledge and skills through an individual learning culture such as senior to junior employees skill transfer. Transferring knowledgeable and skilful IT staff to each local department and districts was another strategy to develop technology knowledge and skills in a local institution such as district offices.

Collective cooperation was an important strategy used by the regency in reducing the technology knowledge and skills gap. The ability and willingness of local government to cooperate with external agents, such as central government, have significantly helped the local government to develop their technology knowledge and skills development. For example, when the local government implemented their early virtual office system (KANTAYA), the local government actors closely cooperated with the Agency for the Assessment and Application of Technology (BPPT) to train their employees. A participant said:

*We cooperated with BBPT; we made a plan to set up an intranet network when we implemented KANTAYA and SIMDA ... but after that, the planning was mostly done by our employees... In addition, cooperation with BPPT also included training of human resources, program design and application building (J.1)*

Cooperation with central government institutions was continuously practiced to support the regency employees' technology knowledge and skills development. The cooperation was not only carried out between IT departments with central government, but also by other local departments with relevant central government institutions. For example, the local department of the Civilization and Civil Service cooperated with the Ministry of Interior Affairs in transferring knowledge and skills for SIAK implementation and use. However, the cooperation also involved the IT

team as the main responsibility for e-government implementation. One of the IT staff commented as follows:

*SIAK (Demographic information systems) is carried out by cooperation between Jakarta and Department of Civilization and Civil service. It is the responsibility of Civilization and Civic Services Department as they know it better. SIAK is used to manage the citizens' database for E-ID system... The Department of Civilization and Civil service came to us to discuss what the appearance of the E-ID card should be. We then produced the E-ID card with a chip inside (J.5)*

Cooperation between the local Department of Civilization and Civil Service with the Ministry of Interior Affairs included providing training for IT staff and operators within the local department. This included knowledge and skills to maintain the system and the database, but there was cooperation with the IT team on complex maintenance issues.

This type of technology knowledge and skills development cooperation was also practiced by other local departments in implementing and managing their systems. For example, the technology knowledge and skills for the licences application system was developed by BPPT in cooperation with the IT team and the local Department of Licencing; this was to support the use of the online licencing system. The technology knowledge and skills for the E-health system was developed by local department of Health in cooperation with the Ministry of Health and the local IT team. As a result, relevant local department employees acquired better technology knowledge and skills regarding use and manage the system functionality.

There was collaborative cooperation between the IT team and all local departments to address technology knowledge and skills weaknesses. If one department could not complete their tasks due to technology knowledge and skill barriers, they would cooperate with another department. This included technology knowledge and skills collaboration between IT staff with other staff in developing a system. For example, collaboration between IT staff with library staff in developing library information system. A participant explained as follows:

*Here we have librarians who understand the library system, and we have staff with a computer background like me. I think when we combine the librarians' knowledge and computer staff's knowledge to develop the system it produced a good system for us (J.7)*

It was also found that technology knowledge and skill transfer from the IT department to other department's staff was not only carried out in formal sessions but also through informal processes such as daily contact. For example, employees from all departments can make a phone call to an IT staff member if they want to know something related to a system operation and an IT staff will visit them directly. The IT team provided all employees with sufficient skills when a system was implemented within a department.

At an individual level, the regency employees have a habit of self-learning and skill transfer among themselves. Even though they have to get formal training, the employees still develop their skills through personal contact with IT team, as described by the following participant:

*After that, we learn by ourselves or teach our friends who don't understand how to operate the system. Or, perhaps, we ask the IT team, and they often teach us (J.6)*

A library staff member who has worked for a long time with the e-library system also trains new staff members on how to use system. The library staff said:

*Usually when a new staff member was employed or transferred here, they did not know how to use this system because e-library system is unique and we have to understand the library system to be able to use it... We need to help new employees when they come here. For example, when a new employee started working with me, I taught him how to use the system in detail (J.7)*

This type of training is circulation training between employees; where a senior employee passes his skill to junior employees. The interactions between senior and junior employees have closed the skills gap between employees regarding e-government systems implementation across the local government institutions. Particularly, since the formal transfer of skills, such as thorough the local government training centre, does not occur frequently.

In order to support the sustainable use of e-government at district levels, IT staffs at district level and central regency office closely cooperate with one another to improve their technology knowledge and skills. The strategy was that an IT team at central regency office assigned IT staff members to all district offices to assist the development of district employees' technology knowledge and skills. This included technology knowledge and skills regarding how to respond to citizen complaints that were related to difficulties with systems use, website access and infrastructure malfunction.

Technology knowledge and skills were also developed through engagement with other local governments that have implemented and used e-government in early 2000 such as Sragen regency and Takalar regency. Sragen is a well-known regency, which has implemented and used computer networks and an integrated services system since 2002; while Takalar regency is well-known for its integrated licensing system use. Since some of local government in Indonesia have successfully implemented certain e-government systems, Jembrana regency acquired technology knowledge and skills through learning from others by sending their IT staff to other regencies. A participant said:

*I also looked at other regencies in Java, like Sragen, and how they were implementing e-government successfully. We tried to do what they did because we thought that would improve our regency development, but in some systems we performed better than them (J.1)*

Technology knowledge and skills for E-ID implementation and use was acquired from Yogyakarta municipality that had implemented and used the system earlier. Through this engagement, Jembrana regency not only implemented and used similar systems, but they also improved the system. Currently, the E-ID card has become a mandatory national program based on central government policy.

All actors within the local government cooperated to reduce the gap in technology knowledge and skills among them. For single actors, such as a department or IT team, it was unlikely that they could develop technology knowledge and skills without cooperation among themselves, with central government or with other external local institutions such as private companies. These cooperation included

vertically (e.g. with central government institutions), horizontally between departments within Jembrana regency and other local government and local companies.

### **6.5.2 Financial mechanism**

Jembrana regency regularly allocates budget support for the sustainable use of e-government. However, annual budget allocation for e-government initiative was not sufficient to support all e-government implementation and use with all local government institutions, due to low local revenue. This caused the regency to develop a unique financial mechanism to sustain their e-government implementation and use. The regency cooperated closely with central government institutions to obtain financial resources to support the sustainable use of e-government, in particular to sustain e-government systems transferred by central government institutions.

Jembrana regency viewed the sustainability of e-government use as a collective responsibility. The local government also encouraged all local institutions to take financial responsibility. Institutions such as local departments, schools and hospitals shared financial responsibility to sustain the e-government systems. For example, the local government network infrastructure, which supported e-government systems use, was successfully built through a collaborative financial scheme where each local government institution, such as districts, villages and schools, took responsibility for the funding needed. The network infrastructure, which is called J-Net (Jimbarwana Network), integrates Jembrana central office, districts, villages, schools, hospitals and other institutions in the network. A participant explained details of the budget sharing as follows:

*The J-Net was funded by local government and supported by districts, villages and schools. They took responsibility for the J-Net budget implementation voluntarily, for example each district donated 60 million Rupiah, villages 40 million Rupiah and schools 30 million Rupiah (J.1). (1 million Rupiah is equal to approximately US\$100)*

The availability of the J-Net network, which connected 228 institutions; including 5 districts; 51 villages; 130 schools; tele-centres; hospitals and health centres; and local

government departmental offices, has supported the systems continuous operation and use. For example, KANTAYA, E-JKJ, and E-ID are operated within this network. The network is supported by wireless transmission towers across districts and villages.

Even though the main responsible for sustaining e-government use within Jembrana regency is on the Department of Transportation, Communication and Information (DINHUBKOMINFO) and the IT team, the responsibilities for the whole task of implementation and use have been distributed across institutions. The extension of responsibility was aimed to reduce burdens of the department and IT team. The Department has a limited budget to support all e-government systems implementation, use and maintenance within the regency. Since each department has autonomy to plan and use budget for their own purposes, the department and the IT team want them to take responsibility for the maintenance cost.

As a result, the IT team strongly encourage other institutions to take the responsibility of all e-government systems implementation and use cost. Departments or other institutions are required to support e-government systems or hardware continuity operation within their work unit. The local government actors' collectively contributed to the financial cost for the sustainability of e-government use. In some cases though, the Department of Transportation, Communication and Information strongly imposed on an institution for them to take financial responsibility for some things such as hardware maintenance cost. A participant explained as follows:

*If maintenance is carried out within a department, the cost is the responsibility of that department. If the maintenance is in districts, schools or villages, they will be responsible for the cost too. We do not have budget for that... If a department wanted us to replace damaged hardware, we have to wait for the hardware from the department. They must then buy the devices. If we need devices to repair the hardware we have to wait for the devices from them. It's their responsibility to provide the devices. (J.10)*

As a consequence of financial responsibility sharing, each department was encouraged to allocate their budget annually for IT maintenance purposes. This was



actively supported by all department and other institutions. A school, for example, made a report through the local government SMS centre on 25 May 2012 that their internet transmission tower was damaged by lightning. The school demanded the IT that the team check the tower and repair it. The school paid the maintenance cost with their own budget. Sharing maintenance cost responsibility by all local actors has become a solution for the local government in reducing the burden related to lack of financial resources. All actors accepted this collective financial responsibility by sharing to sustain their e-government systems.

### **6.5.3 Competence human resources**

Jembrana local government did not have the human and financial resources before they implemented e-government. However, since the regency leader had great motivation to implement and use IT within the regency, the central government bodies (e.g. the Ministry of Interior Affairs and BPPT) assisted the regency in providing human resources in 2001. Since then, the regency has increased the availability of competent human resources through training and recruitment. Today the regency has about 78 IT staff who are graduates with an IT background and other IT staff who have specialized through a variety training programs.

These competent human resources have been distributed to districts level to help sustain e-government use within all areas in the regency. Each district employs specialized IT staff who are also responsible for training other staff. Similarly, each department has been assigned IT staff who are responsible for IT use within their departments and cooperate with the IT team. IT Staff in each department take the main responsibility for the system related to their department needs, for example IT staff in the Local Department of Civilization and Civil Services is responsible for demographic information system use.

The existing competent IT staff within the IT team in the local Department of Transportation, Communication and Information have been divided into five groups to support the sustainable of e-government use. The availability of specific groups enables the local government to focus on certain tasks in sustaining e-government such as planning, implementing, use, maintenance, evaluating and response to all institutions' demands across the regency.

Competent human resources have been developed through a variety of mechanisms. At the early implementation stage the regency cooperated closely with a central government agency (BPPT) to develop competent human resources. This initial interaction was realized through providing training courses to the regency employees to operate certain e-government systems. For example a participant from Licensing Department said:

*When I started working with this department I did not know how to use the system. Then BBPT staff in coordination with IT team held short training courses on the system's operation. I and other employees were involved in that training until we knew how to use and operate the systems (J.6)*

BPPT is not the only external institution that has interacted with the regency in improving human resources competence. Other central government institutions such as the Ministry of Interior Affairs and Ministry of Health also carried out similar initiatives. The Ministry of Interior Affairs provided training for demographic information system (SIAK), while the Ministry of Health provided training for the health information system. The health information system was mainly used by doctors and health centre services in village areas to submit online medication claims to the government's health insurance company.

The regency training centre produced competent human resources to be assigned at the central regency office, district and village levels. One IT staff member who is regularly involved in the training centre as a trainer said:

*I do some training related to computer skills, such as how to operate computer, simple computer maintenance and repair for all relevant government employees within this regency... I trained many employees from departments within this central office and employees from district offices (J.4)*

Another participant from implementation division also admitted that he got training from this training centre before start working in the IT team.

*I have been trained by the training centre staff. Other employees from all departments have also taken part in the training... After we set up a network, we develop an application and implement it within a department office; we tell them*

*straight away how to use and operate it..... We do this through coordination with a relevant department (J.5)*

Informal incidental training skills were provided to all employees across departments through inter-department engagements. These were done whenever there was a new system to be implemented and used, or when new employees were assigned to a department because it was not possible to wait for a formal training session.

IT staff actively developed competent human resources by visiting each department. For example, an IT staff member described his experience in providing training to medical staff in health centre as follows:

*Our IT staff visited the employees in a village health centre to teach them. They're not invited here, but our people actively come to the site ... I think we have provided them enough training because I see they know how to use it (J.9)*

Competent human resources at district and village levels were transferred from regency central office. However, in certain cases, employees at district and village level were invited to central regency office, or the IT team will visit them, such as in the case of e-voting implementation and use, to provide them with the competency.

Competent human resources that support the sustainability of e-government use within Jembrana regency were obtained through variety interactions. Firstly, they were obtained through interaction with external institutions, such as central government institutions and private companies. Secondly, the human resources were also obtained through inter-departmental interactions, districts, and village levels. Finally, competent human resources were obtained through inter-personal skill transfer, particularly from senior to junior employees.

#### *Summary for resource endowments roles*

As argued by Van de Ven & Garud (1993) that there are three critical resources that support the development of technological innovation: advances in basic science, research, technological knowledge and skills; financing mechanism; and a pool of competent human resources. Analyses of this case study suggest that the local government does not practice basic science and research to support the sustainable use of e-government. This can be caused by the responsibility for basic science and

research activities being on central government institutions. In this study context, basic science and research activities for technology sustainability are carried out by the Agency for the Assessment and Application of Technology (BPPT).

The results of basic science and research were transferred to local government through cooperation. Local government was only involved in technology knowledge and skills development through the cooperation with central government institutions, other local government, private sectors and collaboration between the regency internal institutions.

Financial mechanism was uniquely established. The regency regularly allocated finance for the sustainable use of e-government systems. The regency also shared the financial burden among local institutions; in particular the cost for maintenance was distributed to all local institutions. This volunteer financial collaboration has successfully sustained the infrastructures and systems within the regency. Meanwhile, competent human resources were obtained from university graduates, local training centre and by distributing IT staff to all local departments and district offices. The competent human resources building processes are similar to those argued by Van de Ven, et al. (1999) and Van de Ven (1993) who suggest obtaining competent human resources through professional recruitment and training them with the required innovation skills, and diffusing the professional skills across organizations.

However, Jembrana regency also develops competent human resources through self-learning and a senior-to-junior employees' IT knowledge and skills transfer culture. Senior employees were encouraged to teach junior employees before they embark on new position. This approach is able to sustain IT skills when senior employees are transferred into other positions in departments. Frequent employee transfer is common within public sectors due to political issues.

## **6.6 Governmental activities**

In the original model developed by Van de Ven (1999) argues that the focus of proprietary activities are on the action of firms in transforming basic knowledge into infrastructure proprietary activities such as technology development, resources

channels, manufacturing, marketing, distribution and services (Van de Ven et al. 1999; Van de Ven, 1993 & 2005; Van de Ven & Garud, 1989;). However, the literature suggests that proprietary activities mostly belong to private firms; “*which is one that a private entity can perform, and is not uniquely for the benefit of the general public*” (Richards, 2009). As a result, government organizations are mostly involved in governmental activities that do not involve monetary charges rather than proprietary activities (Brown-Graham, 2007; Richards, 2009). Proprietary activities are concentrated on generating financial benefits from market activities.

This study focuses on three governmental activities relating to the sustainable use of e-government within Jembrana regency. The governmental activities are concentrated on e-government development, providing e-government services and building resources channels. These governmental activities were carried out collectively with internal and external actors through a variety of coordination and cooperation mechanisms. The following sections present the analyses of these governmental activities.

#### **6.6.1 E-government systems development**

One sub-component of proprietary activities in the social system model (Van de Ven et al. 1999) is product development. This study argues that an e-government system is also a technology product within public sectors. Literature (e.g. R Heeks & Bailur, 2007; Yildiz, 2007) suggest that e-government is a technology product within public organizations that is utilized for management reform and stakeholders services. Therefore, an e-government system is a technology that should be developed through the transforming knowledge and skills into governmental activities. For example, government officials make collaborative learning and knowledge sharing a requirement to find best practice for developing e-government in their work places (Ke & Wei, 2004). As a result, this sub section discusses e-government development system development activities.

Jembrana local government activities to develop their e-government systems started in 2001 when they cooperated with central government institutions. E-government development activities also include maintenance and evaluation to sustain the implementation and use within all local institutions.

Jembrana regency collaborated harmoniously with a variety of institutions to ease their collective action in developing their e-government systems. This includes collaboration with actors from lowest level, such as districts and villages, to highest level of the local government institutions, such as departmental offices in the central regency office. External actors, such as central government institutions, other regencies and private companies, were also incorporated in the development activities.

Jembrana regency cooperated closely with central government institutions to develop and maintain their e-government systems; in particular e-government systems transferred by central government such as demographic administration information system (SIAK) and electronic identification (E-ID). This includes providing knowledge and skills for local government employees to operate the systems. Their cooperation started in the early IT implementation and use in 2001, when then the local government implement KANTAYA (virtual office) system.

The collaboration between the local government IT staff and central government institutions was practiced as an effort to sustain the use of central government transferred systems. For example, the local government employees within the local government department of Civilization and Civil Services had to coordinate with IT staff within the Ministry of State Internal Affairs when the system did not work properly. A participant said:

*It (SIAK) is connected with the central government in Jakarta. I mean the data input by Department of Demographic directly goes to the server of the State Ministry of Interior Affairs in Jakarta. If anything should be done with the system, we have to collaborate with Jakarta. We cannot repair the systems (J.3)*

SIAK system was transferred by the State Ministry of State Internal Affairs directly to the local government department of Civilization and Civil Services. Employees within the local department can cooperate directly with central government institutions supported by the IT team, as described by the following participant:

*They take care of the server and coordinate directly to the central office in Jakarta (Ministry of Interior Affairs), not from this team (IT). But if something happens, they*

*do coordinate with us to discuss what exactly happened to the server, and then they make a report to Jakarta (J.5)*

Jembrana regency IT team also made improvisation in developing e-government systems to ensure its sustainable use. For example, KANTAYA system was developed by BPPT and then adapted to the regency need. A participant said:

*KANTAYA was developed by BPPT and then they asked us to improve our administration. When we got the system we did not use it straight away but we developed and modified it according to our need (J.4)*

Similarly, e-government systems developed by local IT team were continuously improved according to the situation of use. For example, the SMS centre was first developed to gather citizens' enquiry, without any facilities, to forward the messages to authorized staff mobile phones. Later the system was improved to enable the messages sent directly to authorize staff because they did not check the messages in the system quickly enough. As a participant described it:

*We always improve the systems. For example the SMS centre, we would gather incoming SMS messages and then format them in our system so that the officials in each department were able to respond.... However, the officials often did not respond to the messages from citizens because they did not check the system or they were busy with other tasks. We then changed the system by forwarding the messages directly to the staff mobile phones, so they could manage the messages and respond directly (J.9)*

More importantly, Jembrana regency e-government development strategies focused on development of e-government systems in a broader context to sustain the implementation and use. In other words, the development was not only concentrated on technical issues but also on development of e-society, e-businesses and e-leadership to familiarize stakeholders' engagement with the technology. As participant said:

*Actually, our IT concept development is e-development, which means we do not want this regency only to be one that only concentrates on implementation and use of e-*

*government, but we want to combine the development with e-leadership, e-society and e-business in an integrated infrastructure to change our mindset (J.2)*

To achieve this concept of e-development caused Jembrana regency leaders to establish an IT team structure with different task groups. This IT team structure is not common within the Indonesian local government context. A participant described his experiences as follows:

*At the time I got the position, I began to set up work sections according to specific IT tasks based on my experiences from my field of study. I changed the terms. I added more work sections, not only a general IT section. This included planning, implementation, service, evaluation and development sections... Each section knows their main tasks. Then I translate the tasks into specific ones and distributed them to individual IT members and sections, you can see on each table of the staff there is a list of their daily tasks. (J.3)*

Collaboration with other local government organizations is another e-government development strategy to achieve the sustainability. Some of the transferred e-government systems (e.g. E-ID) required synchronization between regencies within a province due to technical and human resources issues. For example, when a new E-ID transferred by Indonesian central government was implemented within regencies in Bali province, all regencies had to collaborate with regard to human skills and technical synchronization.

*We did a lot of consultation with other regencies in Bali such as with Denpasar City regarding E-ID card implementation and use... we had a number of coordination meetings in Denpasar to discuss E-ID implementation and population data. We had got our E-ID system before this new E-ID system, but there are some differences that should be synchronized with the new system to meet uniformity in data entry. At that time our staff and other regency's staff in Bali met in Denpasar (J.1).*

Central government E-ID system was successfully first implemented and used in Denpasar City which was then followed by other regencies in Bali. Jembrana regency had already implemented E-ID in one district, but they needed more



collaboration with Denpasar City to complete the implementation and use in all districts and to synchronize their data with the new system.

Feedback from IT staff at district levels who managed e-government systems and infrastructures within district offices and villages was used to develop e-government. The IT team at central office level considered cooperation with district levels staff as an important process for e-government implementation and sustainable use because districts IT staff knew the real conditions within village areas. Cooperation with districts' IT staff was also crucial for the systems and hardware maintenance. They could take quick action by contacting the IT team at regency office if they could not handle a problem, then the IT team at regency office would respond to their enquiries. A participant from central office described their engagement with district staffs as follows:

*We sometimes get input from our friends who work at district level because they are directly confronted with the villagers and they know what should be improved. They usually give input at the moment of coordination meeting.....If something happens to internet or towers because of lightning in districts and villages; they directly contact IT service desk. Then, the service desk will coordinate with maintenance division (J.9)*

E-government infrastructures at district and village level are confronted with many challenging issues such as internet connection, internet tower, and software and hardware maintenance. All these issues were collectively handled by central and district office IT staff through frequent coordination.

### **6.6.2 Provide e-government services**

Van de Ven (1999) argue that of a firm's business function is related to provide innovation products and commercialize it to wider community. Government organizations are also functioned to provide product and commercialize it to public, but their activities based on public interest, such as provide education services (Evans & Karras, 1994) rather than profit generation. Government organizations are collectively owed by political public (Boyne, 2002). Their business functions are utilized by citizens without involving commercialization of goods and services for profit as argued by Osburn (2009).

Providing services through e-government system is a key governmental business activity to serve the stakeholders within Jembrana regency. These e-government services are provided by relevant Jembrana regency departments to serve their stakeholders. At the moment of data collection, Jembrana regency has implemented and used about 34 e-government systems to serve their stakeholders. A participant said:

*We've implemented 34 e-government applications. Some them are utilized by employees to perform daily tasks and other are utilized to serve citizens. We have also electronic books and electronic library (J.2)*

One e-government system that is utilized for daily employee tasks performance is KANTAYA system. The system allows employees' engagement in performing their daily tasks. A participant described as follows:

*KANTAYA is a model of a virtual office from which we can perform our tasks virtually. We can share information with friends from other departments and district offices. There's also a menu to ask permission if we cannot go to work, a menu to save and receive documents sent by our work colleagues. It is like an office, we can send messages and orders government inventory exchange between departments (J.2)*

Meanwhile e-government service that can be used by citizens is the SMS centre and VOIP (Voice over Internet Protocol). These services help citizens in remote areas to communicate with the regency office on a free-of-charge basis. The services also reduce the regency costs in communication. A participant said:

*Many citizens send SMS to the SMS centre to ask certain information, but most of them also sent information, such as suggestion and critics, to us. .... 70 per cent of calls with VOIP are equivalent to 70 per cent of efficiency .... Voice over Internet protocol is a telephone call which goes through our internet network. It saves our telephone budget in communicating with all districts and villages (J.3)*

Some key e-government services have been successfully provided through e-government systems as presented in Table 26.

**Table 26: Key e-government services in Jembrana**

No	E-government systems	Service provided
1.	KANTAYA	Allows employees to perform their tasks virtually. Employees can manage their daily jobs through the systems such as sharing data between departments.
2.	SIMDA	SIMDA is an integrated system that incorporates other systems such as e-library and SMS centre. The system is also used for local government administration.
3.	e-JKJ (Electronic Jembrana Health System)	The system is used by hospitals and district health centres to make budget claims electronically to the regency office. Citizens can use the system by using their E-ID.
4.	J-NET (Jimbarwana Network)	It is a network infrastructure that connects all regency institutions. Institutions and citizens in village areas use the system to access government services.
5.	SIAK (demographic information system)	The system is used to manage population administration and data.
6.	SIADINDA (Departmental Information System)	The system is used by regency departments to manage their finances such as expenditure and reporting.
8.	E-ID (Electronic identification)	E-ID is a system used to serve citizens in obtaining an electronic identification.
9.	e-Voting	The system is used by villages' citizens to vote for a village leader.
10.	SMS centre	Provide response to citizens' enquiries such as complaints and reports from rural citizens. Each relevant department can directly get messages from citizens and respond to them.

Those services have provided significant benefits for both citizens and local government. The benefits include cost and time saving, transparency and efficiency. For example, e-voting system saved the regency cost by reducing paper used in a village head election and citizens also save time. A participant described the benefit of the services as follows:

*But based on 70 times voting using e-voting system, we found that citizens can do it more practically and save time. Most citizens are farmers and they do not have to wait as they did before. The election committee did not bother to fill paper sheets to*

*determine a vote is valid or not valid ... just click a button, in case of dispute, we have evidence provided by the system. The system is safe to use and the response from citizens is good (J.11)*

Another system, such as E-ID, also provides benefits from the services. A participant said:

*The advantage of E-ID is that the data is inside the E-ID. It is safer and secure to avoid double entry. It can also combat terrorism and multiple ID because E-ID contain finger print information (J.12)*

Regarding the regency website, a participant said:

*Sometimes they use the website to download information such as related regional regulations, drafts of local government regulations and drafts of Regent's (mayor) decrees. .... The website can support the development of tourism because citizens can do global marketing via the Internet... They sell their art products (J.3).*

Meanwhile J-Net is a key network that provides service for citizens and government in information sharing as described by the following participant:

*Information communication through J-Net can be carried out directly from villages to this Regent central office..... This J-Net is one of our valuable e-government assets because through J-Net link we can share information with districts level and manage our assets. It is beneficial for the public interest, for example if they have a business, they can take advantage of the existing J-Net network to promote local business and tourism to the world (J.1)*

Jembrana regency functions their business activities through providing a variety of e-government services to their stakeholders community. The e-government services are utilized to interact with citizens, such as SMS centre, and to increase efficiency in service delivery such as E-ID. The e-government service products have been diffused to wider stakeholders from employees, businesses, and citizens in rural areas.

### **6.6.3 Resource channels**

Literature (e.g. Van de Ven et al. 1999; Van de Ven, 2005) suggest that single organizations seldom have enough resources to develop and commercialize an

innovation alone. Van de Ven (1976, p. 24) argues that “*resources and expertise are contained within autonomous organizations and vested interest groups*”. This requires organizations to build a coalition to access the spreading resources. This coalition could be built base on a political coalition among the organization that have similar collective interests (A. Van de Ven et al. 1999). Alternatively, organizations can also build wider affiliation within a local and national context to access the resources (McCarthy & Wolfson, 1996). In most cases, organizations are both independent actors and involved members of a larger community. Heeks & Stanforth (2007) suggest those independent actors should build a set of relations to generate resources in where the innovation take place.

Jembrana regency lacks resources. To sustain the use of e-government implementation and use within the regency, Jembrana government obtained resources, such as financial, infrastructure and human resources from various channels. The channels include central government institutions, other local government, private companies, and collaboration within local institutions.

Building a channel with central government institutions is one strategy to gain resources. For example human resource skills were firstly obtained through engagement with BPPT in Jakarta. A participant said:

*You know, when we started IT implementation, we did not have human resources in IT. Therefore in 2001 we cooperated with BPPT to get technology, technical and training support. Our budget was also limited (J.1)*

Early infrastructure, such as computers, was also obtained through cooperation with the BPPT. For example, all districts within Jembrana regency were provided computers in 2001 to support early implementation and use of e-government. A participant said:

*At the beginning of e-government implementation and use, we were supplied computers by BPPT. We distributed the computers to all districts to support our e-government implementation initiative and improve their work performance in serving citizens. It happened in 2001 when the leader served his first year leadership. He has*

*very good connections with BPPT because he is a professor from University of Udayana, Bali (J.3)*

BPPT has become an important resource channel for the sustainability of e-government use within Jembrana regency. BPPT not only contributed to technical and human infrastructure development to support future e-government development, but also contributed to the development of the regency's e-government Blue Print. It is an important resource to support the sustainability of e-government because it comprises the long-term regency e-government planning, implementation, use, development, evaluation and maintenance strategy.

Other central government institutions have also become resource channels that the regency engaged to obtain resources to support their e-government sustainability. Those institutions included the Ministry of Interior Affairs, the Ministry of Health, the Ministry of Education, and the Agency for Government Goods and Services Procurement Policy (LKPP). Other institutions that provided the regency with some e-government systems also supported ongoing maintenance to ensure the sustainable use. For example, a participant said:

*The system (SIAK) is from the central government. We cannot fix it here, we have to contact people from the Ministry of Interior Affairs) to fix the system if something goes wrong. They help us through the phone or they come here if we cannot solve the problem through the phone (J.10)*

Financial resources within the regency are available across local institutions such as central regency departments, districts and villages. These institutions are allocated budget annually and also produce some revenue. They collectively endowed the financial resources to build and maintain the e-government infrastructures. For example, J-NET infrastructure was built and maintained by local institutions through mutual financial cooperation.

The availability the J-Net which connected 5 districts, 51 villages, and 130 schools via internet towers across the regency, has supported other e-government system implementations such as health information system (E-JKJ), e-learning, E-ID and websites. Also, the cheaper, communication system (VOIP) between government

employees and citizens in rural area has also been implemented. The availability of these infrastructures allows the local actors to access other resources such as information and data. A participant said:

*We have an access point to VOIP and internet in every village. So we can communicate with districts, schools and village and share data with them. We can do that because the network is already available (J.4)*

Universities within the province are some of the other channels that provide skilled human resources to support Jembrana regency sustainability of e-government. The regency has recruited a number staff from universities to support their e-government use as stated by the following participant:

*We have recruited IT staff that are graduates from a variety of universities in Bali and Java. They have different IT skills. Some of them are expert in networking, application development, and software and hardware maintenance. In the future we may recruit more specific IT skill staff (J.1)*

The availability of skilful human resources within the regency department of Transportation, Communication and Information enable other regency departments to get assistance to support their e-government implementation and use within their departments. A staff from the department said:

*We have to help them because we have human resources in computer and communication, while other departments do not have a bachelor degree in computer field. They rely on us to help them implement and use IT. Sometimes we assigned some of our IT staff to department temporarily as they request (J.2).*

Some of the IT staff were also assigned to district levels to support e-government implementation and sustainable use at districts and village levels, in particular regarding maintenance issues. A participant said:

*If the problem occurs in districts and villages, there's an IT staff who takes care the problem in that area....they are the staff from this office but appointed there (J.5)*

The distribution of IT human resources across regency institutions was intended to ensure each institution is able to cope with the sustainable use of technology within their institutions.

Local private companies are other channels for the regency to obtain human resource skills. Most of private companies have more advanced IT human resources compared the regency human resources. Jembrana regency cooperated with the private companies to support complex maintenance of their technology. For example, in 2011 the local government allocated 296 million Rupiah (about US\$29,000) to improve and maintain their departmental financial management system. The regency cooperated with a local company to realize the project. Even though the engagement was a business relationship, the regency was able to obtain long-term cooperation that included not only the system improvement and maintenance, but also employees' skills improvement. For example a staff said:

*At that time I made some mistakes in using the system, but after that the boss invited a consultant from the company, which implemented the financial information system in the Financial Department, to train me (J.7)*

Engagement with other local government was carried out due the common practices of e-government within earlier adopter regencies and municipalities. Those earlier adopters of e-government have more advance human resources in e-government implementation and use. Jembrana regency accessed the resources by sending their employees to learn the e-government implementation and use. For example, some employees were sent to Yogyakarta municipality to learn early E-ID implementation and use. This inter-local-government engagement was also practiced with other regencies in Bali province.

#### *Summary for governmental activities*

Governmental activities to sustain the e-government use in Jembrana regency involved development of e-government systems, provision of e-government services to stakeholders, and building resource channels. E-government development activities included development, implementation, improvisation and maintenance. Meanwhile, the regency services were provided through a number of e-government



systems transferred by central government and developed by local IT team. The e-government services improved the local government efficiency and provided benefits for citizens (Axelsson, Melin, & Lindgren, 2013). For example, citizens can apply a licence online or vote for a village leader through e-voting system, which save cost and time.

Resources to support the e-government development and e-government services provision were obtained through a variety of channels. The regency cooperated with central government institutions; other local government organizations; the private sector; and collaborated with local institutions. The regency's strategy was to collaborate with other institutions to access the resources is relevant; as suggested by Van de Ven et al. (1999) and Van de Ven (2005) that organizations should collaborate to obtain resources, because single organization seldom has enough resources to develop and commercialize an innovation alone.

However, Jembrana regency was not only successful in obtaining resources across external institutions, but also in obtaining resources from the regency internal institutions by collaboration.

## **6.7 Market mechanism for e-government**

Market for a new innovation development is not naturally formed but it should be developed, customers should be educated, and demand should also be created (Van de Ven et al. 1999). The market demands come from responsible consumers that have been informed and educated about a new innovation. Similarly, market for e-government product services should be created. For example, citizens should be informed regarding the presence of e-government services (Ke & Wei, 2004). Van de Ven et al. (1999) suggest there three components involve in the market mechanism; cultural norms, market creation and demand, and competitions.

However, this study focuses on public sector market mechanisms. It is considered that market mechanism, which provides choices for individuals in consumption of goods and services, is absent in public sectors (Rainey, Backoff, & Levine, 1976). In addition, public sector organizations are not controlled by market forces, but by political forces (Boyne, 2002) that require them to coordinate and cooperate rather

than to compete. As a result, this study considers “competition” is not a reason for market emergence in e-government innovation, but market may emerge as a result of government cooperation to promote and educate their stakeholders, as suggested by Van de Ven (1999).

The analyses of market mechanism for e-government service products within Jembrana regency focuses on two mechanisms; changing cultural norms, and market creation and demand. Market creation and demand is discussed as two different components; as indicated by Van de Ven et al. (1999), informed and educated consumers. Consumers or stakeholders in this study context are informed through assimilation of e-government service products. The stakeholders are educated through a variety technology and skill improvement. The discussions are as follows:

#### **6.7.1 Cultural norms**

Changing cultural norms of stakeholders, in particular employees, was a key factor in supporting the sustainable use of e-government within Jembrana regency. The regency started with changing their institutions and employees’ mindset toward using e-government systems in daily tasks. This was carried out by departmental leaders’ insistence that their employees use the e-government systems in their institutions, as said by the following participant:

*We are happy because all the heads of departments, at least are aware the benefits of IT implementation and use within their departments. It is not easy. We cannot change the mindset in a short time and make them interested in IT. I need a policy from all departments’ heads to instruct their staff every day to use the systems, such as they want them to use the SMS centre regularly (J.2)*

The change of cultural norms is also related to the change of employees’ behaviour to use the system. For example, employees were encouraged to use a particular system (e.g. fingerprint employees attendance system) and to share data through the system. A participant said:

*The changes maybe in terms of discipline; we used to sign for attendance, but now we have to use the fingerprint system for our attendance. Then the changes also include our work culture, particularly regarding file sharing among departments and*

*employees. My friend from another department just puts the files on the folders in KANTAYA so we and other employees from other departments can get the files online when we need it. (J.11)*

Changing cultural norms to use e-government across the regency institutions was strongly imposed by the leader. This was carried out through the enactment of a local regulation to impose institutions and employees to use e-government system in daily work. The Regent Instruction No. 3 year 2006 states that all institutions and employees must utilize e-government systems to improve their work performances. The local regulation does not only mandate all actors to utilize the systems, but also provides guidance regarding how they implement, maintain, develop and use e-government within their departments.

Strong mandates, to change institutions and employees cultural norms to use e-government, were intended to ensure all actors within the local government paid serious attention to e-government usage. The cultural norms mandatory change policies were often delivered in leader's meetings. A participant described how the Regent threatened department leaders during a number of meeting as follows:

*We really paid serious attention to that issue because we have stated in every meeting that all departments must use technology to serve citizens; that it is one way to ensure efficiency in our local government. Even our leader threatens to cut the budget of a department if they do not use IT or a system that we have provided for them (J.3)*

The IT department used their own communication strategy to force other departments take similar action to use e-government systems. Even though the strategy was not regulated in a formal procedure, the practices were endorsed by their leader. For example, a participant explained how they try to change employees' habits in a department to use e-government systems as follows:

*We motivate them (employees in all departments) to use the systems in different ways. First we motivate them persuasively. I persuade them to use IT by telling them the benefit of using the IT. If they still do not utilize the IT, then we send an official letter from the Regent (mayor) or Regional Secretary that ask them to use IT in their*

*jobs. If the notice still does not work, then, we do the most extreme thing by sanctioning a “naughty” department; we disconnect their Internet from the server in this office (J.2).*

Mostly, that type of strategy was exerted after a notice letter was sent to the department, but the situation had not changed. The notice letter was often written by IT department and endorsed by the Regent, before the IT team sent it to the relevant department.

Individual IT staff also often practiced the cultural norms change mandate with staff from other departments to gain their cooperation in utilizing the systems, as explained by a following participant:

*If they do not use the systems properly we will not respond to their complaints quickly, for example when they want us to fix their computers. I think that is a good way to force them to cooperate and use the systems (J.3).*

A similar strategy was applied to district and village level staff. All districts and villages are required to regularly update their data in e-government systems such as SIAK and E-JKJ. The Department of Transportation, Communication and Information and the IT team force their staff at district levels to support the systems. A participant explained how they make staff at district and village levels willing take action in supporting e-government systems as follows:

*We also threaten staff who work in the districts if they forget their duties to update the existing information such as on poor population, birth and death population data. If they fail to do their job, their salaries will be stopped until they update the information or send us the data via the network (J.2)*

At departmental level, Jembrana regency has a yearly competition to find the best department that update their websites regularly and provides quicker response to citizens' enquiries. This strategy is aimed to motivate all departments to regularly upload information on their websites and take active action in responding to citizens online enquiries. This strategy was helpful to change department beliefs toward importance of websites.

The change of cultural norms strategies practiced by Jembrana leaders, IT team, employees across institutions seems able to bring all actors into similar understanding towards the use of e-government in daily work practices. This ensures the sustainable use of e-government because their attitudes towards the use of new technology have been changed.

### **6.7.2 E-government market creation and demand**

Market for a new innovation product should be created through informing and educating consumers such as through promotion and training (Van de Ven et al. 1999). Consumers' education is required because the introduction of an IT product within an organization mostly requires the acquisition of new skills by the organization's stakeholders. Markus & Tannis (2000) , also suggest to provide continuous end-users skills development after initial training of an information system adoption. This stakeholders' education can improve their competency and shape their preference to utilize the innovation continuously.

Meanwhile, new innovation promotion can increase the awareness of the consumers or stakeholders. The promotion can be carried out through variety strategies. For example, the UK government launched a media campaign to spread awareness of e-government services and to encourage citizens to connect to their local council websites (Carter & Weerakkody, 2008). Government can also bring the technology closer to stakeholders. For example, e-government services can be provided through a tele-centre in rural areas level to stimulate demand (Naik, Joshi, & Basavaraj, 2012).

The analyses of e-government market creation and demand is focused on two main issues; stakeholders education to create competent users and e-government dissemination to inform and increase awareness of the market. The analyses follow.

#### *6.7.2.1 Stakeholders' education*

Stakeholders' education activities toward the sustainable use of e-government within Jembrana regency was carried out formally and informally. At the beginning of e-government implementation and use, Jembrana regency started educating their central office employees through cooperation with central government institutions

such as BPPT. Later other central government institutions were also involved in providing knowledge and skills to the regency staff. The initial interaction included providing a short training course to the regency IT staff and employees to operate certain e-government systems.

The regency employees' education was also improved through engagement with other regencies and municipalities. For example, employees were sent to Sragen regency and Yogyakarta municipality to learn E-ID implementation and use. Similarly, the involvement of a local private company to train employees to use the departmental financial information system was also a strategy to educate employees. Engagement with other local government and private companies helped the regency improve their employees' knowledge and skills.

The regency department employees were educated by the IT team through cooperation with a relevant department when they start using a system.

*We do this through cooperation with relevant departments to prepare human resources. We train employees in the department how to operate and use the applications (J.5)*

However, stakeholders' education was not only intended to improve knowledge and skills but also intended to change their behaviour towards e-government use. This type of education was carried out through a reward-and-punishment strategy. A participant said:

*A diligent department IT staff will be rewarded, while the lazy one will be punished; the salaries won't be paid immediately, until they regularly update their information on the web. Another way to punish them is disconnecting internet connection but local connection remains connected... In the past, I disconnected three days, no one complains until a week of disconnection. But now, after 5 minutes internet connection is off, many complaints come to us. This means there's a significant development in awareness on utilizing technology (J.3)*

Citizens at village level were educated to use technology through ICT vans provided by the Ministry of Information and communication. A participant said:

*We want the public not only understand that the implementation of IT within this government is not merely for government benefits, but also for the rural citizens' benefits... to get those benefits we educated them how to use the internet, access online services and interaction with us. This education is carried out when we visit them with our ICT vans...we have some computers that can be used by citizens (J.1)*

The aim of educating stakeholders at district and village level was to expand the use of e-government system. A participant said:

*We have implemented and used of e-government systems within our government organizations in this regency office, and then we educated citizens to use it. When the citizens in the villages already know how to use the IT, then we moved to business sectors to establish e-business. Finally, all stakeholders know IT and use it in daily life (J.2)*

Stakeholders' education was intended to create competent users of e-government systems. The stakeholders' competency was improved through providing training and routine the use of e-government systems in work practices. The competent users are expected able to utilize e-government services in daily live practices. As a result, the sustainable use of e-government can be achieved.

#### *6.7.2.2 E-government assimilation*

Assimilation of e-government by all stakeholders and institutional levels was intended to inform the stakeholders and increase their awareness. The assimilation activities were carried out through collaboration support between actors within the regency and central government. At the beginning, the assimilation was targeted within the regency central office stakeholders as the main drivers of e-government assimilation within the regency. This early assimilation was supported by BPPT as stated by the following participant:

*At that time the Regent discussed his ideas to start implementation and use of IT with the people in the BPPT Jakarta. The BPPT people then offered help for this regency to socialize the use of IT in this regency office. Then in 2001, we started to distribute computers for all districts. This early project was then continued into the future.....*

*This effort was then incorporated within all departments, and the Regent asked all departments to take quick response in socializing this IT (J.1)*

Jembrana regency's effort to assimilate e-government use across regency was also intended to spread the acceptance across regency. By doing this, the regency expected all institutions to utilize the technology continuously. The Ministry of Communication and Information in Jakarta provided ICT vans to facilitate the assimilation of e-government to village levels. A participant said:

*We also attempted to assimilate IT through vans granted by central government via Department of Transportation, Communication and Information. The IT vans were used to assimilate IT to the community in the countryside and schools, especially in villages far from our reach. It is a part of e-government introduction to village levels (J.1)*

Jembrana regency also built signal transmission towers across district offices and villages to assimilate e-government services and help citizens access the services. A participant said:

*We built internet towers in all districts and remote villages to help citizens and small businesses access our e-government systems. When they can access the Internet, of course they will use all the systems and access our online services regularly. This is one of our strategies to spread e-government technology to the whole regency areas (J.2)*

Those internet transmission towers are integrated in the J-Net network that connects all the regency institutions. All e-government systems are able to be assimilated through the network as stated by the following participant:

*Our J-Net connects all departments, districts, villages, schools and hospitals in a network. We want all institutions, citizens, and businesses to use the e-government systems. We also expect through the J-Net, our e-government services to be reached by all institutions and citizens. All information and communication through J-Net can be carried out directly from villages to this Regency central office (J.1)*

Another participant said:



*One earlier system that we implemented is Jembrana Network which functioned to integrate communication between villages, sub-districts, and schools within Jembrana. It is also an infrastructure for information sharing in which we provide applications that can be accessed and utilized by each sub-district, village, public clinics and schools (J.4)*

However, e-government assimilation was not only carried out through building e-government infrastructures and ICT vans, but also through the distribution of IT staff to all district offices. District offices are the front-line in serving citizens and businesses within village areas. Other than distributing technology knowledge and skills to lowest level of local government hierarchies, the staff was also responsible for maintaining the infrastructure through collaboration with central regency office staff. A participant describes district offices IT staff roles as follows:

*If the problem occurs in a district and village, there are IT staffs who take care of the problem in that area....they are the staff from this office but appointed there to promote e-government uses and help them...district offices can work with them if there are some problems with computers or systems, but if the staff cannot handle the problem they contact us and we will help them. We are a team (J.5)*

E-government services were assimilated through cooperation with central government institutions and between internal regency institutions. Assimilation was carried out through promotion using ICT vans provided by central government institutions, spreading e-government infrastructure across regency, and distributing IT staff across departments and district offices. The presence of the infrastructures and IT staff at district levels increased the awareness of stakeholders regarding the presence of e-government. As result, the demand to use e-government was also increased.

#### *Summary for e-government market mechanism*

Market mechanism for e-government services in Jembrana regency involved two sub-components of social system; changing cultural norms, and market and demand creation. Cultural norms of employees and stakeholders were adapted to the new technology environment. Employees' work-cultural norms were persuasively and

coercively adapted to be more disciplined and familiar with the use of technology in their daily work practices. For example, districts IT staff were forced to regularly update citizens data; and employees within regency central office were also imposed upon to use e-government in their work practice. However, at the same time the regency leader also provided incentive to change the cultural norms in using e-government. For example, local departments that regularly update their websites and respond to citizens enquiries were rewarded. This cultural norms change strategy is considered as “*systematically rewarding the adoption of new assumptions and punishing adherence to the old assumptions*” (Schein, 1990, p. 26).

Market creation and demand for e-government services was carried out through stakeholders’ education and e-government dissemination activities involving the regency and central government institutions. Stakeholders’ education involved providing skills for employees and stakeholders in cooperation with central government and other local government institutions. Employees within the central regency office and at district levels were trained to obtain skills to use e-government systems such as E-ID. The training was carried out in cooperation with central government institutions and with other local government.

Promotion and publicity of e-government services in Jembrana regency was carried out through an assimilation process. The assimilation was intended to inform and increase awareness of employees and citizens regarding the presence of e-government services in the regency. This was done through promotion on the regency website and the operation of ICT vans in rural areas. The promotion and publicity have not only increased the employees and stakeholders’ awareness on e-government, but at the same time also increased their skills to utilize e-government services. The citizens’ awareness was also increased through involvement of all local institutions in constructing infrastructures across districts and villages areas. For example J-NET network, this was built through the regency institutions collective contribution, connect all villages and citizens.

Promotion or publicity is important in educating citizens to use e-government services. Lack of promotion and publicity can result in failure of citizens to utilize e-government services because they do not have the awareness or skills to use it. For

example, lack of use of websites across China local government was caused by “*the lack of promotion or publicity to educate citizens on how to use e-government services*” (Tan & Xiaoi, 2013, p. 13).

## **6.8 Summary**

The original social system suggests that a number of infrastructure components play roles in the emergence and sustainable use of an innovation in a firm’s community. The components include: institutional arrangements to legitimate, regulate and standardize the innovation; resource endowments of technology science and knowledge, financial mechanisms and a pool of competent human resources; the organization’s proprietary activities to develop products, to build business functions and resources channels; market mechanism that includes cultural norms, market creation and demand, and competition (A. Van de Ven et al. 1999).

This study’s analyses suggest that the not all of the social systems components from the original framework play roles in e-government implementation and sustainable use, such as competition. However, some new components and sub-components also emerge in the analyses. E-government implementation and sustainable use within Jembrana regency was achieved through the continuous roles played by the social system components. Actors collaboratively engaged in the social system components, which include institutional arrangements, resources endowment, governmental activities and demand creation. The sustainability of the regency’s e-government implementation and use was supported by the institutional arrangements that legitimate, regulate and standardize the e-government systems. However, this study also found that the Regency’s economic limitation was also another institutional issue that forced the regency to sustain their e-government implementation and use. The summary of social system roles is presented in Table 27.

**Table 27: Summary of social system roles**

<b>Components</b>	<b>Sub-component</b>	<b>Roles</b>
Institutional arrangements	Legitimacy	Seeking legitimacy from central government and local stakeholders
	Regulation	Regulation mandated use of e-government systems, in particular central government transferred systems
	Standards	National and local standards standardized the use of e-government systems
	Economic limitation pressure	Economic limitation encouraged the regency to use e-government systems to reduce operational cost.
Resource endowments	Technology knowledge and skills development	Technology knowledge and skills were improved through collaborative training with central government institutions, other local government organizations and private sectors.
	Financial mechanism	Budget to sustain use of e-government was regularly allocated. Internal regency institutions collectively contributed to the cost of system operations and maintenance.
	Competence human resources	Competent human resources were obtained from universities graduates, local training centre, cooperative training with central government institutions and through learning from other local government.
Governmental activities	E-government development	e-government systems was developed through establishing a long-term Blue Print design, building infrastructures, regular maintenance, improvisation of the systems, and involvement of leaders, IT staff, employees, and private companies, and input from citizens.
	Provide e-government services	The local government services were provided through a variety central government transferred systems and locally developed systems to improve efficiency, transparency, and interactions with stakeholders.
	Build resource channels	Resources to support the sustainable of e-government use were obtained from cooperation with central government institutions, other local government, private sectors, and volunteer collaboration between the regency institutions.
E-government market mechanism	Cultural norms	Cultural norms of employees and stakeholders were changed through persuasive and coercive approaches.
	e-government market and demand creation	Market and demand for e-government services product was created through stakeholders' education and e-government services assimilation across regency.

Resources to sustain the e-government implementation and use were endowed collectively by various actors such as central government institutions, local government, private companies, and political institutions. Governmental activities were also collaboratively carried out to develop and maintain e-government systems, provide e-government services and build resource channels across institutions. Meanwhile, stakeholders' demand was created through changing norms and culture, education of the stakeholders, and assimilation of e-government systems by all actors collectively.

## **CHAPTER 7: Case Study Analysis - Luwu Utara Regency**

### **7.1 Introduction**

This chapter analyses e-government implementation and sustainable use in Luwu Utara regency. The analyses include the background of the local government organizations, organization structure, current stage of e-government systems implementation and use, participant roles and the roles of social systems in e-government implementation and sustainable use within Luwu Utara regency. The analyses are based on data gained from documents, four field visits, notes, memos, formal and informal interviews and observations. The framework (Figure 3) developed in Chapter 3 was used to guide this chapter's analyses. However, since this study applied grounded theory data analyses, the possibility of new themes emerging during analyses was also considered.

The remainder of this chapter is structured as follows. Section 7.2 presents participants roles within the regency. The regency social and demographic issues are described in section 7.3. Section 7.4 presents the current state of e-government implementation and use in Luwu Utara regency. Sections 7.5 and 7.6 present analyses of the institutional arrangements and resource endowment roles in the regency's e-government implementation and sustainable use. Analyses of governmental activities in development of e-government, providing e-government services and building resource channels are presented in section 7.7. Analyses of market mechanism for e-government services, which includes cultural norms and stakeholders' demand creation roles, are presented in section 7.8. The summary is presented in final section.

### **7.2 Participants' roles**

Interview data were gathered from 9 participants. The participants, who were policy makers, implementers and users, were recruited from different levels of the local government organization. The participants' roles are presented in Table 28.

**Table 28: Participants' Roles**

<b>Participants</b>	<b>Participants' Roles</b>
Participant L1	He is a leader of a department. He is responsible for the e-government implementation and use, and other IT policy within the whole regency area. His responsibilities include planning, implementation, use, and evaluation of all infrastructures, human resources and systems.
Participant L2	A decision maker within division of communication and information. His responsibilities include leading the section of post and telecommunication, communication and information dissemination, and information technology implementation and use within the regency.
Participant L3	A decision maker within the section of technology implementation and use within the regency.
Participant L4	A decision maker within the section of communication and information dissemination.
Participant L5	He is responsible for the regency's websites development, oration, and maintenance.
Participant L6	A decision maker within the Procurement Service unit (ULP). He is responsible for the ULP unit work and employees' operation.
Participant L7	He is staff within the education department. He is responsible for IT implementation and use within the department.
Participant L8	A decision maker in the Electronic Procurement Service Unit (LPSE). His responsibilities include managing the e-government procurement system and human resources within the work unit, making decisions, coordination and cooperation with ULP work unit and the National Agency for Procurement Unit (LKPP) in Jakarta
Participant L9	He is a leader of a department. He is responsible for the civilization and civil services within the regency.

### **7.3 The Regency Description**

Luwu Utara is regency located in the South Sulawesi province in Sulawesi, Indonesia. It is a new regency that was established in 1999, under Indonesian government regulation No. 19 year 1999. Previously, it comprised 11 districts and was a part of Great Luwu regency. It occupies about 7,500 square km with a multi-ethnic population of about 370,000. This regency does not have big industries but well-know for cocoa production, farming and forestry. The local government's annual revenue in last two years is less than 10 % of its annual budget. The local government has some mining industries, such as iron ore and coal, but most of the

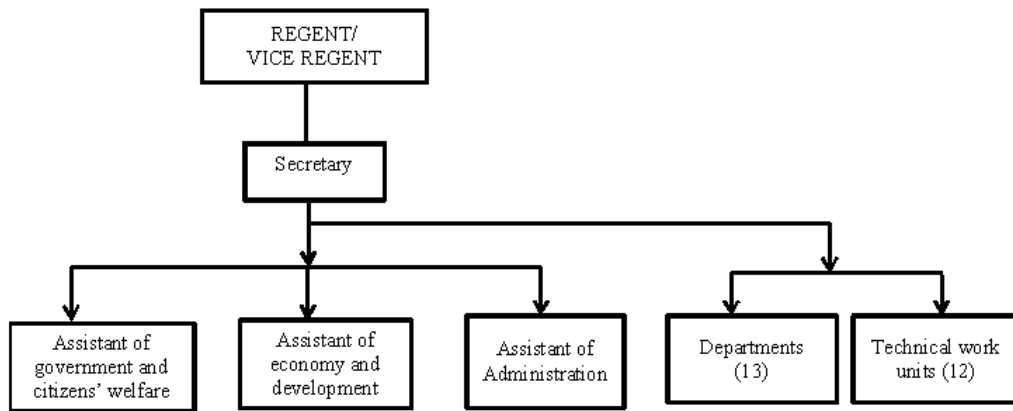
revenue comes from central government. The comparison between the regency's annual budget and its revenue for last five years is depicted in Table 29.

**Table 29: Luwu Utara Regency Annual Budget (in Rupiah)**

Year	Annual budget	Local revenue
2008	539 billion	5%
2009	473 billion	16 %
2010	527 billion	19 %
2011	689 billion	9 %
2012	664 billion	7 %

Source: Luwu Utara (2012a)

The regency is led by a Regent (the head of regency) and supported by a local parliament (DPRD) institution. The Regent assisted by a Vice-Regent and leads 13 departments and 12 technical work units as depicted in Figure 23.



**Figure 23: Luwu Utara organizational structure**

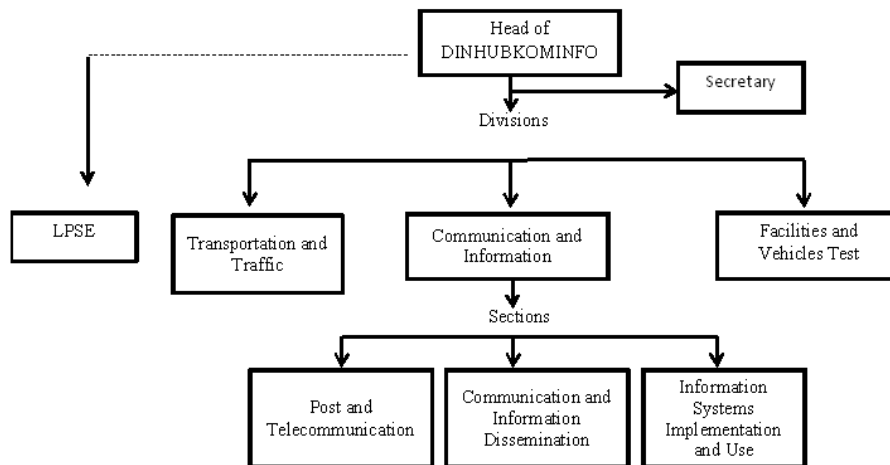
The regency's main office has three assistants that concentrate on certain regency management affairs such as citizens' welfare, economic development and administration. The assistants mostly support the daily operation of the Regent's and Vice-Regent's office. Meanwhile, the regency's development and policies implementation are managed by each relevant department and technical work units as presented in Table 30.



**Table 30: Luwu Utara Departments and Technical Work Unit**

No	Departments names	Technical work units
1.	Education Department	Local Development Planning Unit
2.	Local Revenue Department	Human Resources Administration Unit
3.	Employments, Transmigration, and Social Department	Food Defence Unit
4.	Communication, Information, Cultural, and Tourism Department	Civil Defence Unit
5.	Transportation Department	Citizens Empowerment Unit
6.	Public Infrastructure Department	Women Empowerment Unit
7.	Mining Department	Local Government Enterprises Unit
8.	Trading and Cooperation Department	Training Centre
9.	Agriculture Department	Environment Management Unit
10.	Fishery and Sea Department	Local Library and Archive
11.	Forestry and Farming Department	Hospital
12.	Health Department	Police Civil Service Unit
13.	Sport and Youth Affair Department	-

E-government implementation and use policy is under the department of Transportation, Communication and Information (DINHUBKOMINFO). The department has three divisions: transportation and traffic, communication and information, and transportation facilities and vehicles test. The department organization structure is depicted in Figure 24.



**Figure 24: Department of Transportation, Communication and Information's Structure**

The main responsibility for e-government implementation and use is under the communication and information division. The communication and information division is divided into three sections that focus on post and telecommunication, communication and information dissemination, and information systems implementation and use.

Within the department of Transportation, Communication and Information, there are two institutions, which are responsible to e-government systems implementation and use. LPSE (Electronic Procurement Services Unit) is responsible for e-government procurement system and their own website, while the division of Information and Communication is responsible for the regency's other e-government systems and technology infrastructure such as network and internet. Even though LPSE is directly responsible to the Regent, they are under coordination of the head of the department of Transportation, Communication and Information. All e-government implementation and use activities, and infrastructure are managed by this department.

#### **7.4 E-Government situation in Luwu Utara**

The implementation and use of e-government systems within this regency was formally started in 2009. However, the implementation and use of some e-government systems, such as departmental financial information system (SIADINDA) and demographic information system (SIK), had started earlier in 2006. The regency formally introduced the term e-government in their e-government system implementation and use policy in 2009 when the Regent issued local regulation No 1 year 2009 that was then followed by local regulation No 14 year 2009. The first regulation instructed departments, particularly the department of Transportation, Communication and Information, to prepare for the adoption and implementation of technology within the regency. This included the preparation of infrastructure, hardware, human resources and finances. Meanwhile regulation No 14 year 2009 regulates the implementation and use of the regency e-government systems.

The regency has implemented a number of e-government systems since 2006 (see Table 31). The systems were transferred by central government, obtained from another regency, or developed by staff IT team.

**Table 31: Key e-government systems in Luwu Utara**

No	Information systems	Year	Notes
1.	SIMDA (the regency offices information system )	2006	It was built in collaboration with the Ministry of State Internal Affair. The system is an intranet system that allows employees to share inter-department administration data.
2.	SIAK (Demographic information system for population data management)	2007	The system was transferred by the Ministry of Internal State Affair (DEPDAGRI) to the regency Department of Civilization and Civil Services (DISDUKCAPIL) based on central government regulation no. 23 year 2006.
3.	Departmental Information System (SIADENDA)	2008	It is mandated by central government regulation No. 58 year 2005 and strengthened by The Ministry of Internal State Affairs No. 55 year 2008, and No. 21 year 2011. The system was transferred and maintained by the Ministry of Internal State Affairs.
4.	E-Government procurement system (SPSE)	2009	First version of e-government procurement system was obtained from Surabaya city in 2009 to combat corruption and collusion within the regency. In 2010 the system was migrated to central government e-government procurement systems (SPSE). The system is used to tender the regency's goods and services, with value about 100 billion Rupiah (US \$.10,000,000), as required regulations.
5.	Websites	2009	The regency's formal website, which also provide links to other regency websites such as LPSE. It was established for government information disclosure, information, and to implement and use the e-government procurement system.
6.	E-ID (E-KTP) is the national version of electronic identification, which also developed based on SIAK system	2011	Central government issued President Regulation No. 26 year 2009 to mandate local government implementation and use of E-ID. The regency started implementation and use of the system in early 2011. Currently the system has been implemented and is used in all districts. The system is connected to the regency's central offices and the Ministry of Internal State Affairs in Jakarta.

Information systems which were implemented and used prior to the issue of those regulations were not under responsibility of the local department of Transportation, Communication and Information, the main department responsible for e-government implementation and use. For example, SIADINDA and SIAK information systems were implemented as a result of direct transfer from The Ministry of Interior Affairs in Jakarta. Both SIADINDA and SIAK were utilized within the regency office. SIAK was implemented based on regulation UU No. 23 year 2006 and President Decree No. 26 year 2009 concerning the implementation of single registration ID number (NIK) policy, while SIADINDA was implemented based on Central government regulation No. 58 year 2005 and The Ministry of Interior Affairs No. 55 year 2008.

The regency regulation No. 14 year 2009 gave authority to the local department of Transportation, Communication and Information to coordinate and prepare the infrastructure and implementation and use of e-government system within the regency offices. Since 2009, all e-government systems have been managed by the department in coordination with relevant regency departments and Ministries in Jakarta. The policy to formalize e-government systems' implementation and use in 2009, was mostly driven by the policy to combat collusion, corruption and improve transparency. The regency put more effort on the implementation and use of e-government procurement system at the beginning. However, at a later period, all e-government systems implementation and use sustainability became part of the regency's policy to achieve broader, management-efficiency goals.

Luwu Utara regency received the Indonesian Government Award (IGA) in 2011 as the most successful regency in the implementation and use of e-government systems to improve transparency in government procurement. Since then, Luwu Utara has become a model of a transparent and accountable local government in government procurement in Indonesia. Most of regencies in eastern Indonesia, particularly in Sulawesi Island, have visited the regency to learn about the systems implementation and use. Even though, since 2010, the central government, through its National Agency for Procurement (LKPP), has provided support for all regencies Indonesia to

implement and use of e-government procurement system, many regencies preferred to learn directly from Luwu Utara regency.

In the following sections, the roles of social systems in the sustainability of e-government implementation and use within Luwu Utara regency are presented. The analyses are presented in four sub-social systems sections:

1. Institutional arrangements to legitimate, regulate, and standardize the local e-government;
2. Resources endowment of technological knowledge, financing mechanism, and human competence to support the e-government sustainability;
3. Governmental activities in development and functioning of e-government, and resource channels;
4. Stakeholders demand creation through change of norms and culture, stakeholders' education, and e-government assimilation.

Each sub-social systems role is presented based on their roles in the interaction to sustain the e-government implementation and use. All analyses are informed by institutionalism perspectives.

## **7.5 Institutional arrangements**

This section presents analyses of the role of institutional arrangements in the sustainable use of e-government within Luwu Utara regency. As discussed in Chapter 3, institutional arrangements are defined as administrative rules, norms, laws and conventions that society uses to legitimize, regulate and coordinate the actions and expectations of the individual, which make them predictable (Powell & DiMaggio, 1991; Van de Ven et al. 1999; Van de Ven & Garud, 1993). An organizations behaviour, practices and pattern of interactions within technological field are often governed and shaped by institutional arrangement (Garud, Sanjay, & Arun, 2002). These institutional arrangements include regulatory instruments (Hargrave & Van de Ven, 2006; Van de Ven, 1993; Van de Ven & Garud, 1989), legitimacy (Aldrich & Fiol, 1994; Dacin et al. 1998) and standards (David & Shurmer, 1996; Hargrave & Ven, 2006; Van de Ven et al. 1999).

However, in this study context, social conflict, caused by rampant corruption and collusion within the regency institutions, has also become another arrangement that forced the regency to sustain their e-government use. The social conflict is considered as sources of pressures from the organization's environment that causes organizations to implement certain policies (Delmas & Toffel, 2004). In this study, the social pressure is the regency environment that causes sustainable use of e-government systems for cost reduction and improves efficiency. The roles of those four sub-components of institutional arrangements are discussed, based on insight gained during data analyses as follows.

### **7.5.1 Legitimacy**

Van de Ven et al. (1999) suggest that organizations develop innovation to gain customers legitimacy. The legitimacy is important to legitimate practices and actions taken by organizations for their survival (Selznick, 1996; Sudabby & Greenwood, 2005). In this context the sustainable use of e-government, the customers can be defined as citizens or businesses that demand services provision through the e-government technology. Citizens and businesses may demand better services than they experience from private sectors.

However, the analyses also suggest that central government was also a source of legitimacy for a local government. The local government put hard effort into responding to the central government's expectations regarding the sustainable use of e-government. As a result, this study argues that legitimacy to sustain e-government use within local government comes from central government and customers (citizens & businesses). The discussion is presented in the following sub sections

#### *7.5.1.1 Central government legitimacy*

The literature (e.g.: Beynon-Davies & Martin, 2004; Mofleh, Wanous, & Strachan, 2009) indicates that central government, as a public policy regime, plays roles in public policies' implementation across government institutions. This study also found that the Indonesian central government has become a source of legitimacy for Luwu Utara regency in sustaining their e-government use. The central government has legitimated the sustainable use of e-government since the early emergence of e-government within the regency institutions. Analyses indicated that early initiative of

information technology (IT) use within the regency was directly and indirectly driven by the central government authorities.

Central government, through its relevant ministry departments, demanded and was also actively involved in the sustainable use of e-government to improve the regency's management and administration. Central government, from 2006 onwards, transferred a number of e-government systems to realize their demands. For example, demographic information system (SIAK), financial information system (SIDENDA) and the electronic identification card system (E-ID) were transferred by the Ministry of Interior Affairs, while a new version the e-government procurement system (SPSE) was transferred by the Agency for Government Goods and Services Procurement Policy (LKPP) in Jakarta. A participant from department of Civilization and Civil Services acknowledged as follows:

*E-Identification (E-ID) is the central government policy and we have to support the implementation and use. Now we have successfully implemented the system in eleven district offices and all the hardware was provided by central government and are located in the district offices. We are here as coordinators who monitor the implementation and use within the districts (L.9)*

The Ministry of Interior Affairs stipulated that all regencies and cities must complete their E-ID implementation by the end 2012 (Depdagri, 2011a). Luwu Utara regency started the implementation of E-ID in early 2011. Before the implementation of E-ID, Luwu Utara had already implemented SIAK, which was also transferred by the Ministry. However, SIAK was only used to manage population administration data within the regency office server and assigned a single identification number (NIK) to each family (Depdagri, 2011b).

Meanwhile, the central government body behind e-government procurement system (SPSE) use is LKPP. The LKPP is a non-department institution that is directly responsible to the Indonesian President based on Presidential Regulation No. 106 Year 2007. LKPP has authority to establish regulations, norms, standardization and procedures regarding e-government procurement implementation and use across government institutions in Indonesia (LKPP, 2012). The LKPP also has authority to monitor and evaluate the implementation and use of e-government procurement and



to give sanctions when a government institution does not comply with their regulation, standardization and procedures. A participant said:

*They (LKPP) monitor the process of e-procurement implementation and use within this local government. If there is something wrong with the system they will handle it. All project auctions process is linked to Jakarta and they know what projects we are tendering and how much budget for each project. All process details are recorded in the system. The committee (ULP) cannot do what they want to do as previously ..... their (LKPP) roles also include disputes resolution particularly when companies may argue about the validity of the system utilization in auctions (L1)*

Luwu Utara LPSE website is connected and integrated with to LKPP website in Jakarta, which enables the LKPP to monitor the local government goods and services auction activities. The LKPP is also involved in the system maintenance as said by the following participant.

*When we knew that the SPSE system provided by LKPP is a free system and it is much better because of some new features, we migrated our previous Surabaya procurement systems to the LKPP's SPSE system. In addition, the LKPP system is connected to the central system in Jakarta. The LKPP can easily support us in technical maintenance if something went wrong. Our previous system from Surabaya requires us to contact and invite them if we need maintenance (L2)*

Central government's roles in the sustainable use of e-government systems were followed up with continuous support provision. All mandatory systems must be implemented and used in line with central government policy. Failure to adopt the policy could result in sanctions. For example, The Ministry of Interior Affairs may reject the regency annual budget report if they did not comply with the financial information system report mechanism.

#### *7.5.1.2 Business and citizens legitimacy*

The roles of businesses and citizens' legitimacy in the sustainable use of e-government within Luwu Utara regency was reflected in their demanding efficient and transparent services. These demands shaped the local government actors decision to interact with their clients through various e-government uses. For example, the

construction of the regency official website was targeted to meet with citizens' demands for transparency in licencing procedures, as said by the following participant:

*Citizens often ask about the procedures on how to obtain a licence, such as a building licence, via telephone to us. We forward their call to a relevant department, but they did not get good response, or they do not clearly understand the information. Then they call again and ask similar questions and they are still not satisfied. The citizens, then, complain that the government did not provide good services. We, then, constructed an official website that provides information to citizens, including procedures on how to obtain a licence and other information...there are many other citizen demands that should be put on the website such as local small firms want their businesses to be promoted on the website (L5)*

Local businesses demanding transparency in the regency's goods and services auctions was an example of businesses' roles in the e-government procurement system use. Each regency department had a budget that was spent on variety of local government projects every year. The realization of those projects required the involvement of local contractors. The main authority for budget expenditure was the head of department who formed an auction committee to tender for their projects. However, the projects auction committee often failed to reveal the auction process transparently. This caused dissatisfaction among some firms, as indicated by the following participant:

*In the past there were many companies unsatisfied with the auction process and then they sent huge of complaints and protests to the auction committee because the process was not transparent. Even some of them came directly to the office and try to attack government staff. This caused the committee was under high psychological pressures in performing their jobs. Then we think, we have to find a solution for this problem...after the implementation and use of the e-government procurement system, the auction committee receive very few complaints from the companies and we can work more easily (L3)*

Another participant provides more description on businesses' roles in the regency's use of e-government procurement system as follow:

*Previously, contractors often came here with their bodyguards and threatened project leaders and department leaders to get a project. The project leaders could not make objective and transparency decisions in the auction. These pressures had caused inefficiency in project's implementation because the companies that won a project sometimes were not competent. Then the Regent ordered the head of department of Transportation, Communication and Information to find an auction system to solve the problem. (L2)*

Despite the following participant's argument that he was not worried with private companies' pressures, the statement seems show otherwise, as shown in the following comment:

*Some of managers and companies resisted the system because they prefer traditional system in government goods and services auction process. They may have got benefits from the way they did business; some of the higher leaders tried to intervene in the auction process. However, I am the head of this department and responsible for budget spending, I'm not worried anymore with the intervention from the top positions, the pressures from the thuggery (business men). Some of them said that implementing and using the systems is a wasting budget policy (L1)*

The use of e-government systems has become the regency's policy to be transparent, to combat corruption and to gain their citizens trust. A participant indicated the regency's client roles through the regency transparency demand as follows:

*Combating corruption is not enough by only arresting corruptors; we need to use systems that are able to prevent government employees doing something that violates the rules. Other than that, our citizens' trust in this government is now is at lowest point. Through our e-government systems, this government is trying to regain our image, which is almost lost. (L1)*

The systems mentioned by the participant above are the e-government procurement systems that used to auction the regency goods and services online, the regency official website to promote the licences obtaining procedures, and the LPSE website that is used for the regency goods and services auctions.

Citizens also use the regency's official website to access information and procedures, and for posting enquiries on the chat room. The LPSE website is actively accessed by both citizens and firms to find out about the regency's goods and services auctions. Both citizens and firms often provide feedback for the systems improvement. Meanwhile, another system, such as E-ID, has also been utilized by citizens to obtain new identification documents.

### **7.5.2 Regulation**

Regulation is a source of institutional arrangement that forces the regency to sustain the use of e-government systems. Most of the e-government systems are regulation based mandatory. Even though none of participants addressed Presidential Decree No. 3 Year 2003 as the basis of their e-government systems use within the regency, a number of information systems have been implemented based on regulation mandatory. These information systems include SIAK, based on the Ministry of State Internal Affairs No. 28 Year 2005, SIADINDA, based on Law No. 58 year 2005, The Ministry of State Affairs No. 55 year 2008, and The Ministry of State Affairs No. 21 year 2011, and E-ID, based on Law No. 26 year 2009 and No. 32 year 2010.

These e-government systems have been implemented and used within the local government departments, for example SIAK and SIADINDA were implemented in 2007, while E-ID was implemented in early 2011. Regarding the regulation roles in the regency implementation and use of e-government systems, a participant said:

*Most of information systems which we implemented and used were imposed by regulations such as President Decrees, Ministries regulation, and local regulation. As a result, the systems are implemented in each department according their jobs' responsibilities to improve their daily administration and serve their stakeholders. They also manage and maintain the system by themselves with coordination and cooperation with relevant departments in Jakarta (L.2)*

Another participant gave his comment regarding the emergence of regency website caused by regulation as follows:

*According to central government regulation No. 29 year 2000, government project auctions could only be published in print mass media. However, since central*

*government enacted regulation No. 54 year 2010, all government projects auctions must also be published on local government websites. To comply with the regulation we built our official website in 2009 and then the LPSE website in 2010 (L.1)*

The local government policy to publish information and documents on their website was also influenced by regulation on public information disclosure No.14 Year 2008. For example, when the local department of Transportation, Communication and Information constructed the local government official website, it was intended to disclose government information to its citizens. The department realized that the regulation requires all local government institutions to reveal, provide information publicly, and follow ethical issues as addressed in the regulation. A participant said:

*We want all institutions here to publish information according to the regulation on public information disclosure. We want the information providers to abide by the regulation, we want staff who manage the system to abide by the regulations, we also want the citizens who sent information to the system to abide by the regulation. We do not want that they misuse the information (L5)*

The regulation not only requires the local government institutions to publish their information to citizens, but also to regulate ethical issues regarding information publication. Citizens are also required to comply with ethics mentioned in the regulation when they demand information from government.

A strong regulation that mandates the local government institutions to implement and use the e-government procurement system is the President Decree No. 54 year 2010. The regulation forces all government institutions, including local government, to completely implement and use e-government procurement system by 2012. Even though a local government has autonomy, based on central government regulation No. 32 Year 2004, they cannot reject the policy. Luwu Utara's e-government procurement systems' operation has also been strengthened by this regulation (President Decree No. 54 year 2010). For example, as the e-government procurement system is mandated by the regulation, the regency leaders and companies could not resist the system as stated by the following participant.

*I told them that e-procurement is a mandatory system that should be implemented by all local government by 2012. I do this based on President Decree No. 54 year 2010. I said it like that to all of them (L1).*

Similarly, Electronic Identification (E-ID) was also implemented and used as a result of a mandatory regulation. All local governments must implement and use the system by the end 2012. However, Luwu Utara regency had started implement and use of the system since early 2011 to comply with the regulation as stated by the following participant:

*This is a compulsory system which is mandated by the regulation. Of course there some other local governments have yet to implement and use the system because they are not able to do so at the moment, but by the end of 2012 all local governments have to implement it. We (Luwu Utara) were able to implement E-ID system in early 2011. We told them we were ready to implement and use the system and we proved to them that we can do it. All districts have operated the system (L9).*

The presence of President Decree No. 54 Year 2010 has also caused the regency to establish an independent auction work unit (ULP) and electronic auction work unit (LPSE). Both work units have different functions and responsibilities. The ULP is responsible for auction processes from the announcement of a government project until the final decision regarding which company is assigned a project; while LPSE is responsible for the provision of technological support when the ULP auctions a project through the online mechanism, as mandated by the regulation. A participant said:

*The online auction system could not be established in every department within the regency because President Decree No. 54 year 2010 clearly states that in implementing and using e-government procurement system, this regency must establish an online auction work unit. Therefore, we establish LPSE and we implement the e-procurement system in this unit. All online tendering processes are centralized in this unit. The LPSE is responsible for providing the system, while the ULP is responsible for whole system used for the online auction process such as announcement, administration, management, decision making (L8).*

The regulation has also become a source of justification for online auction process because some companies do not accept and understand the implementation and use of the e-government procurement system. Some companies often make reports to the police that the regency has tendered their projects with a different system (not with the manual system). As a result, the police become involved in the dispute between companies and the auction committee. A participant said:

*The companies often argue with us that using electronic system to tender a project is illegal because they did not understand the new regulation. Then, they (companies) report us to the police that we made a mistake because we tender our project through electronic system, and then the police get involved and use their own rules in managing the dispute. Then, the police question us what's basis of law for that (online auction)? What's the legal basis that underlies your electronic tender? So we show them the regulation that allows us to use online auction system. (L1).*

The regulation that required Luwu Utara to use e-government systems caused the local government leader to issue a local regulation to support their e-government systems implementation and use, as stipulated by central regulation. The regency leader issued local regulation No. 1 Year 2009 to instruct the local department of Transportation, Communication and Information to formally prepare for the implementation and use of e-government systems infrastructure, such as IT team and a formal website. The regency leader also specifically issued local regulation No. 7 year 2008 and No 14 year 2009 to regulate the implementation of demographic information system and e-government procurement system.

### **7.5.3 Standards**

There are a number of standards have been enacted by central government institutions and Luwu Utara regency to standardize the use of e-government. The standards relate to broader and specific e-government development strategy such as the standard for government electronic document management system. National standards were followed by the regency to sustain e-government use within their institutions. However, the regency also developed their local standards for internal regency institutions use. Some standards that have played roles in the sustainable use of e-government in Luwu Utara regency are presented in Table 32:

**Table 32: Standards to support e-government sustainability**

<b>Name of Standard</b>	<b>Purposes</b>	<b>Produced by institutions</b>
National Standard for e-Government development	To standardize e-government development across local government	President
Guidelines on government services and goods procurement	To standardize government goods and services procurement within local government	President
Standard for government portals development	To standardize local government portal and websites development	The Ministry of Communication and Information
Guidelines on management electronic document system	To standardize government electronic document management	The Ministry of Communication and Information
Guidelines for government information system network development	To standardize network development within local government	The Ministry of Communication and Information
Guidelines information system development for municipality/regency	To standardize e-government systems development	The Ministry of Communication and Information
Standardization for go-id domain for central and local government institutions	To standardize local government website names	The Ministry of Communication and Information
Guidelines LAN network security in government institutions	To standardize the development and use of local area network within local government	The Ministry of Communication and Information
Guidelines for implementation web-based government services and goods electronic procurement	To standardize web based services provision for local government goods and services tendering	Agency for Government Goods and Services Procurement Policy (LKPP)
Government goods and services tendering document standard	To standardize tendering document submission for local government tendering	Agency for Government Goods and Services Procurement Policy (LKPP)
Guidelines for Demographic Information System (SIAK) use within Luwu Utara regency	To standardize the use of demographic information system within Luwu Utara regency	The Regent of Luwu Utara
Guidelines for e-government infrastructures maintenance and use within Luwu Utara regency	To standardize the use and maintenance e-government infrastructures across Luwu Utara regency institutions	The Regent of Luwu Utara Regency



A standard procedure document has been provided to help the IT team, employees, and auction committee perform their interaction on the right track. The standard operating procedures (SOP), for example, explains step by step how the IT team and auction committee members should perform their jobs, and coping with certain situations during auction process as stated by participants as follows:

*We have got a Regent's Decree. We also have a SOP (standard operating procedures) regarding how to manage e-procurement system and the online auction process. The SOP explains how a firm bids for a government project, procedures, the ethics, and how to put a bid... How to manage the e-procurement system and online auction processes which starts from announcement, through registration, document submission, selection process, and final decision that decides which company gets a project. The SOP also describes what should we do if the system does not work at the time of auction, such as electricity power off or internet disconnection. Everything is described in the SOP (L3).*

The SOP mentioned by the participant is supported by the local regulation No 14 year 2009. The SOP clearly describes how actors should play roles in all the regency's e-government implementation and use systems. The regulation also provides guidance for the auction committee to manage the auction process. The details of the online auction process are described in the standard operating procedures document produced by the regency department of Transportation, Communication and Information.

#### **7.5.4 Social pressures**

Luwu Utara regency's social pressure caused by rampant corruption and collusion was an organization environment factor that put pressure to sustain the e-government systems use. The social pressure found in this study also includes lack of transparency in the regency projects management and auction. The corruption and collusion involved the regency employees, leaders and families, politicians' family members and non-government organizations (NGO). The social pressure caused the regency leaders to sustain use of e-government to rectify the situation.

The level of corruption and collusion rate during 2007 to 2009 was higher because the regency projects were tendered through a manual system. Some of government

staff at higher and lower levels, employees, politician's family members and company's owners were convicted. A participant at management level revealed:

*There were some department leaders who had problems with the law. There were also approximately three members of the auction committee who had been arrested due to the mal-practice in auctions. They were reported by the firms to the police officers or the court that there were deviations in this government, relating to tender processes, because it was carried out manually (L1).*

The participant gave further explanation regarding how the collusion caused a chaotic situation in the auction process as follows:

*You can imagine, with the manual system, it can be set up. For example, a firm had been chosen to win a project, but the firm didn't meet the documented requirements. Another firm, that had money and relationship with department leaders and parliament members, may have also approached a project leader to disqualify other firms. But that firm did not have qualifications to win a project contract. But the firm prepared fake documents and fake signatures, and so on. Then other firms or businessmen who know about it make reports (L1)*

The auction process, previously carried out manually, had provided opportunities for government employees, politicians' families and companies to collude in the auction process due to lack of transparency. A politician usually secretly supported a company to get a government project, but the company may not be qualified. This led to high cost of the regency projects because projects' cost can also be marked up to give benefits for companies, employees, and politicians.

Some NGOs occasionally tried to monitor the regency's transparency; but at same time they often approach certain government leaders and employees demanding money in return to not blow-up the collusion and corruption practiced by employees, companies and politicians. This resulted in bad relationships between companies, government employees, NGOs and politicians. As a result, the police made investigations within the project auction team and some department leaders that led to prosecution. A participant describes the situation as follows:

*There was a lot of conspiracy between companies, heads of departments and project leaders in project auctions. Some of them have been jailed. Then, the Regent ordered the head of Department Transportation, Communication and Information to implement and use an electronic auction system to overcome the conspiracy and physical contact between companies... NGOs monitor the situation and shouted loudly until police investigated the matters; but some of them also used the situation to get financial benefits (L2)*

Physical contact indicated by above participant is related to physical clash between company leaders with other company leaders. This situation is common in this new regency with low education and law awareness among communities. This caused the high pressure on the regency leaders to change the situation through the use of technology, as said by the following participant:

*We have to change this situation; we have to implement an e-government procurement system. We do not want contractors always blaming the project committee only for trivial problem in administrative procedures. They (companies) often blame and threaten us just for simple things such as if we used wrong stamps. They became an anarchist or they report us to the police. The police came to questioned us, which led auction delaying. This impacted the implementation of a project within our regency (L3)*

Data shows there were 2 government project leaders from the local Department Public Infrastructure and 3 company directors who were arrested due to corruption in two government projects in 2008 (Makassau, 2011). Corruption not only involved government leaders and employees at the regency central office, but also government employees at district level such as head of districts. During that era, collusion between private companies and government leaders was common; mostly carried out by the regency leaders and politicians' families who had companies. For example, one of the family members of the regency leader was arrested due to his involvement in the regency's dormitory renovation, which cost the regency 1.2 billion Rupiah loss (approximately US\$120,000).

A number of companies' staff not only threatened government employees, but also tried to attack government employees with weapons, such as axes. The violence

occurred not only relating to sensitive issues, such as those mentioned above, but sometimes caused by trivial problems in administrative process such as mismanagement of auction documents. The following participant described his experiences as follows:

*In the past we had to meet face-to-face with the contractors from the beginning until the end of auction process. When they meet us, they were very demanding; they want us to put them in a high priority and tried to bargain with us. That put us under pressure... sometimes they got into our room to bully and threaten us to get a project. Another problem is that between the companies they knew each other and they tried to arrange auctions to win a project. It was very hard to work in those conditions (L6)*

The impact of the social uncertainty surrounding the regency has caused the regency to put high effort to sustain all e-government systems. The sustainable uses of e-government systems are able to reduce the social conflict within the regency environment.

## **7.6 Resource endowments**

Van de Ven & Garud (1993) mention three critical resources that support the development of technological innovation; advances in basic scientific or technological knowledge, financing mechanism, and a pool of competent human resources. Basic scientific is technological research activities to build the foundation of knowledge that support the emergence of innovation (Van de Ven et al. 1999). This study analyses indicated that the basic scientific was not carried out within local government context, but it was carried out by central government institutions. The regency focused on practical technology knowledge and skills development, financial mechanisms and a pool of competent human resources. The three resource endowments were collaboratively endowed through coordination and cooperation with central government institutions, other local governments, private sectors and between the regency's internal institutions. The analyses are presented in the following sub-sections.

### **7.6.1 Technology Knowledge and skills development**

Luwu Utara IT team and employees' practical technology knowledge and skills were developed through engagement in training programs provided by central government institutions, the regency training centre and engagement with other local governments. Transferring knowledgeable and skilful workers from private sectors to the regency IT staff and other employees was also a strategy to develop technology knowledge and skills.

Collective cooperation with a variety of actors was an important strategy used by the regency to reduce their IT staff and employees, technology knowledge and skills gap. The local government's ability and the willingness to cooperate with external agents, such as central government and other local government institutions, has significantly helped the local government to cope with their technology and skills development. For example, when the regency faced high pressures to implement and use of online procurement system, the regency leaders closely cooperated with Surabaya municipality and the Agency for Government Goods and Services Procurement Policy (LKPP).

Engagement with other local government was shown when Luwu Utara leaders and employees formed relationships with other regencies and municipalities. It started when Luwu Utara departmental leaders interacted with leaders from other regencies during early stages of e-government systems implementation and use. A participant said:

*My friends told me that e-government is for good governance, IT based citizens, IT for health, telemedicine/e-health, IT for education, e-commerce for citizens economic empowerment, e-democracy, IT for poverty reduction, etc. Those all are IT products for government bureaucracy reform purposes in respond to public service modernization agenda and provide better public services. Then, in late 2008 we started looking around to understand the situation and in early 2009 we built our website ( L2).*

Another participant mentioned the regency leaders' relationship with the Surabaya city when they started the implementation and use of e-government procurement system as follows:

*I got information from my friends that Surabaya city had implemented and used an online auction system, and then I discussed that with the head of Department of Transportation, Communication and Information and the Regent. After that we went to Surabaya to learn about the system. We learned a lot from them. Only a few local governments in Sulawesi have used the system, but in South Sulawesi province, Luwu Utara is the first local government that has implemented and uses the system (L2).*

Surabaya city had implemented and used e-government procurement system since 2004, but the system was not fully automated in which the bidding can be put online. Some auction processes were still carried out manually such as printed document submission and project explanation. However, this engagement process had improved Luwu Utara leaders and employees' knowledge and skills to sustain their future e-government procurement and other e-government systems.

Prior to the adoption, the regency leader made a memorandum of understanding (MOU) with Surabaya city. The MOU covered providing system and human resources training to Luwu Utara regency. At initial stage, some employees from department of Transportation, Communication and Information were sent to Surabaya to engage in training programs regarding system operation, implementation and maintenance. At a later stage, the employees were sent to get training of trainers (TOT) training to help the regency to transfer the knowledge and skills to other local employees.

Engagement with Surabaya municipality was caused by its success in e-government implementation and use. This inspired the regency actors to learn about this success as stated by the following participant:

*I and other employees learned how to implement and use e-government systems in Surabaya. At that time we were also accompanied by the auction committee and some of parliament members, and the Vice-Regent. Surabaya is very well known for its IT implementation and use success since 2004.... they have very good websites and e-licensing systems, but e-government procurement system is the best (L3)*

At the beginning, employees were trained in two steps. First training was given to provide technological skills, such as how to implement and operate the e-government

procurement system, and manage online auction process. At the second step, the employees were given training of trainers (TOT) to able them to train other Luwu Utara regency employees and other stakeholders. A participant said:

*In late 2008, this government was committed to implement and use of the e-government procurement system. We were sent to Surabaya to get skills on how to operate and manage the system. After that we got training of trainers (TOT) three times. By the end of training sessions we brought our server and they installed the system. Then we practiced auction process through a simulation activity in Surabaya. We repeated the simulation a couple of times to make sure we knew how to implement the system successfully, which finally we launched at the beginning of January 2009 (L3).*

Simulation is an activity which was held to practice the online auction by using the system to provide practical knowledge and skills for Luwu Utara employees. It shows what situations might arise when the system is used for real. By the end of training and simulation process, the Surabaya e-government procurement system was implemented and used in Luwu Utara.

The effect of engagement with Surabaya city in knowledge and skill development process still remains even though Luwu Utara no longer uses the system. The knowledge and skills helped the Luwu Utara IT team and other employees in the future sustainability of e-government systems implementation and use as indicated by the following participant:

*We are no longer using the system from Surabaya. However, we learned very much from the Surabaya, such as how to use the all e-government systems and how to manage our online auction (L1).*

Currently, Luwu Utara is using the e-government procurement system provided by LKPP Jakarta. Similarly, Surabaya municipality has also migrated to the system provided by LKPP because it is provided freely and maintained by LKPP. This reduced the regency budget for maintenance. In addition, the LKPP system also created uniformity in online auction systems across local government in Indonesia.

The influence of the engagement with other regencies on Luwu Utara e-government systems sustainability was also reflected when the IT team imitated other regencies' best websites. This mimetic process caused the IT team to improve their knowledge and skills to improve their websites based on those interactions as said by the following participant:

*We learn from other regency's better websites how to improve our website. We realize that we have weaknesses. We have got 40 employees with IT backgrounds but our skill is still limited. By looking at other best regency's websites we get new knowledge to regularly improve and update our website (L5)*

When Luwu Utara regency migrated to the e-government procurement system provided by LKPP, the regency also made interaction with Makassar municipality as the closest local government neighbourhood. Makassar municipality is the capital city of South Sulawesi Province. Luwu Utara was the first regency in South Sulawesi that implemented and used an e-government procurement system; but the new system from the LKPP's was firstly transferred to the Makassar municipality from where the Luwu Utara regency learnt the system. A participant described his engagement with Makassar municipality and a university in developing his knowledge and skills as follows:

*After we switched to new SPSE system, we took a course again in University of Makassar and then LKPP also gave us training when they held a training session in Makassar city for two days. When we came back, then we gave training to our friends and the auction committee members... In the training we also involved the companies' employees. We expect that after the training all companies know how to use the system to bid a government project online (L8)*

Engagement with central government institution to develop their IT knowledge and skill is describe by the following participant:

*Last month, LKPP team came here to give us advanced training. There were 10 regencies should have been involved in the three days training but only three regencies came; Luwu Timur, Toraja Utara, and Luwu. Each of the regency sent 10 employees. We became the assistant of the training because we had got more*



*experience from earlier. After the training, the regencies implemented and used their e-government systems, in particular the e-government procurement system. Luwu Timur, for example, invited us to help implement their e-government procurement system and Luwu regency also got more training from us (L2)*

A regency can learn the e-government procurement system from the closest regency that has implemented the system as recommended by LKPP. In this case, there is a responsibility for a regency that has implemented and used e-government procurement system to support the transference of technological knowledge and skills to other regencies, as stated by the following participant:

*They (Luwu Timur regency and Palopo city) joined with our online auction system because they haven't got their own system. We were appointed by LKPP office to train them like we did last year in Makassar. A local government that wants to implement the e-government procurement system is encouraged by Jakarta to learn from closest neighbour (L.7)*

Luwu Timur regency and Palopo city were planning to implement the e-government procurement system, but currently they have to start promote their goods and services online and auction through a proprietary online system. As a result, they have to engage with Luwu Utara to use their official website to promote goods and services auctions and also to use the e-government procurement system. At the same time, Luwu Utara uses this interaction to transfer knowledge and skills relating e-government procurement and other e-government systems.

The impact of training engagement provided by LKPP was an improvement in the regency's IT staff and other employees' knowledge and skills in dealing with the online auction process in both the auction unit services (ULP) and the electronic auction service unit (SPSE). The ULP staff were able to gain knowledge and skills regarding how to practice professional and transparent auction to reduce pressure from companies and internal regency office regarding collusion and corruption.

The regency also hired outsourced workers to help LPSE staff implement and manage the e-procurement system. All the outsourced workers were knowledgeable and had better skills in IT. The availability of outsourced workers was temporary;

their main responsible was to interact with the government employees to transfer IT knowledge and skills.

*The outsourced workers are also accompanied by government employees to absorb their knowledge and skill, so when the outsourced workers finished the contract, government employees are ready to fully support our technology independently (L1)*

Some of the outsourced workers were also knowledgeable in the legal assistance and administration process. They helped the regency staff to deal with regulation and auction management issues; companies often questioned the LPSE and ULP staff regarding the regulation validity and documents requirement during an online project auction process.

### **7.6.2 Financial mechanism**

Luwu Utara is rich in natural resources, such as nickel, cocoa plantation, forestry, and farming, but the regency has yet to make enough revenue from the resources. The regency is new regency which was separated from its main regency Luwu Raya (Great Luwu). As result, most of the regency's annual budget was transferred by central government.

The e-government implementation and sustainable use was mainly supported by the regency's annual budget transferred from central government. The regency leader regularly committed to allocate budget to support the e-government implementation and sustainable use within the regency. Some budget that has been spent for e-government projects since 2005 is depicted in Table 33.

**Table 33: E-Government related projects cost (Rupiah)**

No	Projects	Year	Cost	Financial sources
1.	Building computers lab	2005	128 million	Annual budget
2.	Building VSAT antenna	2005	123 million	Annual budget
3.	Building 3 transmission towers	2006	175 million	Annual budget
4.	Rent Bandwidth	2006	90 million	Annual budget
5.	Building 7 transmission towers in districts	2007	650 million	Annual budget
6.	Providing hotspot	2007	128 million	Annual budget
7.	Rent bandwidth	2007	180 million	Annual budget
8.	Building E-Government Secretariat	2008	995 million	Annual budget
9.	Building VSAT antenna	2008	227 million	Annual budget
10.	Rent Bandwidth	2008	552 million	Annual budget
11.	Rent Bandwidth	2009	770 million	Annual budget
12.	Internet Cafes	2007	-	Central government and UNDP

Source: Luwu Utara (2012b) (1 million Rupiah is approximately US \$100)

A participant described the budget allocation as follows:

*When we built internet transmission towers across districts, one tower in this regency office and another one in the local parliament house, we spent a lot of our budget. But we have committed that all infrastructures to support our IT must be completed. Then we allocate our budget regularly to keep it all running. Those all are like a toll road that support the flow information, data, pictures and the use of e-government applications. Now we can also communicate with districts through VOIP (L.1)*

Regular budget allocation for the sustainable use of e-government was supported by the local parliament. Political leaders and politicians engagement was not only intended to smooth the budget allocation, but also to counter criticisms from those who resisted the e-government implementation and use.

*At the beginning we implemented the systems, many people did not agree. They said it was wasting money and it was not legal... but when approached DPRD (local parliament) they supported us. We were able to justify our policy and then we*

*allocated annual budget regularly. We use the budget to pay our outsourced workers, Internet bandwidth, maintenance, and incentives to our IT staff (L.1)*

The engagement between local leaders and political institutions was harmonized; the relationships and interactions between local department leaders and other internal regency actors were also easy to harmonize because the leader has cleared the political barriers. The IT team and the Department of Transportation, Communication and Information have smoothly implemented and used IT. Even actors who previously resisted the system finally accepted and used it. For example, a participant explained situation regarding the e-government procurement system as follows:

*Now we have got the LPSE unit and ULP unit. All government projects above 100 million Rupiah are auctioned online and everybody follows it. ... Companies don't dare to try to approach head of departments, or to persuade, or try to offer something that may make government employees...to be their target. They have to be careful and not do bad things. This government is very serious with combating corruption. We're really consistent and we try to close the gaps that enable them to make collusion with employees.....even if it will cost more budget to improve the system so they cannot do bad things again (L1)*

However, cooperation with other institutions was also carried out to support the regency e-government systems. The cooperation was aimed to reduce budget expenditure. For example, the Agency for Government Goods and Services Procurement Policy (LKPP) provided an e-procurement system when Luwu Utara migrated to new e-procurement system. The new e-procurement system was supported with on-going maintenance to ensure its sustainable operation, as stated by the following participant:

*Last year we migrated to new system provided by LKPP. It is a free system and they supported us with the implementation and maintenance, so we do not have to spend our budget. If something went wrong we just contact them (L.3)*

A leader from the regency's department of Civilization and Civic Services described their financial contribution to the sustainability of E-ID implementation and use policy as follows:

*We are responsible for the whole operational cost for the E-ID system operation and use. We provide them incentives and lunches because they work hard in districts offices serving rural people. Sometime they have to work late. We think the incentives make IT staff able to work based on a target every day (L9).*

In conclusion, the financial mechanism for the sustainable use of e-government within Luwu Utara regency was mostly built on the regency's annual budget. The cost to support the sustainability of e-government was regularly allocated, with strong collaboration with local parliament, to eliminate political barriers in budget allocation. However, some cooperation with other actors, such as central government, and cooperation between the regency departments was also carried out. This was intended to reduce the cost expenditures such as maintenance and incentives payments.

### **7.6.3 Competence human resources**

Competent human resources have been recruited to support the e-government systems implementation and sustainable use. The human resources were university graduates and outsource workers from private companies. The skilful outsource workers were temporary recruited to support the regency permanent employees in certain e-government implementation and use area. A participant said:

*We also have outsource workers to help us in implementing and operating the systems, but this department recruited employees, 80% of them or about 40 employees, with bachelor degrees in computing. The employees are working together with outsource workers to support our online auction (L3)*

Outsourced workers whose contracts are renewed every 3 months have played significant roles in supporting the e-government systems, particularly the procurement systems. They assisted the regency employees in daily operation of the systems by transferring knowledge and skills to the employees.

Regarding competence of outsources workers, a participant said:

*There two types LPSE staff: outsourced workers and civil servants. I use outsourced workers because they know how to maintain the system if some something goes wrong. They are also expert in network and data entry ..... There is a variety of outsourced works such as document verification, system maintenance, and network. We hired them to perform some jobs together with government employees. Their contracts are renewed every three months (L1).*

Document verification is an importance task that has to be carried out in an auction process. These skills require legal and another special knowledge from the government employees because some companies tried to fake documents to get involved in auction process. Companies also often complained about other companies, or the regency decision's regarding document legality and policy. As the result the regency hired several outsource workers to improve government skills in dealing with issues.

The Online Procurement Services Unit's (LPSE) responsibility is for e-government procurement systems implementation, maintenance, management and evaluation; while the Procurement Service Unit (ULP) unit concentrated on the use of the system and management of the online auction process. LPSE staffs have technical IT knowledge and skills to manage the system, while ULP staffs have knowledge and skills regarding how to use the system for online auctions. A participant described ULP unit staff competency as follows:

*The men in ULP are a collection from all the committees of all SKPD's (departments) to which the tasks have been distributed. The men in ULP are recruited from SKPD employees who have been accredited in goods and services procurement. The men who have the certification are then assigned in ULP. The ULP consists of four divisions; construction procurement, civil construction, goods procurement and services procurement. If we have a project to be tendered, we will assign the job to the relevant division (L1)*

To fully support the e-government procurement implementation and sustainable use, the regency assigned accredited employees in the auction unit (ULP). Before they were assigned into ULP unit, the employees were trained by LKPP in Jakarta to get

accreditation for auctions. However, only the best trained employees were assigned to ULP unit after they passed a selection test held the regency human resources.

*People who work in ULP unit are the staffs who have passed exam in the online auction course and they have been granted accredited certificate in government goods and service auction. Their skills are different with the staff in LPSE unit because their skill is related to the use of system for auction only and the procedure to carry out the auctions....we were trained and then tested, after we passed the test we still need follow the selection process. If we were selected then we become a ULP committee member (L6)*

Sustaining the regency official website is a challenging issue, in particular relating to regular information updates as demanding by stakeholders, because of the lack of human skills to gather information across regency. However, IT staffs solve this problem through cooperation with local journalists who operate across the regency's remotes areas. A participant stated as follows:

*We do not have enough human skills to gather all the information within regency. To overcome the problem, we cooperate with local media such as Palopo Post to get the latest news. The journalist often follows government activities within all areas and then they send us news. We upload the information to our websites after we discussed with the boss, information processors, and staff who are responsible for response to citizens' enquiries. (L5)*

Competent human resources were also obtained through senior-junior knowledge-and-skills-transfer and inter-departmental employees transfer. These strategies were able to maintain competence human resources in a department. A participant said:

*We improved our skills to maintain and use all systems continuously, during that time we also trained other employees. When those employees have better skills they train other new employees. This is like a regeneration process to maintain our skills. You know sometimes employees are transferred to other departments, so this is a good strategy to avoid skill loss in our department. But at the same time when they move to other department they may train employees in those departments (L6)*

Even though the IT team was not divided into specific IT divisions, the IT team members have been assigned IT tasks based on their specific competency. All tasks were continuously and clearly performed by the competent staff. Outsourced IT staff were also located in the specialized areas to support government IT staff. All tasks were also clearly communicated to all employees and outsourced staff through the job descriptions that are displayed in the IT room. A participant mentioned the competence of IT staff as follows:

*They know what to do in this office. Outsourced workers and government employees have different, specific jobs. Each job position has been filed by skilled IT staff such as systems maintenance, website manager, another on network of administration, and hardware maintenance as well. We also made a clear contract with outsourcing staff who have been assigned diverse job positions based on the contract. (L2)*

Within the LPSE unit, tasks were also clearly assigned to all competent staff to ensure the e-government procurement system was operated and used by the ULP unit continuously. A participant described their competency as follows:

*We work in this LPSE unit based on different specific tasks. Some of us maintain the systems, another will serve the ULP unit staff enquiries, and another concentrates on the website to respond companies' enquiries. These tasks are described in our job descriptions and we have to be very careful in performing our tasks. If something went wrong with the system, we know what to do (L3)*

In conclusion, competent human resources were obtained through recruitment, training, cooperation with other institution, such as local media and outsource staff, and inter-departmental transfer. Competent IT staff with variety IT knowledge and skills supported the sustainable use of e-government. They performed tasks based on their specific competency, such as hardware and systems maintenance, to ensure all e-government system and infrastructures were continuously operated.

#### *Summary for resources endowments*

As argued by Van de Ven & Garud (1993) that the three critical resources that support the development of technological innovation: advances in basic science and research, technological knowledge and skills; financing mechanism; and a pool of



competent human resources. Analyses of this case study suggest that the local government does not practice basic science and research to support the sustainable use of e-government. This might be caused by the responsibility for practice of basic science and research activities are on central government institutions. In this study context, basic science and research activities for technology sustainability are carried out by the Agency for the Assessment and Application of Technology (BPPT).

The results of basic science and research were transferred to local government through cooperation. Local government was only involved in technology knowledge and skills development through the cooperation with central government institutions, other local government, private sectors and collaboration between the regency internal institutions.

Financial mechanism to support the sustainable use of e-government Luwu Utara regency relied on regular annual budget allocation. This was strongly supported by local parliament. Indirect financial benefits were also gained from cooperation with other institutions. For example, cooperation with central government institutions to reduce maintenance cost as it was covered by the central government institutions. Meanwhile, competent human resources were obtained from university graduates, the local training centre, and distributing IT staff to all local departments and district offices. The competent human resources building processes are similar as argued by Van de Ven et al. (1999) and Van de Ven (1993) who suggest to obtain competent human resources through professional recruitment and training them with the required innovation skills, and diffusing the professional skill across organizations.

Luwu Utara regency also developed competent human resources through a culture of senior-to-junior employee IT knowledge and skills transfer. Senior employees were encouraged to teach junior employees before they embark on new position. This approach is able to sustain IT skills when a senior employees are transferred into positions in other departments. Frequent employees transfer is common within public sectors due to political issues.

## **7.7 Governmental activities**

In the original model developed by Van de Ven (1999), it argues that the focus of proprietary activities are on the action of firms in transforming basic knowledge into infrastructure proprietary activities such as technology development, resources channels, manufacturing, marketing, distribution and services (Van de Ven et al. 1999; Van de Ven, 1993; Van de Ven, 2005; Van de Ven & Garud, 1989). However, literature suggests that proprietary activities mostly belong to private firms “*which is one that a private entity can perform, and is not uniquely for the benefit of the general public*” (Richards, 2009). As a result, government organizations are mostly involved in governmental activities, which do not involve monetary charge, rather than proprietary activities (Brown-Graham, 2007; Richards, 2009). Proprietary activities are concentrated on generating financial benefits from market activities.

This study focuses on three governmental activities relating to the sustainable use of e-government within Luwu Utara regency. The governmental activities are concentrated on e-government development, providing e-government services and building resources channels. These governmental activities were carried out collectively with internal and external actors through variety coordination and cooperation mechanisms. The following sections present the analyses of these governmental activities.

### **7.7.1 E-government development**

One sub-component of proprietary activities in the social system model (Van de Ven et al. 1990) is product development. This study argues that an e-government system is also a technology product within public sectors. Literature (e.g.: Heeks & Bailur, 2007; Yildiz, 2007) suggest that e-government is a technology product within public organizations that is utilized for management reform and stakeholders services. Therefore, an e-government system is a technology product that should be developed through the transforming knowledge and skills into governmental activities. For example, government official makes collaborative learning and knowledge sharing to find best practice for developing e-government in their work places (Ke & Wei, 2004). As a result, this sub section discusses e-government systems development activities.

Luwu Utara regency's activities to develop their e-government systems were started in 2006, when they cooperated with central government institutions. Early activities were focused on development infrastructures to support the operational of local area network and central government transferred systems, such as demographic information system and financial information system. A participant said:

*We started our network development in 2006 when we built an internet network in two districts. The networks support our ability to deliver data and implement information systems applications between two districts and this central regency office. Then in 2007 we built another network in five districts in which we then developed VOIP communication with citizens in remote villages. (J.2)*

The intensity of e-government development was increased in late 2008 when the regency experienced more pressures from citizens and businesses to improve transparency. E-government development activities were broadening to human resources recruitment and development, systems and infrastructures development and maintenance. A report from the regency's head of the department of Transportation, Communication and Information (2011) revealed that main development of e-government was focused on political support for building, infrastructures and human resources.

Political support was obtained through cooperation with the local parliament to get continuous budget allocation and to avoid the resistance from some institutions. Cooperation with parliament institutions also resulted in an agreement to recruit more IT staff to support the sustainable use of e-government, in particular e-government procurement at that time. E-government use policy was smoothly supported by the local parliament for which more budget was allocated in the future. The budget was used to build a computer laboratory for employees and stakeholders training.

The Luwu Utara Department of Transportation, Communication and Information budget report in 2012 (Luwu-Utara, 2012c) showed that e-government development was involved in four aspects: information dissemination, IT staff development, information system and network development. Information dissemination was focused on improving the regency main website and online procurement service unit

(LPSE) website. IT staff development was carried out through training programs within the regency and in cooperation with central government institutions such as The Ministry of Interior Affairs. Meanwhile, information system and network development was focused on maintaining current systems and network. Regarding human resource development a participant said:

*We need to improve our IT staff skills regularly through a number of training programs. We expect the training to develop employees' ability to use information technology in their daily tasks to support our good governance. For example, the last time people from The Ministry of Interior Affairs came here was to train employees to operate E-ID system. This improved employees' skills in districts to manage ID application and citizens' data (L.9)*

Meanwhile, systems' maintenance was regularly carried out through cooperation with central government institutions. For example, IT staffs within the LPSE unit coordinate frequently with LKPP in Jakarta to maintain the network and e-government procurement system operation and use. A participant said:

*We often coordinate with LKPP and the head of the Department of Transportation, Communication and Information who is also in charge here. In a coordination meeting we usually discuss problems such as network problems. If it occurs, we coordinate with the head of LKPP by notifying them that an auction must be cancelled because of technical errors or something else (L2)*

Another participant said:

*We often coordinate with other team to discuss the problems we encounter when we use the system on how to prepare our project's auction. Sometimes there are complaints from companies that go to the system and we discussed it and how to address it. We also discuss about regulations regarding a project specification (L8)*

However, Luwu Utara regency lacks a long-term development strategy for their e-government. The regency did not have a Blue Print and grand planning strategy that guides them to develop future e-government use. The regency e-government development strategies followed central government development policy.

### 7.7.2 Provide e-government services

Van de Ven (1999) argues that a firm's business function is related to provide innovation products and commercialize it to wider community. Government organizations are also functioned to provide products and commercialize it to the public, but their activities based on public interest, such as provide education services (Evans & Karras, 1994) rather than profit generation. Government organizations are collectively owned by the political public (Boyne, 2002) and their business functions are utilized by citizens without involving commercialization of goods and services for profit, as argued by Osburn (2009).

Providing service through e-government system is a key governmental activity in serving stakeholders in the regency. These e-government services are provided by relevant Luwu Utara regency departments to serve their stakeholders. At the moment of data collection, Luwu Utara regency has implemented and used about 6 e-government systems to serve their stakeholders. (see Table 34)

**Table 34: Key e-government services in Luwu Utara**

No	E-government systems	Service provided
1.	SIMDA (regency office information system management)	SIMDA is a system that is used for internal government institutions data sharing. For example, local departments can use the system to submit annual report and exchange documents between departments.
2.	SIAK (demographic information system)	The system is used to manage population administration and data.
3.	SIADINDA (Departmental Information System)	The system is used by regency departments to manage their finances such as expenditure and reporting.
4.	E-ID (Electronic identification)	E-ID is a system used to serve citizens in obtaining an electronic identification.
5.	e-procurement system	The system is used for the regency goods and service online auctions.
6.	Websites	The website is use to provide information to stakeholders and promotes the regency online auction projects

All systems were used to provide service to both internal and external stakeholders. For example, SIMDA and departmental financial information system were used to

support departments' tasks performance. A participant described service provided by SIMDA system as follows:

*SIMDA server is located in the department of local government & revenue but the network covers all departments. The system is an intranet system, not a web-based system. Only government employees can log in to the system. Each department can put reports to the system. For example, the treasurers can input financial reports into the system and other department can access it if they require. Other department can also input their budget proposals to the system (L.1)*

Meanwhile the demographic information system was used to support the regency department of Civilization and Civil Services in population data management. The departments input and manage population data electronically and then they lodge it in the online data centre in The Ministry of Interior Affairs' office. Citizens also can get a single family identification number from the system. The system improved population data management, citizens' registration services, and support of electronic citizens' data exchange between institutions.

Another e-government system, the e-procurement system, was implemented and used to provide service for private companies and procurement service unit. A company does not have to come to the regency office when they submit auction documents. The system also provides opportunities to companies outside of the regency to become involved in the regency auction. A participant said:

*Now where ever the companies are located, they can register their companies through the system to become involved in the auction process and they do not need to visit this regency physically. For example, a company in Java Island can put in a bid for a project in Luwu Utara online and vice-versa. Small companies also do not worry that they will miss a project auction because they can see all project auctions online. This we want to do all the times (L.1)*

Another participant from procurement service unit described his experience using services provided the system as follows:

*In an auction, our time is limited, but with this system, all documents are uploaded electronically into the system, it saved our time and energy to the check it. Besides,*

*we checked the documents and the bidders without have to be there during the tender. We can be everywhere. We also do not need see the bidders face to face. Previously we often confronted with the bidders during the auction particularly when some companies did not win a tender. Even sometimes the problem escalated to physical conflict between us and the companies or between companies. The most important thing is that with the new system we can access it everywhere and make decisions without interruption. (L.4)*

Since the implementation of e-government procurement system and other e-government systems, the regency has been able to reduce the collusion and corruption, and improve transparency significantly. This includes savings in the regency annual projects budget between 10 to 15 per cent, as showed in Table 35.

**Table 35: Luwu Utara LPSE transaction status (2009-2011)**

No.	Description	2009	2010	2011
1	Number of projects auctioned	235	97	226

Source: Smart Report LPSE Luwu Utara, 2011 (KREDIBEL, 2012)

The table only present projects auctioned through the e-government procurement system only. Projects which were manually auctioned are not presented. Savings presented in the Table 35 mean the difference of a project price between the regency allocated prices minus a vendor bidding price.

The regency official website is used to serve citizens and businesses in obtaining information and documents. Citizens can ask certain information through a forum on the website and download documents. For example, when the regency announced a public servants recruitment result, citizens can download the document from the website. The regency projects auction was also transparently announced on the website. A participant said:

*Our job is to respond citizens' enquiries on the website. Citizens often ask this and that, and then we answer it. We also put news and documents on the websites so they can download it. Now we also promote project auction on the website. (L.5)*

In conclusion, Luwu Utara regency has provided services through number e-government systems. The services provided tangible benefits for both their internal

and external stakeholders. As the stakeholders experienced benefits, they tended to engage in using the systems continuously.

### **7.7.3 Resource channels**

Literature (e.g.: Van de Ven et al. 1999; Van de Ven, 2005) suggest that a single organization seldom has enough resources to develop and commercialize an innovation alone. Van de Ven (1976, p. 24) argues that “*resources and expertise are contained within autonomous organizations and vested interest groups*”. This requires organizations to build a coalition to access the spreading resources. This coalition could be built base on political coalition among the organizations that have similar collective interest (Van de Ven et al. 1999). Alternatively, organizations can also build wider affiliation within a local and national context to access the resources (McCarthy & Wolfsan, 1996). In most cases, organizations are both independent actors and involved members of a larger community. Heeks & Stanforth (2007) suggest those independent actors should build a set of relations to generate resources at where the innovation takes place.

The sustainable use of e-government within the Luwu Utara regency was supported by the availability of resources from various channels. The regency obtained financial, infrastructure and human resources through cooperation with central government institutions, other local government, private companies, and donators.

Central government institutions supported Luwu Utara regency with human resources skills and infrastructures (e.g. systems and hardware) to sustain their e-government use. The central government institutions include the Ministry of State Interior, the Ministry of National Education, and the Agency for Government Goods and Services Procurement Policy (LKPP). For example, the construction of the regency Education Department’s information system and website were supported by the Ministry of National Education. The Ministry also granted computers to schools in villages areas. A participant described this resource channel as follows:

*We (Education department) have our own website that integrates our education information systems. All schools information can be accessed through the website. The website and system were built in cooperation with the Ministry of National Education. The Ministry also uses the website to publish their policy to this regency.*



*At that time everything was prepared by the Ministry including computers that have been distributed to all schools. The schools can use the facilities to send data into the system (L7)*

Another participant described resources obtained from the Ministry of Interior Affairs as follows:

*The system and hardware were transferred by the DEPDAGRI (Department of Internal State Affairs) in Jakarta. We are responsible for operational cost only, such as employees' incentive payment because they have to work overtime (L.9)*

Meanwhile, the Ministry of Communication and Information supported the regency with five ICT vans that were operated across the regency villages. The vans were equipped with ICT facilities to help villages' citizens access the e-government services and information. A participant said:

*We have 5 internet minibuses from the Ministry of Communication and Information. Each minibus is equipped with six laptop computers, a table and desks, a server, wireless connection, modem, a LCD projector, a LCD TV 32 inch, a DVD player, a loud speaker, UPS, a generator, and a multi-function printer. Citizen can access internet from the laptop or they can connect to the wireless by using their own laptop (L.2)*

A resource channel was also built through engagement with other local government. Prior to the implementation and use of e-government systems, the regency leader made a memorandum of understanding (MOU) with the Surabaya city, which had successfully implemented and use of e-government systems earlier. The MOU was intended to make a close relationship between both local governments regarding human resources development and technical assistance. A participant said:

*I told him (the Regent) that we can find e-government systems in Surabaya which has success since 2002. The Regent, some of DPR (local legislative) members and I, then went to Surabaya and made a MOU (memorandum of understanding) with Surabaya city. After the Regent signed the MOU with Surabaya city, they gave us the system to be used in our local government (L1).*

When the regency started to implement e-government systems, they had to establish a good internet connection to support the network within the regency office. This required the regency leaders to engage with a telecommunication company to get better services and bigger bandwidth allocation from the company. This was to ensure the regency office would be able to operate a stable internet connection to support all e-government systems use, such as e-government procurement and E-ID data entry within districts. A participant said:

*We had to work hand-in-hand with an internet provider able to supply us with a high-capacity internet connection, and has a good reputation, such as the company has obtained ISO [standard]. For this reason we cooperated with CV. Lintas Arta (a telecommunication company) to provide access through VISAT (an internet gateway). We got a special frequency that allows us to access the internet faster. If the quality is not as they said, we have freedom to cancel their service (L3)*

Internet in Luwu Utara regency is mostly available in the regency capital city Masamba, while outside then capital city internet is rare. Therefore the regency cooperated with the private company to obtain internet access and built free hot spots in the regency central office and districts offices. Free internet hot spots are intended to support citizens' access to information and e-government systems.

Sustaining the regency's e-government systems use at village levels was intended to reduce citizens' information illiteracy and empower the citizens' economy. This was realized through the regency cooperation with central government institutions and a donor (UNDP = United Nations Development Project) that provided funding for Eastern Indonesia development. A participant said:

*We synergized with PMD (unit for villages development from the Ministry of State Internal Affairs in Jakarta) in building a centre for information technology services in some villages. We called the centre WARINTEK (internet café) to empower citizens, in particular cocoa farmers. The WARINTEK is supported by BAPPENAS (Bureau for National Development) and UNDP (United Nations Development Project). The WARINTEK operators were trained to operate it. (L1)*

The internet cafés are available in some villages that are considered the most digitally divided and with a high level of farmers' activities. Students in villages' areas also used the internet café to access information.

In conclusion, Luwu Utara regency has successfully obtained resources from various channels such as systems, financial, skills, software, and hardware as well as maintenance. For example, the implementation and use of E-ID was fully supported by DEPDAGRI and its vendors. All software, hardware and skills were provided by DEPDAGRI. Luwu Utara regency is only responsible for coordinating local actors during implementation and use. Meanwhile, e-government procurement implementation and use was supported by LKPP, which they provide as a free system and give training to the regency employees.

#### *Summary for governmental activities*

Governmental activities to sustain the e-government use in Luwu Utara regency involved development of e-government systems, provision of e-government services to stakeholders and building resource channels. E-government development activities include development, implementation and maintenance. Meanwhile, the regency services were provided through a number of e-government systems transferred by central government. The e-government services improve the local government efficiency and provide benefits for citizens (Axelsson, Melin, & Lindgren, 2013). For example, citizens can apply for a licence online or businesses can bid government projects through e-government procurement system.

Resources to support the e-government development and e-government services were obtained through cooperation with a variety of channels. The regency cooperated with central government institutions, other local government organizations, private sectors, such as donors. The regency strategy to collaborate with other institutions to access the resources is relevant; as suggested by Van de Ven et al. (1999) and Van de Ven (2005) that organizations should collaborate to obtain resources because a single organization seldom has enough resources to develop and commercialize an innovation alone.

## **7.8 Market Mechanism for E-Government**

Market for a new innovation development is not naturally formed but it should be developed, customers should be educated, and demand should also be created (Van de Ven et al. 1999). The market demands come from responsible consumers that have been informed and educated about a new innovation. Similarly, market for e-government product services should be created. For example, citizens should be informed regarding the presence of e-government services (Ke & Wei, 2004). Van de Ven et al. (1999) suggest there three components involve in the market mechanism; cultural norms, market creation and demand, and competition.

However, this study focuses on public sector market mechanisms. It is considered that public sectors lack market mechanism, which provides choices for individuals in consumption of goods and services (Rainey, Backoff, & Levine, 1976). In addition, public sector organizations also are not controlled by market forces, but by political forces (Boyne, 2002) that requires them to coordinate and cooperate rather than to compete. As a result, this study considers “competition” is not a reason for market emergence in e-government innovation, but market may emerge as a result of government cooperation to promote and educate their stakeholders as suggested by Van de Ven (1999).

The analyses of market mechanism for e-government service products within Jembrana regency focuses two mechanisms; changing cultural norms, and market creation and demand. Market creation and demand is discussed into two different components as indicated by Van de Ven et al. (1999); informed and educated customers. Customers or stakeholders in this study context are informed through dissemination of e-government service products. The stakeholders are educated through a variety technology and skill improvement. The discussions follow.

### **7.8.1 Cultural norms**

Changing cultural norms of stakeholders, in particular employees, is a key factor in supporting the sustainability of e-government use within Luwu Utara regency. The regency started with changing their institutions and employees work culture toward using e-government systems in daily tasks. This was carried out through engagement

between department leaders to adjust employees work habits with the emergence of new technology. For example, a participant said:

*When we started using the technology in this regency, we started to change employees' work culture. We wanted that they work in accordance with the technology, and that required them to be more disciplined. For example, when we implemented the e-procurement system, all employees in the electronic auction service unit (LPSE) and the procurement service unit (ULP) had to work on time. Otherwise we would be complained about by companies and citizens. Similarly, information on the websites must be updated regularly. (L.1)*

A participant described his experience regarding work culture change as follows:

*My experience is interesting in that we have become more disciplined in performing our tasks. I have to be strict with the time. For example, if an *aanwijzing*<sup>4</sup> (a project tendering explanation activity) should be carried out today, I must do it today. I cannot delay it because companies and citizens have seen it on the website. Similarly, I have to do other tasks like that too. Now I am more comfortable with this new work culture (L.6)*

At the moment of the field visit, the number of regency public servants was about 5000 including teachers, but only 25% of them are technology literate. However, this number has been increased since the use of e-government was formally started in 2009. In the following years, the regency put hard effort to change their employees' perspectives toward the technology. The expectation was the number of employees who have IT knowledge and skills, utilize the technology will be improved by the end of 2013, when most e-government systems become, or will be become fully mandatory to use. For example, E-ID must be used completely by the end 2012, while the e-government procurement will be not exception to use by the early 2014. A participant expressed the expectation of technological culture change as follows:

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<sup>4</sup> *Aanwijzing* is a Dutch term that is commonly used in project tendering process in Indonesia. It is a stage where all companies (bidders) are invited to listen to government project leaders' explanation regarding projects specifications.

*We have tried to provide government employees, who use technology in their daily tasks performance in this office, with technological culture perspectives. Currently 25% of our employees are technology literate, but by the end 2013 we expect 75 % of employees to have become technology literate and work with technology. Most of technology illiterate employees are old employees, but through the implementation and use of e-government systems in their offices, their perspectives have been changed. We expect they at least encourage their staffs to use technology in work place. (L.1)*

The building of internet cafes (WARINTEK) in village areas was also intended to change citizen mindset towards the use of technology in their life. Previously some citizens, according to a participant, viewed internet as a forbidden technology due to religious issues. However, since the presence of WARINTEK in village areas their beliefs have been changed. Most citizens have utilized internet in their daily lives. For example, citizens and businesses have used internet to monitor cocoa price at international level and access the regency website. A participant said:

*Today we can see that many citizens are technology literate. They know what computers and internet are. A few years ago they had never see those things. Citizens go to the internet cafes to read the news and check the agricultural prices, such as cocoa. Young people use internet on their mobile phones. Internet is no longer a new thing in village areas (L.2)*

Similarly, private companies that were familiar with conventional style of doing business with government were forced to adapt with the e-government procurement system use. Companies were forced reduce direct engagement with government employees to reduce collusion among them. A participant said:

*Companies' directors came here to put a project proposal. Some of them even entered the Boss' room and made negotiations. Now we changed the situation; we use the technology. They can no longer make face-to-face interaction with us. They must put their bids online. Neither the auction committee nor the leaders meet with companies' staff in this office. If a company could not put a bid, we will help them. We have a room that can be used by companies to put in their bids and access*

*internet and there are staff who assist them. We also build a number of hot spots in districts, so they can access internet (L.4)*

In conclusion, norms and culture toward the use of e-government within Luwu Utara regency have changed. Government employees have adapted with a new work culture to adjust with the technology use. Meanwhile, citizens and businesses perspectives toward the use of technology in their lives were changed through technology provision in villages' areas.

### **7.8.2 E-government Market Creation and Demand**

Market for a new innovation product should be created through informing and educating customers such as through promotion and training (Van de Ven et al. 1999). Customers' education is required because the introduction of an IT within an organization mostly requires the acquisition of new skills by the stakeholders. Markus & Tannis (2000) even suggest to provide continuous end-users skills development after initial training of an information system adoption. This stakeholders' education can improve their competency and shape their preference to utilize the innovation continuously.

Meanwhile, new innovation promotion can increase the awareness of the customers or stakeholders. The promotion can be carried out through variety strategies. For example, the UK government launched a media campaign to spread awareness of e-government services and to encourage citizens to connect to their local council websites (Carter & Weerakkody, 2008). Government can also bring the technology closer to stakeholders. For example, e-government services can be provided through a Tele-centre at rural areas level to stimulate demand (Naik, Joshi, & Basavaraj, 2012).

The analyses of e-government market creation and demand is focused on two main issues: stakeholders' education to create competent users and e-government assimilation to inform and increase awareness of the market. The analyses follow.

#### *7.8.2.1 Stakeholders' education*

Stakeholders' education is an important process in creating demand to utilize e-government in Luwu Utara regency. The stakeholders' education was not only to

improve stakeholders' skills to use technology, but also to change their behaviour to accept the technology. This was aimed to improve the number of stakeholders using the e-government. Stakeholders' education was focused on the employees, businesses, citizens and local politicians.

At the beginning of e-government implementation and use, Luwu Utara regency started educating their central office employees through engagements with central government institutions. Later the regency also engaged with other local government institutions to educate their stakeholders. Initial interaction with central government was focused on campaigns on technology benefits and providing skills to the employees. A participant said:

*The E-ID is the Ministry of Interior Affairs project in cooperation with local department of the Civilization and Civil Services. The employees within the local department and districts offices were trained by the Ministry office. They came here and told us and districts employees the benefits of the systems (L.5)*

Another participant added as follows:

*Most of human resources who involved in this E-ID project are from district levels because this system is operated there and citizens apply ID from there too. That is why we think that educating them is very important to keep them using the system responsibly. The staff from Jakarta and us trained them to use the system. We expect all districts use the system and then they also educate citizens how to apply the ID (L.9)*

The regency stakeholders (employees and politicians) education was also improved through engagement with other local governments. For example, politicians and employees visited Surabaya municipality to learn e-procurement implementation and use. This was intended to provide understanding toward technology implementation for public management and services within the regency. The expected results were that the stakeholders would accept and support the policy.

In supporting the stakeholders' education activities, Luwu Utara provided a computer room to educate their stakeholders. The computer room was regularly used by employees and private companies' staff. Most the regency employees and



companies' staffs were technology illiterate, the department of Transportation, Communication and Information and LPSE utilized the facility to educate them. Companies' staff are provided with technological skills to encourage them to use an e-government system service, as said by the following participant:

*We also provide training for companies' staff, other government staff, members of government goods and services committee and citizens who needs IT skills. They can use the skill when they want to use e-government systems, such as submit online applications and bid on an online government project. If they (companies) do not have their own computers and internet connection, they can come to the room that has been provided (L3)*

The regency has five internet minibuses which were operated in remote villages areas to support public services such as E-ID and licences application. The mobile internet was transferred by The Ministry of Communication and Information in Jakarta. However, the internet minibuses were also used to reduce citizens' technology illiteracy and provide access to information, as stated by the following participant:

*The aim of this mobile internet is to introduce computer and internet to citizens, and disseminate information and knowledge. We also provide guidance through videos such how to apply a permit and other services. (L2)*

The department of Transportation, Communication and Information's leader and IT staff inform stakeholders about the system by providing assistance on how to use it. The IT staff are ready to assist stakeholders any time they need help when they encounter difficulties in accessing the systems as said by the following participant:

*We have told all citizens and companies (by use of the website and brochures) that if they have problems and need help, we're ready to handle it and help them. They can contact us anytime. Our friends have agreed that whenever there is a phone call from citizens or companies, we have to come here to solve the problem. Even if there is heavy rain, we have to come here because this is public service. We have to serve the community ( L4)*

In conclusion, stakeholders' education was carried out to increase skills and awareness of e-government implementation and use within the regency. Stakeholders' education activities involve different actors from central government institutions, local government leaders, local businesses, politician, and citizens.

#### *7.8.3.2 e-Government assimilation*

Assimilation of e-government into all stakeholders and institutional levels was a Luwu Utara regency effort to inform and increase awareness. These activities were carried out through collaboration support between actors within the regency, central government, other local government and donators. At the beginning, the assimilation was targeted within the regency central office stakeholders and politician members to obtain political support. A participant said:

*We discussed with parliament members from the Economic Commission that we have to implement technology to solve our problems and if would they support us; and then they approved the local regulation concerning the e-government implementation and use. Some of them even went to Surabaya with us to do a comparative study (L1)*

Another participant described the collaboration among regency leaders, local parliament members, and IT staff in the assimilation when all of them went to another local government to understand the e-government implementation and use saying:

*At that time all of us; the Vice Regent, the head of Transportation, Communication and Information, the IT team, and some parliament members (DPRD) went to Surabaya municipality to look at their e-government implementation and use (L.3)*

The local leader and IT team's efforts to take parliament members to another local government were aimed to strengthen the assimilation, with the expectation they would accept the policy.

Ensuring all e-government systems were accepted and used within the regency, the IT team promoted the implementation and use of e-government systems to all actors, such as government employees, private companies and citizens in rural areas. The

assimilation of the systems was carried out through the regency official website and LPSE website, and brochures.

For example, the assimilation of e-government procurement system was carried out by the IT team through brochures and users were invited to the regency computer lab to see the simulation process. A participant said:

*We promoted (socialize) the system to all auction committee members, employees, and companies regarding how to use the system and we gave them manual brochures..... We also called them to come here, and bring them into the Internet lab next to this office. The lab is specially provided for companies which may not have internet access outside there. (L.3)*

However, the regency also has 5 internet minibuses which are equipped with technology facilities and internet connections. They used these mobile technologies to introduce the regency e-government policy to citizens in remote areas.

*We also have 5 ICT minibuses that can be used to socialize IT to rural citizens. We show them videos about e-government services we provided and how to access them. (L.2)*

The assimilation has successfully improved stakeholders acceptance and use of e-government systems. The assimilation was carried out to increase awareness of employees, citizens, businesses, and politicians. Involvement of actors in e-government use and promotion through brochures and ICT vans were carried out at the central regency office and rural area levels.

#### *Summary for e-government market mechanism*

Market mechanism for e-government services in Luwu Utara regency involved two sub-components of social system; changing cultural norms, and market and demand creation. Cultural norms of employees and stakeholders were adapted to the new technology environment. For example, employees' work norms culture was adapted to be more disciplined and be familiarized with the use of technology in their daily work practices. Meanwhile, businesses were familiarized with less physical contact when they access e-government services, such as access to government project tendering.

Market creation and demand for e-government services was carried out through stakeholders' education and e-government assimilation activities involving the regency and central government institutions. Stakeholders' education involved providing skills for employees and stakeholders in cooperation with central government and other local government institutions. Employees within the central regency office and at districts levels were trained to obtain skill to use e-government systems such as E-ID and e-government procurement. Local businesses were educated by IT team regarding how to use the e-government procurement systems to be involved in online procurement. Meanwhile, citizens were educated through ICT vans operated in rural areas.

Promotion and publicity of e-government services in Luwu Utara regency was carried out through the assimilation process. The assimilation was intended to inform and increase awareness of employees and citizens regarding the presence of e-government services in the regency. These were done through promotion on the regency website, brochures, and the operation of ICT vans in rural areas. The promotion and publicity have not only increased the employees and stakeholders' awareness on e-government, but at the same time also increased their skill to utilize e-government services. Promotion or publicity is important in educating citizens to use e-government services. Lack of promotion and publicity can result in the failure of citizens to utilize e-government services because they do not have awareness or skills to use it. For example, lack of use of websites across China local government was caused by "the lack of promotion or publicity to educate citizens on how to use e-government services" (Tan & Xiaoai, 2013, p. 13)

## **7.9 Summary**

The original social system suggests that a number of infrastructure components play roles in the emergence and sustainable of innovation in firms community. The component includes; institutional arrangement to legitimate, regulate, and standardize the innovation; resources endowments of technology science and knowledge, financial mechanisms, and pool of competent human resources; organizations' proprietary activities to develop products, to build business functions

and resources channels; and market mechanism that includes cultural norms, market creation and demand, and competition (Van de Ven et al. 1999).

This study analyses found that not all of the social systems components from the original framework play roles in e-government implementation and sustainable use, such as competition. However, some new components and sub-components also emerge in the analyses. E-government implementation and sustainable use within Luwu Utara was achieved through the continuous roles played by the social system components. Actors collaboratively engaged in the social system components, which include institutional arrangements, resources endowment, governmental activities, and demand creation. The sustainability of the regency e-government implementation and use was supported by the institutional arrangements that legitimate, regulate, and standardize the e-government systems. However, this study also found that a social problem caused by collusion and corruption was also another institutional issue that forced the regency to sustain their e-government implementation and use. The summary of social system roles is presented in Table 36.

**Table 36: Summary of social system roles from case two, Luwu Utara**

<b>Components of Social System</b>	<b>Sub-component</b>	<b>Roles</b>
Institutional arrangements	Legitimacy	Seeking legitimacy from central government and local stakeholders
	Regulation	Regulation mandate use of e-government systems in particular central government transferred systems
	Standards	National and local standards standardize the use of e-government systems
	Social pressures	Social pressures caused by rampant corruption and collusions encourage the regency to use e-government systems to increase transparency and save cost.
Resource endowments	Technology knowledge and skills development	Technology knowledge and skills were improved through collaborative training with central government institutions, other local government organizations, and private sectors.
	Financial mechanism	Budget to sustain use of e-government was regularly allocated. The regency closely cooperated with local political institution to secure budget allocation. The regency also cooperated with central government the cost of system operations and maintenance.
	Competence human resources	Competent human resources were obtained from universities graduates, local training centre, cooperative training with central government institutions, and through learning from other local government.
Governmental activities	E-government development	e-government systems was developed through establishing a long term Blue Print design, building infrastructures, regular maintenance, improvisation of the systems, and involvement of leaders, IT staff, employees, and private companies, and input from citizens.
	Provide e-government services	The local government services were provided through a variety central government transferred systems and local developed systems to improve efficiency, transparency, and interactions with stakeholders.
	Build resource channels	Resources to support the sustainable of e-government use were obtained from cooperation with central government institutions, other local government, private sectors, and volunteer collaboration between the regency institutions.
E-government market mechanism	Cultural norms	Cultural norms of employees and stakeholders were changed through adapting work practices with the new technology.
	e-government market and demand creation	Market and demand for e-government services product was created through stakeholders' education and e-government services assimilation across regency.

Resources to sustain the e-government implementation and use were endowed collectively by various actors such as central government institutions, local government, private companies, and political institutions. Governmental activities were also collaboratively carried out to develop and maintain e-government systems, provided e-government services, and built resource channels across institutions. Meanwhile, stakeholders' demand was created through changing norms and culture, educate the stakeholders, and assimilate e-government systems to all actors collectively.

## **CHAPTER 8: Cross-Case Analysis**

### **8.1 Introduction**

In Chapters 6 and 7, each case was considered as a single unit of analysis and the results from within each case. This chapter presents cross-case analyses of the two cases from the aspects of their similarities and differences. The analyses of the differences and similarities of the both cases were supported with facts that underlie the phenomena to provide a deeper insight. The cross-case analyses include the regencies' social economic and e-government situations, and the social system roles in the sustainable use of e-government within both cases.

The analyses of social economic demography and e-government situation are discussed to provide insight regarding the differences and similarities of cases' context. The social economic demography and e-government situation have been discussed separately in a single unit of analyses in chapter 6 and 7. The cross case context is important enhancement of the understanding of the roles social system in the sustainable of e-government within both regencies.

The structure of this chapter as follows: sections 8.2 and 8.3 present social economics of both cases and current stage of e-government. Section 8.4 analyses the institutional arrangement roles and section 8.5 analyses the roles of resource endowments within the regencies. The roles of governmental activities and stakeholders' demand creation are presented in section 8.6 and 8.7 respectively. Summary of this chapter is presented in final section.

### **8.2 The cases' social economic analyses**

Jembrana regency is relatively old with high stability in its society, government and politics. On the other hands, Luwu Utara is a relatively new regency that has just started to establish its political and governmental hierarchy. Some of Luwu Utara employees and politicians were transferred from its previous parent regency (Great Luwu regency), while most other employees were recruited since 2000 during period



after separation. This social, governmental, and social immaturity seems to have affected the regency's capability in policy implementation.

Both regencies' are relatively similar in demographic characteristics with populations of about 300,000. Both regencies rely on agriculture and small industries to produce their annual revenues. Most of Jembrana regency's small industries concentrate on religious and cultural art industries to support tourism industries in Bali province; while small industries in Luwu Utara regency are focused on agriculture and forestry related industries such as cocoa and wood processing. These industries produce lower revenues and require support from the annual budget. The whole revenues from these local industries only produce about 10 % of the regencies' annual budget, while another 90 % per cent was transferred by central government.

Most of the transferred annual budget has been increasing from year to year according to annual budget planning. According to Indonesian regulation on local government No. 34 year 2004, each regency must plan their own annual budget, according their needs and policies' priorities, through the local government executive and local parliament's cooperation. The local government policies and priorities development are determined by the local executives with approval from local parliament institutions.

This section's cross case analyses provides insights on why both the regencies were not able to produce change alone. Instead they cooperate and coordinate in the social system to endow resources, as argued by Van de Ven, Polly, Garud, & Venkataraman (1999), to support the sustainable of e-government.

### **8.3 E-Government Situation**

Both regencies have sustained their e-government systems use to enhance their bureaucracy and administration performance to serve their stakeholders. Jembrana regency has used both transferred central government systems and local, voluntarily developed systems; while Luwu Utara regency has only used e-government systems transferred by central government institutions, except the regency's official website. Jembrana regency experienced e-government implementation and use earlier than Luwu Utara regency, through cooperation with central government institutions.

Jembrana regency's early adoption of e-government systems was driven by the intention to improve organizational performance through cooperation with central government institutions, while Luwu Utara regency's early adoption was driven by social pressures due to rampant of collusion and corruption.

Even though both regencies have similar characteristics in terms of government bureaucracy, population and annual budget, they seem to have gained different characteristics in the sustainability of e-government systems. Jembrana regency was not only able to sustain use of e-government systems imposed by central government institutions, but also successfully sustained their voluntarily developed e-government systems. For example, e-voting systems (e-Voting) and Jembrana identification (J-ID) are two local e-government systems that have been used continuously to improve the regency democracy and population services. E-Voting, even, has become the most successful system and central government awarded the system as the most success e-democracy system implementation and use in 2010. The regency was also twice awarded the e-government award in 2008 and 2009.

Meanwhile, Luwu Utara regency mostly concentrated on sustaining e-government systems transferred by central government or obtained from other local governments. Luwu Utara regency implemented and used e-government systems from central government such as demographic information system (SIAK), electronic identification (e-ID) and departmental financial information system (SIADINDA). However, Luwu Utara regency has very successfully used the e-government procurement system. The central government awarded Luwu Utara regency as the best innovative local government in government procurement in 2011. The regency's IT team only developed the regency's official website.

The ability of Jembrana regency to sustain all e-government systems' use, whether imposed by central government and regulation or voluntarily developed systems, seems to be caused by the core regency institution's motivation. The regency's motivation was not only to seek legitimacy from their environment, such as central government institutions, regulations and stakeholders, but also to improve their organizational performances such as organizational administration, management and services reform.

Meanwhile, Luwu Utara regency did not develop many voluntary systems, but focused on central government transferred systems, because the regency's intentions seemed to be focused on achieving legitimacy from environments such as central government, citizens and businesses, and social uncertainty. For example, the implementation and use of e-government procurement system (SPSE) was mostly imposed by the regency's organizational environment of social pressures such as collusion and corruption. The regency put in hard effort to sustain the e-government system's use to avoid more pressures from citizens and businesses. The regency did develop their official website voluntarily, but the initiative was also a part of legitimacy-seeking that related to information disclosure imposed by regulation and the need to put the regency procurement process on the website.

Jembrana also sustain other voluntary innovative e-government systems such as SMS centre, VOIP, J-ID, J-NET and E-Voting systems. The regency realized that the sustainability of e-government use is also important in increasing their organizational efficiency. The regency, for example, was able to save about 70 per cent of their communication costs after they used the VOIP system in communication with rural citizens. The regency used its economic limitation pressures, where the regency's annual revenue is less than 10%, as sources of creativity to improve their organizational performance.

Even though Luwu Utara regency is similar to Jembrana regency in terms of annual revenue, with an average of less than 10 %, Luwu Utara did not perceive this environmental situation as a reason to improve organizational performance. This might be caused by the regency's policy to sustain their e-government use of systems transferred by central government, or demanded by businesses. This caused the regency to put more effort in sustaining e-government systems that were able to help the regency achieve their legitimacy.

The insight gained from the different situations of e-government within both cases' context is that they have different institutional environmental roles in implementation and the sustainable use of local e-government. This has led to the emergence of new themes in the institutional arrangement's component in the social system, discussed in the following sections. The themes are economic limitation and social pressures of

the regencies' organizational environment. Social-economic is considered as sources of pressures from the organizational environments that cause organizations to implement certain policies (Delmas & Toffel, 2004). This includes the regencies' efforts to sustain the use of e-government.

In the following sections, cross analyses of the social systems and their roles in implementation and sustainable use of local e-government within both regencies are presented. The analyses are presented in four sub-social systems dimensions;

- the institutional arrangements;
- resources' endowments of technological knowledge and skills, financing mechanism and human competence to support the e-government sustainability;
- governmental activities in the development and functioning of e-government and building resource channels;
- e-government market mechanisms through change of norms and culture, stakeholders' education and e-government assimilation.

#### **8.4 Institutional Arrangements**

This section presents a cross case analyses of the institutional arrangements in e-government implementation and sustainable use in Jembrana and Luwu Utara regencies. As discussed in the theoretical framework in chapter 3, the institutional arrangements include regulatory instruments, such as rules or regulations (Hargrave & Ven, 2006; Van de Ven, 1993; Van de Ven & Garud, 1989), legitimacy (Aldrich & Fiol et al. 1994), and standards (David & Shurmer, 1996; Hargrave & Van de Ven, 2006; Van de Ven et al. 1999). However, in analyses of cases one and case two, social pressures and economic limitations also emerge as additional institutional arrangements that were found play roles in the social systems for the sustainable use of e-government. These two new institutional elements are considered to be a socio-economic components as a result of the cross case analyses.

In the original social system proposed by Van de Ven et al. (1999), the source of legitimacy comes from consumers, which this study defines customers as stakeholders such as citizens and businesses. These study's findings suggest that the sources of legitimacy not only come from stakeholders, but also from central

government. Central government institutions have the power and authority to legitimize the regencies' policies implementation because they are under the central government structure. As a result, this study argues that in the context local government there two sources of legitimacy: central government and local stakeholders.

Social pressure caused by rampant corruption and collusion within Luwu Utara regency is another institutional arrangement that forces the regency to sustain their e-government systems. Meanwhile, economic limitation is an institutional arrangement that caused Jembrana regency to collaboratively sustain their e-government systems for administration and management efficiency. The institutional arrangements caused both regencies collectively to take actions to sustain the e-government systems.

Legitimacy, regulations, standards and socio-economics are sub-components that played roles in institutional arrangements. Legitimacy not only comes from stakeholders, but also from central government. Each of the sub-components of the social system roles in the sustainable use of e-government, are discussed in the following sub-sections.

#### **8.4.1 Legitimacy**

Van de Ven et al.(1999) argue that legitimacy comes from customers who demand products. (The customer is understood as stakeholders in this study such as local citizens and businesses.) However, these study findings suggest that legitimacy to sustain use of e-government within the regencies not only came from local stakeholders, but also the regency, which has to seek legitimacy from central government. The two sources of legitimacy are discussed in the following sections:

##### *8.4.1.1 Citizens and Businesses Legitimacy*

Citizens and business are local stakeholders that demand e-government services from both regencies. Citizens and business demanded the regencies to provide efficient and effective services through electronic systems. For example, Jembrana citizens and businesses demand efficient services in licence application and library loans procedures, while Luwu Utara citizens and businesses demand transparency in

government procurement process. The citizens and businesses' roles are depicted in Table 37.

**Table 37: Citizens and businesses' roles**

Sub-Category	Issues	Regency	
		Jembrana	Luwu Utara
Citizens and businesses legitimacy	Demands better services	Implement and use more e-government systems including locally developed systems such as SMS centre, e-voting, and e-library	Relied on central government transferred systems
	Demands efficient systems	Implement and use more e-government systems included local developed systems such as SMS centre, e-voting, and e-library	Relied on central government transferred systems
	Demands transparency	Utilized e-government systems to limit collusion such as in online licence system application	Utilized e-government systems to limit collusion and corruption such as in online procurement system

Both regencies sustain their e-government use, to seek legitimacy from their citizens and businesses. This was caused by the similarity in stakeholders' services orientations. Both regencies prioritized their local citizens and businesses as the main stakeholders in their e-government services. This e-government services' orientation was reflected in most e-government systems implementation and use objectives. For example, Jembrana regency sustains the use of e-licencing and SMS centre to respond to citizens and businesses' demands for efficiency in licensing and communication process. Meanwhile, Luwu Utara regency sustained the use of e-government procurement due to citizens and businesses demands for transparency in the local government goods and service procurement process.

Similarly, the sustainable use of all central government transferred systems within both regencies, was also caused by local citizens and businesses demands to access

national-based services. These services include single family identification number and E-ID card provided by SIAK and E-ID systems. As a result, demands to sustain the use of those e-government systems were specifically intended to gain the local citizens and businesses legitimacy.

However, Jembrana regency not only relied on central government transferred systems in achieving their stakeholders' legitimacy. They also actively engaged with central government institutions, other local governments, businesses and the collaboration between local institutions, to develop, implement and utilize systems developed by the local IT team. On the other hand, Luwu Utara regency merely relied on central government transferred systems in response to their local stakeholders' demands; though similar efforts were carried out to sustain these e-government systems.

#### *8.4.1.2 Central government legitimacy*

Central government put pressures on both regencies to sustain e-government systems through their relevant ministries. The pressures were reflected in central government mandatory policies, which central government institutions imposed on the regencies to use certain e-government systems. This caused the regencies to engage with central government institutions in various activities to sustain use of e-government systems.

Both regencies implemented and used similar transferred e-government systems, such as demographic information systems (SIAK), the electronic identification (E-ID) system, departmental financial information system (SIADINDA) and the e-government procurement system (SPSE). These systems were imposed by the Ministry of Interior Affairs on all local governments in Indonesia. Local governments have to comply with the ministry policy to implement and use the systems because hierarchically and politically they are under the ministry control.

Other than imposing the implementation and use of e-government systems, central government institutions also provided supports to both regencies. The Ministry of Interior Affairs, for example, provided human resources training and infrastructures for E-ID implementation. The Agency for the Assessment and Application of

Technology (BPPT) and the Agency for Government Goods and Services Procurement Policy (LKPP) also provided long-term support for both regencies to sustain their intranet and e-government procurement systems. This support impacted the regencies' future ability to sustain their e-government system because they had obtained resources.

Both regencies were influenced by central government legitimacy in sustaining their e-government use because they are under a similar central government structure. The regencies are under control of Ministry of Interior Affairs, which directly responsible for implementation of central government policies at local levels. As a result, the regencies had to seek legitimacy from similar government institutions in sustaining their e-government. The regencies' engagements in seeking legitimacy from central government institutions are summarized in Table 38.

**Table 38: Central government legitimacy**

Sub-component	Issues	Regency	
		Jembrana	Luwu Utara
Central government legitimacy	Imposed systems	Central government impose implementation and use e-government systems	Central government impose implementation and use e-government systems
	Provide support	Central government provided human skills, maintenance, and infrastructure supports	Central government provided human skills, maintenance, and infrastructure supports

*Summary of legitimacy for central e-government*

This study found that legitimacy for e-government implementation and sustainable use within local government comes from two sources: customers (local citizens and businesses) and central government. Van de Ven, et al., (1999) argument that legitimacy comes from customers, may fit within an industry context where they are independently operated. However, in the context of this study, both local governments are controlled by central government and their operations are legitimized by central government. As a result, sustaining e-government is not only



intended to meet their citizens' and businesses' (customers) legitimacy but also to seek the central government's legitimacy. The central government legitimacy is important because it justifies the regencies' actions in their e-government implementation and sustainable use. For example, the regencies may obtain justification to access the resources from central government such as financial and infrastructures.

#### **8.4.2 Regulation**

Some of the e-government systems within both regencies are regulation-based implementation and use; sustaining the use of e-government by abiding with the regulations. E-government use is mainly regulated by Presidential Decree No.3 year 2003. The Presidential Decree is uniformly applied to all local government institutions in managing their e-government initiatives. Both regencies also use the Presidential Decree as a source for e-government implementation and use legality within their organizations. This includes annual budget allocation, human resources and infrastructure development.

Regulations impose both regencies to utilize e-government systems regularly in service provisions. For example, the regencies must utilize the financial information system otherwise their annual financial reports will be rejected. Similarly, demographic information systems (SIAK) and the electronic identification system (E-ID) must be utilized within local department of Civilization and Civil Services for population data management.

Both regencies were restricted and enhanced by similar regulation characteristics in sustaining their e-government systems use. This was caused by similar regulations operated in both regency contexts. The regulations also came from similar central government institution sources. For example, Presidential Decree No.3 year 2003 applied to both regencies with similar conditions. As a result, the regencies' responses toward the regulation were also similar. For example, both regencies have to allocate budget regularly to sustain the systems. Table 39 summarizes regulations' roles.

**Table 39: Regulations' roles**

Sub-component	Issues	Regency	
		Jembrana	Luwu Utara
Regulation	Budget allocation justification	Local parliament institution support annual budget allocation	Local parliament institution support for regular financial allocation to sustain e-government systems.
	Impose transparency	Publish information and local government services online through e-government systems	Publish information, services, and government project online through e-government systems
	Impose sanctions	Sanctions as instrument to impose all local institutions to utilize e-government systems regularly	Sanctions as instruments to impose all local institutions to utilize e-government systems regularly

### 8.4.3 Standards

Standards for e-government use are prevalent. The standards were established by central government institutions and the local governments. Standards are a sub-component of the social system that plays significant roles in creating “*the rules of engagement*” that covers detail form and function of actors (Garud, Sanjay, & Arun, 2002, p. 198) in sustaining e-government use within both regencies. There are a number of standards that have been enacted by central and local government. The standards relate to broader and specific e-government development, implementation and use strategies. National standards play major roles in the sustainable use of e-government because they guide the development, implementation and use of e-government. For example, how local government should develop a local network system and how web-based service should be provided. Meanwhile, local standards were enacted to support the operation of national standards within local contexts such as provide more details procedures.

National standards were followed and practiced by the regencies in using e-government within their institutions. However, the regencies also established their standards for internal institutional use. Local standards were mostly enacted to support national standards and provide detail guides according the local context. Jembrana regency established a comprehensive, long-term standard to guide the regency development, implementation, use, and maintenance of e-government. They had to establish their long term standard because the regency not only used central government transferred systems, but they also used systems developed by local IT team.

Meanwhile, Luwu Utara did not have a comprehensive, long-term standard because most of e-government systems were transferred by central government. The regency only needed to comply with the national standards. The local standards were enacted to guide the use of e-government systems within the local context. The local standards also guide the development and maintenance infrastructures that support the e-government systems use. Some of national and local standards that play roles in the sustainable use of e-government are summarized in Table 40.

**Table 40: Standard roles**

<b>Sub-component</b>	<b>Issues</b>	<b>Regency</b>	
		<b>Jembrana</b>	<b>Luwu Utara</b>
Standards	National standards	National standards standardize the development, implementation, and use of e-government systems according national requirements.	National standards standardize the development, implementation and use of e-government systems according national requirements.
	Local standards	Local standards support national standards and guide the use of local developed e-government systems within local institutions. The standards also provide long term e-government development, implementation, use, and maintenance strategies according the regency contexts.	Local standards focus on supporting national standards to strengthen the use and maintenance of e-government. The standards also guide infrastructures development and maintenance.

#### **8.4.4 Socio-economic pressures**

As discussed in each unit of analyses in Chapters 6 and 7, the themes, social pressures, and economic limitation also emerged as another institutional arrangement component that plays roles in the social systems. These two new institutional elements are considered to be a socio-economic component as a result of the cross case analyses. Social-economic is considered as sources of pressures from an organization environment (Delmas & Toffel, 2004).

Most of the regencies' annual budget was transferred by central government. Sustaining e-government systems use is a strategy to save costs in the local government operation and reduce their reliance to central government. E-government is able to improve the regency services delivery and reduce administration cost. For example, Jembrana regency obtained efficiency from VOIP system when they communicate with rural citizens, and reduced licences application service through their online system. Meanwhile, Luwu Utara regency reduced their goods and service procurement cost through their e-government procurement use.

Social pressures caused by rampant corruption and collusion were the most important reasons for Luwu Utara to sustain the use of e-government. Rampant collusion and corruption practiced by their stakeholders, such as employees, business, NGO, and local politicians, has caused distraction in the regencies' policies implementation and inefficiency in government administration and management. The impact of the social pressures was reflected in conflict between the stakeholders and citizens' degradation of trust toward the local government services.

Luwu Utara regency perceived the social environment pressures as a reason to sustain all e-government systems use. Even though more efforts were committed on sustaining e-government procurement system, other e-government policies were also influenced by this social environment. The regency tried re-gain their local stakeholders' trust through the sustainable use of all e-government systems. This was aimed at avoiding more social uncertainty in the future.

Meanwhile, economic limitation was considered as a source of environment pressures to sustain e-government use by Jembrana regency. Jembrana sustained not only central government transferred e-government systems, but also voluntary

developed systems such as SMS centre and VOIP systems. Economic limitation pressures caused Jembrana regency to become more innovative and sustainable in maintaining and operating their e-government systems. The regency believed that the economic limitation should be responded to by putting more effort on development and sustaining e-government systems. This helped the regency save more operational cost and reduced the annual budget as well as reducing their reliance on the central government budget transfers.

On the other hand, Luwu Utara did not consider low annual revenue as pressure to sustain their e-government systems because Luwu Utara regency mostly implemented and used central government transferred systems. The transferred systems sustainability was mostly supported by central government institutions. In addition, Luwu Utara was more concerned with sustaining their e-government systems for improving transparency, rather than focusing on cost reduction, because of the rampant of collusion and corruption within the regency's institutions.

Jembrana regency was not influenced by their social environment because of the stability of the regency's social environment. There was pressure to be transparent, such as in licences application process, but it was related to providing a more efficient system in licences application. Corruption and collusion were not issues in this regency. The regency focused on improving efficiency and cost reduction.

In conclusion, socio-economic has become another component of institutional arrangements for both regencies in sustaining their e-government use. Socio-economic is considered as a source of organizational environment pressures (Delmas & Toffel, 2004) that influence both regencies to sustain use of e-government systems. It is aimed to increase efficiency, transparency, and reduce cost. The socio-economic roles are summarized in Table 41.

**Table 41: Socio-economic roles**

Sub-component	Issues	Regency	
		Jembrana	Luwu Utara
Socio-economic	Economic limitation pressures	Jembrana regency economic limitation forced the regency to be efficient in administration, management, and services delivery.	Luwu Utara regency was not affected by economic limitation because they use systems transferred by central government.
	Social pressures	The regency was not affected by social pressures because corruption and collusion were not an issue. The regency also has used many e-government systems that support transparency in their institutions	Luwu Utara faces more social pressures due to rampant collusion and corruption. This caused the regency to focus on sustaining systems that improved transparency in services' delivery

Van de Ven et al. (1999) argue that institutional arrangements govern organization and its members to take collective action. The institutional arrangements included are legitimacy from stakeholders and central government, regulation and standards. However, this study's findings also suggest that social-economic environment is another arrangement that can enhance, or constrain an organization to utilize a policy. Both local governments sustained the use of e-government to increase efficiency and transparency as a result of socio-economic environment inducement. As result, this study extends the components of institutional arrangement roles to include socio-economic pressures.

### **8.5 Resource Endowments**

Resources are likely to enable organizations to outperform in their environment (Ray, Muhanna, & Barney, 2005). Van de Ven (1999) and Van de Ven & Garud (1993) mention three critical resources that support the development of technological innovation: advances in basic scientific or technological knowledge, financing mechanism and a pool of competent human resources. Van de Ven, et al. (1999)

argue that science and technology knowledge become a foundation to support technology innovation and make it available to the whole community. However, this study's findings suggest that both regencies did not involve basic science activities, such as research, to build their e-government sustainability foundation. Research activities relating to technology implementation and use in Indonesia are carried out by central government institutions, such as the Agency for the Assessment and Application of Technology (BPPT) and the Ministry of Communication and Information, which initiated the technology implementation and use in Indonesia. The Agency for the Assessment and Application of Technology (BPPT) is an Indonesian central government institution that focuses on sciences and research activities for technology development. The result of the research activities are implemented and used within government institutions including local governments.

As a result, the cross case analyses of resources endowments are focused on technology knowledge and skill development, financial mechanisms and a pool of competent human resources. These three types of resource endowments have significantly contributed to the sustainable use of e-government within Jembrana and Luwu Utara regencies. Actors from central government, within the regencies, other local governments and private sectors collaborated to develop these resources. The three resource endowments are discussed in the following sub-sections.

#### **8.5.1 Technology Knowledge and skills development**

Both local governments were mostly dealing with technology knowledge and skills development. Literature suggests that organizations develop the technology knowledge and skill through activities such as imitation of competitors (Zack, 1999), personnel transfers (Roberts & Hauptman, 1986) and building an IT training and education centre (Weill et al. 2002).

Luwu Utara regency focused on utilizing a computer laboratory for training companies' staff and employees. Luwu Utara regency seems more focused on high profile stakeholders' IT knowledge and skill improvement. The impact is that IT knowledge and skill might be only spread among high stakeholders' profiles, while grass-root stakeholders, such as citizens at village level, were not constantly in touch with the knowledge and skills, except through ICT vans operations. High-profile



stakeholders are understood as stakeholders who have higher education and economic opportunity. For example: Mavri, et al. (2008) associate high-profile customers with high education and financial credibility.

In contrast, Jembrana regency utilized their training centres to improve all levels of their stakeholders (IT staff and employees) from the central regency office to the district offices. This strategy increased the distribution of IT knowledge and skill to all levels of stakeholders, including citizens in rural areas through engagement with district office IT staffs. This technology knowledge and skills development might be more sustainable compared to Luwu Utara regency because training contributed to high distribution of IT knowledge and skills among employees across local institutions and citizens at village level.

Interactions with various actors through professional activities were an instrument for both regencies to improve their staff IT knowledge and skills. Those professional activities that the regencies IT staff and employees engaged with, included coordinative training between central government and regency institutions, regency training centres, senior to junior employees' trainings, learning from other local government and employees self-learning habits. The technology knowledge and skills development activities interactions were aimed to continuously support human skills' improvement across regency institutions' hierarchies from the regency central office to the district offices.

Jembrana has interacted with central government institutions (e.g. BPPT) in training activities to improve their IT staff and employees IT knowledge and skills, since 2004. At that time the regency started to implement and use e-government systems (e.g. virtual office system); while Luwu Utara started engagement with central government institutions (e.g. LKPP) training activities when they implemented and used their e-government procurement systems. Both regencies interacted with central government institutions and local IT team training programs because they implemented and used similar central government transferred systems, such as demographic information system (SIK), electronic identification (E-ID), and financial information system (SIADINDA).

To sustain knowledge and skills in IT job positions within local departments, both regencies' IT staff and employees used a senior-to-junior training process; where a senior staff member needed to train junior staff, so as to anticipate staff transfers across departments. This caused unexpected staff transfers within both local government institutions. Jembrana practices of the senior-to-junior skills transfer was also regulated in their work procedures. At the same time, a self-learning habits culture was encouraged within Jembrana regency IT team because of the limitation of skills obtained from formal training activities. The common knowledge and skill self-learning culture within Jembrana regency may have been caused by the regency leader's education background. Jembrana regency leader was a professor from a university, while the head of the local department of Transportation, Information, and Communication held a master degree in management. The head of department strongly encouraged the self-learning habits.

Learning from other local governments is another strategy utilized by both regencies' IT staff in improving their technological knowledge and skills. Luwu Utara, for example, obtained skills and knowledge from Surabaya and Makassar municipalities to support their e-government use. The Luwu Utara official website was regularly improved after they had learned from other regency websites. Similarly, Jembrana regency learned from Yogyakarta and Denpasar municipalities in improving their E-ID system. Learning from other local governments was practiced by both regencies because they tried to mimic best e-government practices, due to the common implementation and use of e-government across regencies in Indonesia.

The involvement of private companies in IT staff skills' improvement was practiced by Jembrana regency, while Luwu Utara employed outsourced IT workers to support their IT staff skills' improvement. Jembrana has outsourced their financial information system maintenance to local private companies and use this business relationship to improve their staff knowledge and IT skills. Luwu Utara did not outsource their financial information systems maintenance because they relied on central government support.

Both regencies' interaction in IT knowledge and skills development has improved their IT staff skills in maintenance and support for the sustainable use of e-

government. IT staff within both regencies were able to solve their e-government systems problems due to their continuous engagement in a variety of professional activities. As a result, even though they encountered new challenges in e-government use in their daily operation, they were still able to overcome it. The technological knowledge and skills development strategies are summarized in the Table 42.

**Table 42: IT knowledge and skills development strategy**

Sub component	Issues	Regency	
		Jembrana	Luwu Utara
Technological and skills development	Trainings	Trainings were carried out in cooperation with central government institutions and within the regency training centre.	Trainings were carried out in cooperation with central government institutions and other local governments (e.g. Surabaya municipality) and within the regency training centre.
	Staff distribution	IT staff were distributed across local departments and districts offices to transfer IT knowledge and skills to employees and citizens	IT staff were assigned across local departments to transfer IT knowledge and skills to employees
	Learning from other regencies	IT staff were sent to other local governments to acquire IT knowledge and skills	IT staff were sent to other local governments to acquire IT knowledge and skills
	Public and private cooperation	Private sectors transferred IT knowledge and skills	Engaged with outsource workers
	Senior to junior knowledge and skills transfer	Senior IT staff transferred IT knowledge and skills to junior staff	Senior IT staff transferred IT knowledge and skills to junior staff
	Promote self-learning habits	Leaders promoted self-learning among IT staff to improve their IT knowledge and skills	Self-learning habit was not promoted. It could be caused by relying on central government support

### **8.5.2 Financial Mechanism**

Van de Ven, et al. (1999) suggest that within organizations the building of a unique financial mechanism to support technology development and public institutions should play a key role in the financing process. It is suggested that organizations should cooperate to access financial resources. This study finding shows that both regencies have played important roles to finance the sustainable use of e-government.

Jembrana and Luwu Utara are relatively poor regencies compared to other regencies within their provinces. Most of their revenue relies on central government's annual transfer. To support the sustainable use of e-government systems, both regencies used different financial mechanisms.

Both Jembrana and Luwu Utara regencies regularly allocate budget to support the sustainability of e-government. Budget allocation was supported by local political institutions and was used for infrastructure and system development and maintenance across the regencies' institutions. However, the amount of financial allocation was different from year to year depending on the amount of annual budget transferred from central government. The budget required to support the e-government development and maintenance was increased every year.

In coping with limited annual budget allocation, Jembrana regency established a collaborative financial mechanism among local institutions. Each local institution voluntarily contributed financially to develop and maintain the sustainability of e-government. For example, the regency's key e-government infrastructure (J-NET) was built through collaborative financial contributions where each institution contributed to the cost according their financial ability. The collaborative financial infrastructure building has been successfully utilized for e-government systems' operation.

The IT team of Jembrana regency's department of Transportation, Communication and Information also encouraged all institutions to take e-government systems and infrastructure maintenance responsibilities collectively. Each institution got annual budget from the central regency office and central government that can be spent according their policies' implementation. Other than encouraging each institution to

allocate to annual maintenance to sustain their e-government systems and infrastructures, the department and IT team also forced local institutions to allocate to the maintenance cost.

On the other hand, Luwu Utara regency did not practice voluntary cost-sharing responsibility among local institutions because the regency mostly implemented and used central government transferred systems. The responsibilities to sustain the systems were on both regency and central government institutions. In addition, solving problems, such as budget and human skills, were not major issues in sustaining their e-government systems because systems were central government or regulation-based policies. Annual budget allocation was smoothly approved by central government and local parliament institution. Table 43

**Table 43: Financial mechanism**

Sub-component	Issues	Regency	
		Jembrana	Luwu Utara
Financial mechanism	Annual local budget allocation	Budget to sustain e-government implementation and use was regularly allocated	Budget to sustain e-government implementation and use was regularly allocated.
	Infrastructures cost	Cost to build infrastructures was obtained from regency budget, central government support, and voluntarily shared by local actors	Cost to build infrastructure was obtained from the regency budget and central government support.
	Maintenance cost	Maintenance cost was regularly allocated from the regency annual budget, support from central government, and each local institutions were assigned maintenance cost responsibility	Maintenance cost relied on annual budget and support from a relevant central government institutions.

### **8.5.3 Competence in human resources**

Van de Ven, et al. (1999) suggest that competence human in resources can be obtained through recruitment and training, while Rappa (1989) argues that competence in human resources can also be developed through job transfer and competency diffusion among professionals. Both Jembrana and Luwu Utara regencies have recruited competent human resources to support e-government implementation, use, development, maintenance and new ways of performing government tasks. These competent human resources support the regencies in identifying problems during implementation, maintenance, evaluation and finding solutions for future IT development (Kamal, 2006).

Competent human resources within both regencies have been obtained to support the sustainability of e-government. The human resources were recruited from formal institutions, assigned across local institutions and regular competency development. The human resources development activities were carried out collaboratively with various actors from central government, other local government and between internal regencies' institutions.

Both regencies recruited more professional IT staff to support their e-government implementation and use within the regencies. The competent human resources had different formal professional skills to support the e-government systems' sustainability. The human resources have also been assigned tasks according specific job descriptions. However, Jembrana regency clearly divided the competent IT staff into five sections according to each field of major jobs. The sections include planning, implementation, development, maintenance and evaluation. Luwu Utara regency did not divide the competence human IT staff into specific job sections because the IT team was smaller compared to Jembrana regency IT team. Besides, Luwu Utara regency did not implement and use as many or as complex e-government systems as did Jembrana.

Since Jembrana regency had obtained more competent human resources, the regency did not outsource IT staff. The human resources were distributed to all local departments and district offices to engage with other employees. Meanwhile, Luwu Utara only distributed IT staff within departments in central offices to support other

employees, but districts employees' competence was regularly developed in the central district office. Table 44 summarizes competent human resources development strategies.

**Table 44: Competent human resource development**

Sub-component	Issues	Regency	
		Jembrana	Luwu Utara
Competence in human resources	Recruitment of professional IT staff	Recruited 78 IT staff from university graduates	Recruited 40 staff from university graduates and hired outsource workers
	Distribution and transfer	Professional IT staff were assigned across local departments and to district level	Professional IT staff were assigned across local departments
	Regularly competency development	IT staff and employees competencies were regularly developed and maintained	IT staff and employees competencies were regularly developed and maintained

*Summary for resource endowments:*

Both regencies endowed resources through collaboration with central government institutions, other local governments, private organizations and between institutions within the regencies. Van de Ven, et al. (1999) argue that resource endowments include science technology knowledge and skills, financial mechanism and competence in human resources. However this study suggests that the local governments were not involved in science and research activities; instead they focused on endowing technology knowledge and skills, financial and competent human resources. In this study's context, basic science and research was carried out by central government institutions. The practices of the basic science and research were transferred to local government.

## **8.6 Governmental Activities**

One sub-system of social systems built by Van de Ven, et al. (1999) (as discussed in theoretical framework Chapter 3) is proprietary activities that consist of the groups of



private companies commercializing innovations for economic benefits. The activities include product development, business functions and resources channels. However, literature (e.g.: Rainey, Backoff, & Levine, 1976) suggest that public organizations focus more on providing services for public interest through budget allocation, instead of market performance and making profit. In addition, public organizations commit strong obedience to political superiors, regulations and provide services for public interests rather than self-fulfilment and profitability, as assumed by private organization actors (Van Der Wal, De Graaf, & Lasthuizen, 2008). Therefore, this study uses the term government activities (Brown-Graham, 2007; Richards, 2009) which refers to government activities that do not involve profit-making as in private sectors

This study's finding suggests there are three governmental activities relating to e-government implementation and sustainable use. They are e-government development, e-government services provision and building resource channels. The following sections present the cross analyses of the three governmental activities within both cases.

### **8.6.1 E-government Development**

E-government development is understood as the information system's development starting from system analyses through specification, design, development, installation to maintenance. (Alavi, 1984), Ewusi-Mensah (1997) suggest IS staff, users and management, should build dynamic interaction, communication and coordination in an IS development project. There is a need to involve those three stakeholders due to complexity of IS development. Within public sector context, Torres, Pina & Sonya (2005) also suggest involvement of political actors, as in e-government systems project development.

E-government development activities in Jembrana and Luwu Utara regencies have been started in 2001 and 2009, when they cooperated with central government institutions and other local governments. The e-government development involved activities such as e-government design, infrastructures, maintenance, systems and involvement. At a later stage, e-government development was also supported by local actors such as leaders, employees, IT staff and their stakeholders. Both

regencies took different strategies to support e-government development. Luwu Utara regency focused on involvement of political actors and building cooperation with other local governments, when the e-government implementation was officially started in 2009. Meanwhile, Jembrana regency developed an e-government blue-print that cover long term e-government development strategy through cooperation with central government institutions.

Jembrana regency established long term e-government development strategy that was covered in a blue-print document. The blue-print covers long-term e-government management such as planning, implementation, development, maintenance and evaluation. This supports the regency government and IT team in the management of their e-government systems and infrastructure in a systematic development strategy according to certain time frames, such as a 5 years period.

Meanwhile, Luwu Utara regency did not develop a long-term development strategy because the regency mostly followed central government e-government development strategy. Luwu Utara regency mostly implemented and used central government transferred systems. Even though Luwu Utara also built infrastructure voluntarily, such as websites and internet towers, the policy was mostly driven by central government policy. For example, internet towers were used to support the operational of E-ID system.

Both regencies cooperated with central government institutions and other local governments in building their e-government infrastructures; and it was supported by local leaders. However, Jembrana regency was also able to build their e-government infrastructures through volunteer collaboration between the local institutions (e.g. J-NET). Cooperation among Jembrana regency local institutions was also shown through their commitment to maintain the systems and infrastructures.

Jembrana regency leaders and IT staff also made more improvisation in the implementation and use of certain e-government systems. Even though the regency adopted systems from central government or from other local governments, the systems were adjusted to the regency's context and needs. For example, the implementation of SIMDA and earlier version of E-ID was adapted to the regency

context and demands when more facilities were added to SIMDA systems. The improvisation was intended to improve the systems use.

E-government development within both regencies involved all political leaders, implementers and users. Jembrana regency involved employees and grass-root users, such as citizens in village areas. For example, districts IT staff received feedback from rural citizens in improving their systems. While Luwu Utara focused more on involvement of high profile users, such as employees and businesses, in their e-government development. E-government development activities are summarised in Table 45.

**Table 45: E-government development activities**

Sub-component	Issues	Regency	
		Jembrana	Luwu Utara
e-government development	Long term strategy	Availability of a long term e-government development strategy (a blue-print) that includes implementation, use, development and maintenance	Long term e-government design was not available because the regency mostly use central government transferred systems
	infrastructure development	Cooperation with central government institutions, local leader support, and collaboration among local institutions	Cooperation with central government institutions, local leader and local political institution supports
	Maintenance	Cooperation with central government institutions, local leader support, and sharing responsibilities among local institutions	Cooperation with central government institutions, local leader and local political institution supports
	Systems development	Follow central government policies, stakeholder demands, and improvisation from local IT staff	Follow the central government and stakeholder demands
	Involvement	Leaders, IT staff, employees, citizens, and businesses.	Leaders, IT staff, employees, businesses, and political institutions

### **8.6.2 Provision of e-Government Services**

Government organizations' provision of services through e-government systems is intended to improve management efficiency and provide benefits for citizens (Axelsson, Melin, & Lindgren, 2013). Government stakeholders expect to be able to access these services 24/7 through the e-government systems (Kernaghan & Berardi, 2008; Soon et al. 2010). For example, the appearance of the website interface; its comprehensiveness; all the functions are fully operational; and that it can be accessed at all times by all stakeholders (Chee-Wee, Benbasat, & Cenfetelli, 2008). The websites should also allow citizens to access community-based and local government information with a more user-friendly, comprehensive and convenient way (Detlor et al. 2013).

Providing services through e-government systems is a key governmental activity in sustaining e-government use within Jembrana and Luwu Utara regencies. These e-government services are provided by relevant local departments to serve their stakeholders. At the moment of data collection, Jembrana regency has implemented and used about 34 e-government systems to serve their stakeholders, while Luwu Utara provide e-services through 6 key e-government systems. All the services were intended to increase efficiency, transparency and interactions between the local government and stakeholders.

Jembrana regency provided more e-government services compared to Luwu Utara regency. Jembrana not only provided e-government services through central government transferred systems, but also provided services through the systems developed by the regency IT team. For example, the regency provides a SMS centre service where citizens can send their enquiries to a relevant local government institution. The regency also provides an e-voting system to support village head elections. Meanwhile, Luwu Utara regency mostly provided services through systems provided by central government. The differences in services provision types between both regencies might be caused by the different stages of e-government development.

E-government services provided by both regencies were targeted to improve efficiency in administration and management and reduce financial cost in services

delivery. This target is stated in central government e-government blue-print for implementation and use that must be followed by all local government. Transparency within local government organization was also imposed by regulation. As a result, both regencies must provide e-government services that promote transparency.

E-government services within Jembrana and Luwu regencies support the regencies' government to interact with their stakeholders. Most of interactions were made through the regencies' official websites. However, Jembrana regency provides a specific system (SMS centre) to enable the appropriate authority to respond a specific citizens' enquiry. This helped citizens to get more relevant services that they demanded. Meanwhile, in Luwu Utara regency all citizens and other stakeholders' enquiries were sent via the regency's official website. E-government services characteristics are summarized in Table 46.

**Table 46: E-government services provision**

Sub-category	Issues	Regency	
		Jembrana	Luwu Utara
Provision of e-government services	Type of services	Provides more e-government services through mandatory and voluntary systems	E-government services are provided through mandatory systems
	Efficiency	E-government systems to provide efficiency in government administration to reduce cost for both the regency and stakeholders.	E-government systems to provide efficiency in government administration to reduce cost for both the regency and stakeholders.
	Transparency	E-government systems to improve the regency transparency in information disclosure and service provision	E-government systems to improve the regency transparency in information disclosure, service provision, and to combat corruption and collusion
	Interaction	E-government systems ease interaction between the regency and its stakeholders	E-government systems ease interaction between the regency and its stakeholders

### 8.6.3 Resource Channels

Van de Ven (1976, p. 24) argues that “*resources and expertise are contained within autonomous organizations and vested interest groups*”. Organizations are required to build a coalition to access these spreading resources. This coalition could be built based on a political coalition among the organizations that have similar collective interest (Van de Ven et al. 1999). Alternatively, organizations are encouraged to build wider affiliation within local and national context to access the resources (McCarthy & Wolfson, 1996). Resources can promote the technology implementation and use (Edmondson, Bohmer, & Pisano, 2001)

Jembrana and Luwu Utara regencies both lack of resources. To sustain the use of e-government, the regencies obtained resources, such as financial, infrastructure and human resources, from various channels. The channels include central government institutions, other local governments, private companies and collaboration within local institutions.

Some of e-government systems and infrastructures within both regencies were transferred by central government institutions, or they were implemented and used as a consequence of central government policies and regulation. For example, the implementation and use of the electronic identification system (E-ID) and the e-government procurement system were transferred by central government institutions. These transferred systems were accompanied by resources support. For example, central government provided system and hardware to support E-ID system implementation and use within the regencies. This included resources support to develop IT staff skills related to the operation of the systems.

Cooperation with other local governments was another channel to access resources. Both regencies engaged with other local governments to obtain human resource skills. Jembrana regency engaged through their employees’ visits to other local governments, while Luwu Utara built a formal engagement to transfer skills and systems resources through an agreement (MOU) with another local government.

Both regencies have also established relationships with private companies to support the sustainable use of e-government. These relationships might not be considered beneficial in terms of cost because they were business relationships. But the

regencies still got more advantages because the companies did not treat the regency offices as they would other customers who pay standard services costs. As a result of their success in persuading private companies to support their e-government systems implementation and use, both regencies received extra services over and above what they paid. These government and private partnerships provided opportunity to maintain systems and infrastructures at a low cost.

However, Jembrana was more successful in obtaining financial and infrastructures resources from the local institutions through collective contribution. The regency was able to build a unique resource channel within the regency; where local institutions took collective responsibility to contribute to the financial costs of building and maintaining the e-government systems and infrastructures. Resource channels building strategies are summarized in Table 47.

**Table 47: Resource channels strategies**

Sub-category	Issues	Regency	
		Jembrana	Luwu Utara
Resource channels	Local - Central government engagements	Cooperation with central government institutions to gain resources	Cooperation with central government institutions to gain resources
	Inter local government engagements	Cooperation with other local government to access resources	Cooperation with other local government to access resources
	Local institutions engagements	Resources were gained from local institutions' collective contributions.	Local institutions did not contribute to resources provision because the resource was supported by the regency annual budget
	Public-private sector engagement	Cooperation with private sector to access resources, e.g. internet support	Cooperation with private sectors, such as with companies and donors, to access resources.

*Summary for sub-system of governmental activities*

Governmental activities related to e-government implementation and sustainable use focused on e-government development, e-government services provision and

building resource channels to access resources. E-government development included planning, implementation, evaluation and maintenance. E-government services were provided through various systems to widen stakeholders' access. The e-government systems support the regencies to improve transparency, efficiency and interaction with the stakeholders. Resources to support the e-government development and services were obtained from various channels. These included cooperation with central government institutions, inter-local government cooperation, public-private cooperation and collaboration between internal agencies' institutions.

## **8.7 Market Consumption for E-Government**

A market for a new innovation's development is not naturally formed, but it should be developed, customers should be educated, and demand should also be created (Van de Ven et al. 1999). Norms and culture are related to what an organization provides and what customers' value. Van de Ven et al. (1999) suggested matching between those elements by shaping customers' preferences. In Addition, a market is also considered highly competitive and requires an organization to introduce products publicly. Van de Ven, et al. (1999) introduce this sub-system within market consumption with norms and culture, market creation and competition included.

However, as argued in chapter 3, competition is unlikely to exist in a public organization domain because of the lack of market exposure and more reliance on appropriation (Rainey et al. 1976). In addition, the main objective of government organizations is to deliver goods and services for public interest rather than market performance and making profits (IFAC, 2010; Rainey et al. 1976). As a result, this study focuses on norms and culture, and market and demand creation in an e-government context. The term stakeholder is used rather than customers to fit public sector context as discussed in chapter 3. The discussions are presented in the following sub-sections.

### **8.7.1 Cultural Norms**

Van de Ven et al. (1999) say that *“multiple possible interpretations and uses for products may be different from those originally intended”*. This flexibility of interpretation could be caused by cultural norms within a wider community. To eliminate these cultural and norm barriers, there is a need for a government to change



the mindset of civil servants, businesses practice and citizens toward e-government (Chen, Chen, Huang, & Ching, 2006).

Cultural norm changes towards the use of technology by employees and stakeholders are key factors in supporting the sustainable use of e-government within both regencies. Cultural norms were adapted to ensure that the employees and stakeholders were familiar the e-government system, and use it continuously in the workplace. The regencies started with changing their employees and stakeholders' attitudes toward using e-government systems in daily tasks. The cultural norms' adaptation was carried out through variety mechanisms.

For example, Jembrana regency used coercive and persuasive approaches to change their employees and middle leaders' perspectives. The IT team cooperated with the regency and departmental leaders to persuade and force them to utilize technology in the workplace. The approaches were intended to gain employees and middle leaders' commitment to use the e-government system regularly in their daily work.

In contrast, Luwu Utara did not apply a coercive strategy in cultural norms' adaptation. Luwu Utara regency focused on increasing their internal stakeholders' awareness persuasively to utilize the e-government systems. Most of e-government systems were central government or regulation mandatory-based, and the regency actors were required to adapt their cultural norms towards the technology. Meanwhile, Jembrana also implemented and used voluntary systems to improve the regency performances. This required strong commitment from all local actors to adapt their cultural norms to the technology.

Work culture was adapted to the e-government system use within both regencies. Employees were required to adjust their work patterns with the technology. For example, employees were required to be more disciplined with data updates on the websites. Similarly, stakeholders' (e.g. businesses and citizens) cultural norms were also changed to familiarize themselves with the use of e-government. Rural citizens' cultural norms were adapted through exposure to technology within village areas. For example, both regencies use ICT vans to promote the use of internet across villages. Both regencies used similar strategies in changing citizens' beliefs toward technology because they received similar facilities from Ministry of Communication

and Information. The cultural norms adaptation strategies within both regencies are summarized in Table 48.

**Table 48: Cultural norms adaptation strategies**

Sub-component	Issues	Regency	
		Jembrana	Luwu Utara
Cultural norms	Individual cultural norms	Change of employees mindset and attitude through coercive and persuasive approaches	Change employees' attitude to increase awareness through persuasive approach
	Work cultural norms	Work cultural norms were adjusted to technology requirement	Work culture was adjusted to technology requirement
	Organizational cultural norms	Persuasion through providing rewards and coercive by applying sanctions	Persuasively increased internal stakeholders to use e-government.
	Stakeholders cultural norms	Expose technology to rural areas	Expose technology to rural areas

### 8.7.2 Market and Demand Creation

A market for a new innovation product should be created through informing and educating customers such as through promotion and training (Van de Ven et al. 1999). Promotion is a marketing concept that can be used in advancing government services, as suggested by Laing (2003). The market demands come from responsible consumers that have been informed and educated about a new innovation (Van de Ven et al. 1999). Similarly, market for e-government product services should be created such as stakeholders being informed regarding the presence of e-government services (Ke & Wei, 2004). One way to inform stakeholders regarding the presence of e-government services is to assimilate the e-government services to all stakeholders. The assimilation can increase awareness of the innovation as argued by Fichman (1999). The e-government assimilation process can be carried out through media campaign websites (Carter & Weerakkody, 2008), establish a task force and providing awards to encourage use of e-government (Whitson & Davis, 2001). This

section presents cross cases analyses of market and demand creation mechanisms in both regencies through stakeholders' education and e-government assimilation.

#### *8.7.2.1 Stakeholders Education*

The emergence of new technology within an organization requires the acquisition of new knowledge and skills by the organization members and its stakeholders. This knowledge and skills shapes their demands to continuously utilize the technology. Van de Ven (2005) and Van de Ven, et al. (1999) suggest that demand on innovation should be created through creating competent stakeholders. Markus & Tannis (2000) also suggest the continuous provision of end-users skills' development after initial training of an information system adoption. i.e. government stakeholders, such as employees, citizens and businesses being educated to use e-government.

Educating stakeholders to use e-government was an important strategy to create demand to use e-government within both regencies. Stakeholders' education was not only to improve their IT knowledge and skill in using e-government systems, but also to change their behaviour. As a result, the stakeholders accepted and used the technology in their daily life. A number of mechanisms were used to educate the stakeholders within both regencies.

Both regencies educated their internal and external stakeholders to improve their skills and change behaviour towards e-government use. Internal stakeholders, such as employees and leaders, were educated through engagement with central government, other local governments and businesses to gain IT knowledge and skills. Jembrana regency focused on four group stakeholders; middle leaders, employees, citizens and businesses, while Luwu Utara regency also involved local politicians as well.

Citizens and businesses stakeholders were educated through engagement between the regencies IT staff at regencies' central offices or village areas. For example, Luwu Utara regency provided training for private companies' staff to improve their skill to utilize e-government procurement system. This strategy increased the number of companies participating in the regency's online procurement process. Meanwhile, Jembrana regency assigned their IT staff to district levels to enable the staff to educated citizens and businesses from rural areas. This proactive strategy provided

continual support to stakeholders in rural areas to increase and maintain the use of e-government by the stakeholders. Luwu Utara did not assign IT staff to district level because they did not have enough IT staff. However, citizens within both regencies were educated through media such as ICT vans.

Both regencies provided a help desk to support daily stakeholders' education. Jembrana used the help desk to educate all stakeholder groups, while Luwu Utara focused more on educating employees and private companies' staff. Jembrana regency leader and the IT team used stronger mechanisms to educate stakeholders. The regency leader and the IT team forced the employees to utilize e-government in their daily work activities with sanctions applied to those who resisted the policy. This strategy was helpful to make the employees within all departments to engage with the technology. For example, employees updated their departmental websites regularly. Table 49 summarizes education strategies for stakeholders in both regencies.

**Table 49: Education strategies for stakeholders**

Sub-component	Issues	Regency	
		Jembrana	Luwu Utara
Stakeholders' education	Provide IT knowledge and skills	Involved leaders, employees, businesses and citizens	Involved leaders, employees, businesses and politicians
	Disseminate information	Use ICT vans, website, promote benefits	Use ICT vans and brochures, websites, promoted benefits
	Help desks	Assisted employees and citizens	Assisted employees and businesses
	Mandatory use	The regency applied punishment and rewards to encourage use	The regency mostly used central mandatory systems. Mandatory usage was embedded in the policy

### 8.7.3 E-government Assimilation

Assimilation is understood as the diffusion of an innovation into society (Carter & Weerakkody, 2008). Van de Ven, et al. (1999) and Van de Ven (2005) argue that

market demand on new innovations come from informed customers, and publicity and promotion are often used by firms to shape the customers demand. As a result, there is a need for an organization to increase their customers' awareness.

Assimilation of e-government to all stakeholders and institutional levels was intended to increase awareness regarding the emergence of e-government within both regencies. These activities were carried out through collaboration between actors within the regency and central government. At the beginning, the assimilation was targeted within the regency central office stakeholders as the main drivers of the e-government assimilation process that followed.

The emergence of e-government was assimilated within both regencies through promotion to whole regencies' institutions. The promotion was carried out through involvement of institutions in the implementation and use. At the beginning, Jembrana regency, for example, cooperated with central government institutions to begin the implementation and use of e-government. The cooperation was a bottom-up strategy to assimilate the policy to higher levels of government hierarchy. This was not only intended to increase awareness the presence of the policy but also to get support. At later stage, e-government services were assimilated to all level of institutions within the regency.

Meanwhile, Luwu Utara regency's earlier cooperation was carried out with local political institutions. The e-government policy was firstly communicated to local parliament members to increase their awareness. This was intended to avoid political resistant because the e-government implementation and use was mostly supported by the regency annual budget. At a later stage, the e-government policy was promoted to employees and business sectors which were the main stakeholders at that time. In the following stages, both regencies directed their e-government policies to districts and villages areas for assimilation.

Jembrana regency assimilated their e-government policy through the availability of IT staff and technology infrastructures, such as internet and J-NET, across districts. As the resources were commonly found within the district, stakeholders and government actors were continuously engaged with the e-government systems. Meanwhile, Luwu Utara regency e-government policy was represented through the

availability of Internet infrastructures and regular visit of IT staff to village areas using ICT vans. The process of e-government assimilation is summarized in Table 50 below:

**Table 50: E-government assimilation strategies**

Sub-component	Issues	Regency	
		Jembrana	Luwu Utara
E-government assimilation	Promote e-government	Within central office, districts, villages, and to businesses	Within central offices, districts, villages, businesses, and political institutions
	Information dissemination	To all levels of regency institutions through websites and assigned IT staff to all local departments and district offices	To all levels of regency institutions through website and brochures.
	Resources presentation	IT staff and infrastructure availability in districts	Infrastructure availability in districts

In conclusion, e-government assimilation was used as a mechanism to create government stakeholders' demand for e-government services. The assimilation was carried out through promoting e-government services publicly. Enforcement and incentive were also practiced to create demand among the stakeholders. As a result, informed stakeholders have used the e-government services.

*Summary of market consumption for e-government services*

The market mechanism for e-government was evolved through the change of cultural norms and market creation and demand. Stakeholders' cultural norms can be changed through persuasive and coercive approaches. Meanwhile, the market for e-government products was created through stakeholders' education and e-government dissemination activities. Stakeholders were forcibly and persuasively educated because they are bound by regulations and they were also dealing with no alternative choices to use the e-government service products.

## **8.8 Cross case summary**

The implementation and sustainable use of e-government within both regencies were supported by the emergence and the roles of social systems. The social system includes: institutional arrangements, resources endowments, governmental activities and e-government services consumption. The summary for social systems and their roles in e-government implementation and sustainable use within both regencies is presented in Table 51.

**Table 51: Summary of social system and roles in both cases**

<b>Components</b>	<b>Sub-component</b>	<b>Roles</b>
Institutional arrangements	Legitimacy	Seeking legitimacy from central government and local stakeholders
	Regulation	Regulation mandate use of e-government systems in particular central government transferred systems
	Standards	National and local standards standardize the use of e-government systems
	Socio- economic	Socio-economic roles encourage the sustainable use of e-government to increase efficiency and transparency.
Resource endowments	Technology knowledge and skills development	Technology knowledge and skills were improved through collaborative training with central government institutions, other local government organizations and private sectors.
	Financial mechanism	Budget to sustain use of e-government was regularly allocated. Internal regency institutions collectively contributed to the cost of system operations and maintenance.
	Competent human resources	Competent human resources were obtained from university graduates, local training centre, cooperative training with central government institutions and through learning from other local government.
Governmental activities	E-government development	e-government systems was developed through establishing a long term blue print design, building infrastructures, regular maintenance, improvisation of the systems, involvement of leaders, IT staff, employees, and private companies, as well as input from citizens.
	Provide e-government services	The local government services were provided through a variety central government transferred systems and locally developed systems to improve efficiency, transparency and interactions with stakeholders.
	Build resource channels	Resources to support the sustainable of e-government use were obtained from cooperation with central government institutions, other local government, private sectors, and volunteer collaboration between the regency institutions.
E-government market consumption	Cultural norms	Cultural norms of employees and stakeholders were changed through persuasive and coercive approaches.
	e-government market and demand creation	Market and demand for e-government services product was created through stakeholders' education and e-government services assimilation across regency.



Institutional arrangements played roles through the legitimisation, regulation and standards of the sustainability of e-government within both regencies. However, socio-economic pressure also emerged as another arrangement that caused the regency put effort to sustaining their e-government so as to increase efficiency and transparency.

Resource endowments, which included technological knowledge and skill development, financial mechanism, and a pool of competence human resources, have also played roles in the sustainability of e-government implementation and use within both regencies. Both regencies endowed their resources through collaboration with central government institutions, other local governments and private sectors. However, Jembrana regency built a unique financial mechanism to support the sustainability of e-government. Actors within Jembrana regency collectively contributed financial resources to implement and maintain the e-government.

Governmental activities played roles in development and maintaining of e-government systems, providing e-government services and building resources channels across government institutions and private sectors. Meanwhile, market consumption for e-government emerged through cultural norms changes and adaptation as well as market and demand creation for e-government product services. Market and demand for e-government was created through stakeholders' education and assimilation of e-government across the regencies levels.

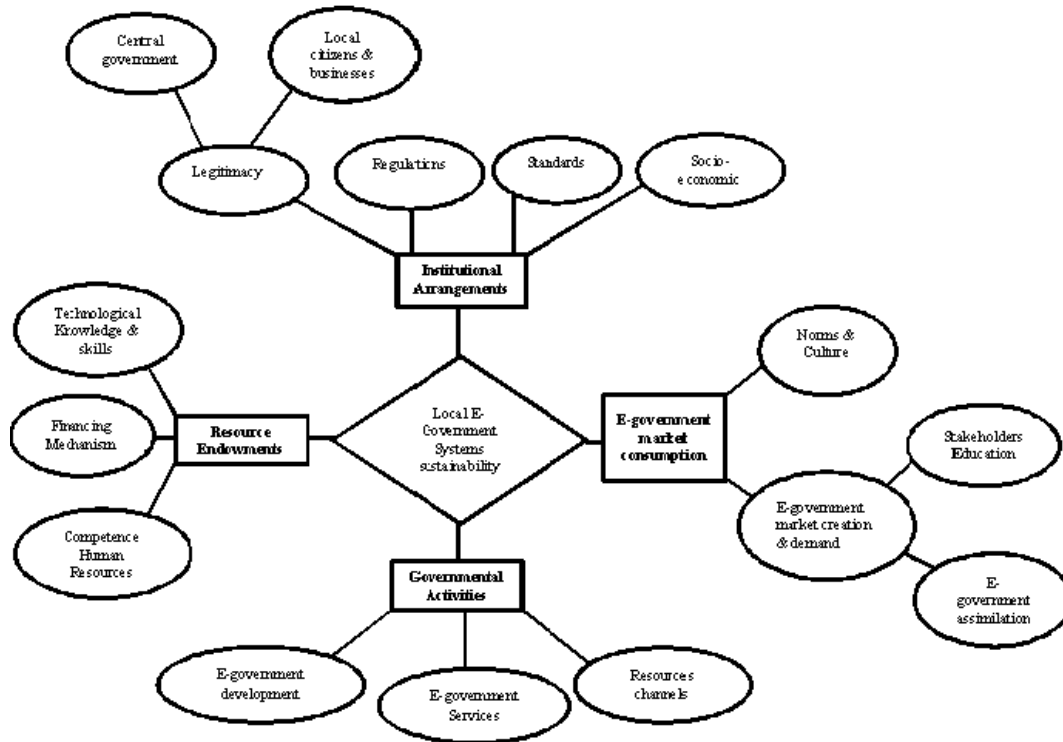
## **8.9 Building the framework**

Based on the cross case analyses above, this section presents the social system framework for implementation and sustainable use of local e-government. The framework was developed based on the analyses results against the original model of social system proposed by Van de Ven (1999a).

The analyses suggest that some components of the original social system have emerged in the social system for implementation and sustainable use of local e-government; for example, the component of institutional arrangements that includes legitimacy, regulations and standards, and resource endowments. These also include technology knowledge and skills, financing mechanisms and competence human resources. The similarities of some components of the social system between the private and government organization's context, suggest that most

organizations, regardless whether private or public, are constrained and enhanced by their institutional arrangement in developing and sustaining innovation. Similarly, organizations also need to endow resources collectively through developing technology knowledge and skills, unique financial mechanisms, and competent human resources, as suggested by Van de Ven (1999a).

However, since this study was carried out within public organizations, some of the social system components were also adapted and new components also emerged. The emergence of different components and the roles they play in the social system might be caused by the different context of organizations, as argued by Van de Ven (2005, p. 367); who says that *“the specific characteristics of an industrial infrastructure vary according to the technology on which it based”*. This means the adaptation and the emergence of different components of the social system framework that consist in various institutional infrastructures is intended to fit the context where e-government innovation is based. As a result, this study built a social system model that incorporates various components for implementation and sustainable use of local e-government, as depicted in Figure 25, to address the public sector organizations characteristics.



**Figure 25: Social system framework for implementation and sustainable use of local e-government**

The social systems framework for local e-government sustainability posits that e-government sustainability is achieved simultaneously with the emergence of e-government infrastructure in the social system that includes;

- (1) The institutional arrangement to legitimize, regulate and standardize the sustainability of e-government, as well as the socio-economic environment that induce innovation idea;
- (2) The resources endowment of technological knowledge, financing mechanism and human competence to support the sustainable use of e-government;
- (3) Governmental activities in the development and functioning of e-government and building resource channels;
- (4) Market mechanisms to educate stakeholders and stimulate demand for e-government products.

The framework of social system for local e-government sustainable use illustrates that institutional arrangements legitimize, regulate, and standardize the implementation and sustainable use of local e-government. The analyses also proves that local government not only seeks legitimacy from stakeholders (local citizens and businesses), but also legitimacy from central government. Legitimacy from central government is important because most of the local government annual budget relies on central government support. Conformation to the central government mandates, such as implementation and sustainable use of e-government, is important to get legitimacy. As a result, the local governments are able to access support from central government such as annual budget, technical, and human skills.

Socio-economics has also emerged as a new sub-component of institutional arrangements. Socio-economics inhibits the local government to innovate strategically. The use of e-government systems was intended to counter the limitation of the local government budget and reduce uncertainty regarding rampant of collusion and corruption. The sustainable use of e-government systems increases the local government efficiency in administration and management as well as improves transparency in the local government bureaucracy. Social-economics is considered as sources of pressures from an organization's environment that causes organizations to implement certain policies (Delmas & Toffel, 2004). In this study, social-economic in the local government environment that causes sustainable use of e-government systems.

There are three critical resource endowments that support the development of innovation: (1) basic scientific or technological research, (2) financing mechanisms, and (3) a pool of competent human resources (Van de Ven et al. 199a). However, the analyses suggest that basic scientific and research for e-government was carried out at central government level not at local levels. For example, the Agency for the Assessment and Application of Technology (BPPT) carries out all basic science and research activities for technology development and implementation in Indonesia. The result of the research activities were implemented at local government level. For example, the implementation of SIMDA system was the result of the agency's research activities where the system was initiated and development before transferring to local government.

Local governments mostly engaged in practical technology knowledge and skills development for their employees in order to obtain a pool of competent human resources.

Financial mechanisms were built through regular budget allocation, cooperation with relevant central government institutions, political institutions and private sectors as well as encouraging local institutions volunteer contribution. Availability of finances, human resources and technological infrastructure within organizations can determine their ability to sustain technology within their organization (Kettinger, Grover, Guha, & Segars, 1994).

The local governments did not involve in proprietary activities that focus on development and commercialization of product to generate profits. The analyses suggest that the local governments focus on governmental activities that have to serve their stakeholders. It is evident that government organizations are strongly committed to the obedience of their political superiors, regulations and the provision of services for public interests, rather than self-fulfilment and profitability as practiced by private organization actors (Van Der Wal et al. 2008). Governmental activities relate to implementation and sustainable use of local e-government including e-government development, provision of e-government services, and building resource channels to support the implementation and sustainable use of local e-government.

E-government development and service provisions require the local government to allocate resources and efforts for success. These resources, according to Van de Ven (1976, p. 24) “are contained within autonomous organizations and vested interest groups”. Local governments built channels through coordination and cooperation to access the resources necessary for their collective survival (Meyer & Rowan, 1977). As a result, the development of e-government systems and e-government services provision were continually practiced to ensure the sustainability.

E-government products’ market emerged through the change of cultural norms of the local government and their stakeholders, and the creation of the market and demand. Competition was not a component that triggered the market’s creation for e-government because local government organizations do not focus on profit generation. Instead the local government coordinated and cooperated with various actors to create e-governmental demand. The local government focus was on changing and adapting employees and stakeholders’ cultural norms to fit new innovation in their organizations.

The employees and stakeholders cultural norms were changed, at all levels, through persuasive and coercive means, with respect to the use of e-government. Meanwhile, markets

for e-government product services were created through educating the employees and stakeholders and assimilation of e-government across local government institutions. Improvements in stakeholders' skills ensure they use e-government services continuously; while assimilation of e-government to all levels of local government increases awareness and provides opportunity to access the services at all times.

In the next chapter (Chapter 9) the discussion is presented. The discussion will include the emergence of a social system in implementation and sustainable use of local e-government, the roles of the components of the social system, and the relationship between each of the components of the social system in the implementation and sustainable use of local e-government.

## **CHAPTER 9: Discussion**

### **9.1 Introduction**

This chapter presents the discussion of the findings to address the research questions in Chapter 1. As discussed in literature review (Chapters 2 & 3), many studies have highlighted the challenges of sustainable use of e-government within government organizations. The challenges are common when a government organization works alone to sustain the innovation because single organizations seldom have resources, power, and legitimacy to produce change alone (Van de Ven, 2005; Van de Ven et al., 1999). Development and sustaining innovation is a collective achievement process which requires actors to collaborate to construct a social system (Van de Ven et al., 1999).

Components of the infrastructure of the social system were identified in the cross case analysis (Chapter 8). These are discussed in this chapter to show how the social system for implementation and sustainable use of local e-government has emerged from the data analysis. A comparison with the original framework is followed by a discussion of how the various constructs contribute to the social system framework for implementation and sustainable use of local e-government. Finally, Section 9.4 discusses the relationship between components of the social systems.

### **9.2 Identifying the social system components**

As discussed in Chapter 3, a social system in industrial innovation consists of a number of components that include institutional arrangements, resource endowments, firms' proprietary activities and market mechanism. This study has found that a social system for implementation and sustainable use of local e-government requires adaptation to incorporate some different infrastructures components. The differences are caused by the context of the study and reflects the argument of Van de Ven (2005, p. 367) who states "*the specific characteristics of an industrial infrastructure vary according to the technology on which it is based*".

Some components of the social system framework for implementation and sustainable use of local e-government are similar to those identified in the social system for industrial innovation. Such similarities are to be expected given that most organizations, regardless of whether they are private or public, are constrained and enhanced by a number of common organisational mechanisms. Other components are identified as they emerged in the context of public organizations to revise and refine the framework for local e-government (Figure 25). The emergence of the social system constructs for implementation and sustainable use of local government are presented in Table 52. The table identifies the variations in these constructs against those of the original commercial/industrial social system framework, which follows from Research Question 1.

Within the table, the column markings summarise the differences as follows:

Same	The components of the social systems framework for local e-government are similar to the original social system framework. This implies that organizations, whether they are private and public, operate in similar institutional arrangements and perform similar action to endow resources.
Adapted.	The components of the social system framework were adapted according to government organizations contexts. The adaptation was based on the empirical findings that government organizations focus more on governmental activities and show loyalty to political stakeholders (e.g. citizens, local businesses, politicians) than profitability.
Add / Deleted	A new component is added that emerged in the analyses or an existing component is deleted from the original social system framework as it is not applicable in government organization context.



Table 52. The emergence of social system components for implementation and sustainable use of local e-government

Social system framework components for commercial/industrial innovation (Van de Ven, 1999)	Same	Adapted	Added/Deleted	Social system framework components for implementation and sustainable use of e-government
<p><b>Institutional arrangements:</b> The overall factors that shape and govern behaviour, practices, and patterns of interactions in organizations, within the technological field. These authorities include legitimation, regulation, and standards.</p> <ul style="list-style-type: none"> <li>• <b>Regulation:</b> government regulations that facilitate and inhibit the emergence of new technologies and industries.</li> <li>• <b>Legitimacy:</b> legitimacy is obtained from customers, trade association, and other firms. It does not involve higher parent organizations because each firm was independently operated.</li> <li>• <b>Standards:</b> standards were imposed by government and voluntarily established by firms to specify the process and performance of new technology design.</li> </ul>	X			<p><b>Institutional arrangements:</b> Implementation and sustainable use of local e-government include regulation, legitimacy, standards, and socio-economic pressures. The similarities of some arrangements implies that organizations, regardless of whether they are public or private, are operated in a highly institutionalized environment (Mayer &amp; Rowan, 1977) to perform their collective actions.</p> <ul style="list-style-type: none"> <li>• <b>Regulation:</b> various regulations are enacted by central government institutions to facilitate implementation and sustainable use of local government.</li> <li>• <b>Legitimacy:</b> legitimacy was obtained from stakeholders (customers) and also central government as the parent organization. Central government is able to impose and mandate the local government to implement and sustain use of local e-government.</li> <li>• <b>Standards:</b> standards were imposed by various central government institutions and voluntarily established by local government to specify process, procedures, and performance of e-government.</li> </ul>

		X	<ul style="list-style-type: none"> <li>• <b>Socio-economic pressure:</b> This is an important component of the social system because it induces and pressures the local government to sustain the implementation and use of e-government for efficiency and transparency. It also forces the local government to take collective action to implement and use e-government to improve efficiency and transparency. This accords with literature in that organizations with limited resources tend to develop creative strategies to improve performance and build coalitions to pursue objectives (George, 2005).</li> </ul>
<p><b>Resource endowments:</b> Van de Ven et al., (1999) identify three critical resources that support the development of technological innovation; sciences and technology, financing and insurances, and a pool of competent human resources. Organizations coordinate, cooperate and at the same time compete to endow the resources together.</p> <ul style="list-style-type: none"> <li>• <b>Science and technology:</b> firms conduct basic science and technological research to provide the foundation of knowledge for technological innovations and make it available to a wider community (Van de Ven et al., 1999). Firms make a variety of engagements such as communication, personnel transfer, and human resource development to obtain the knowledge.</li> <li>• <b>Financing mechanism:</b> organizations build unique financial arrangements, such as joining insurance industry and creating third-party payment systems, to commercialize their innovation.</li> </ul>	X	X	<p><b>Resource endowments:</b> This study found similar resource endowments that enable local government to succeed in their e-government environment. However, they have been adapted for e-government, which relies more on coordination and cooperation of various actors than on competition.</p> <ul style="list-style-type: none"> <li>• <b>Technology knowledge and skills:</b> basic science and research for technology are not practiced at local government level but are practiced by central government institutions. The local governments focus on development of practical knowledge and skills such as e-government system implementation, use, and maintenances. Technology knowledge and skills were obtained through learning from other local governments, collaborative human resource development with central government, and personnel transfer.</li> <li>• <b>Financing mechanism:</b> local government build unique financing mechanisms through regular annual budget allocation and voluntary internal institutional contributions to provide e-government services. The local</li> </ul>



<ul style="list-style-type: none"> <li>• <b>Business functions:</b> Van de Ven et al., (1999) argue that a firm’s proprietary function is related to innovation and product development and the commercialization of it to the wider community. This process involves manufacturing, marketing, and distribution to establish a profitable business.</li> <li>• <b>Resource channels:</b> Single organizations seldom have enough resources to develop and commercialize an innovation (Van de Ven, 2005; Van de Ven et al., 1999). Van de Ven (1976, p. 24) argues that “<i>resources and expertise are contained within autonomous organizations and vested interest groups</i>”. Organizations are required to build a coalition to access these spreading resources. This coalition could be built based on political coalition among the organization that have similar collective interest (Van de Ven et al., 1999). Alternatively, organizations are encouraged to build wider affiliation within local and national contexts to access the resources (McCarthy &amp; Wolfson, 1996).</li> </ul>		<p>X</p> <p>X</p>	<p>local skilful IT staff, employees, management level, and politicians, central government institutions, and private organizations.</p> <ul style="list-style-type: none"> <li>• <b>E-government services:</b> The local governments’ function is to provide e-government and promote it to wider stakeholders based on public interest and to conform to regulations. At the same time the local governments implement and use the e-government services to improve management efficiency.</li> <li>• <b>Resource channels:</b> local government organizations are both independent actors and involved as members of a larger collective. Heeks &amp; Stanforth (2007) suggest those independent actors should build a set of relations to generate resources where the innovation can take place. Local governments build channels through cooperation with central government institutions, other local governments, private companies, and collaboration within local institutions. Resources are also spread within autonomous local government communities. Local governments build inter-local government cooperation to share resources (Cironi, Lippi, &amp; Profeti, 2013) because no single local government has enough resources to support their e-government alone. More important, the findings also show that internal resource channels were successfully built through coordination and cooperation.</li> </ul>
<p><b>Market consumption:</b> The market for a new innovation is not naturally formed but it must be developed. Market demand comes from responsible consumers that have been informed and educated about a new innovation. However, those informed, competent, and responsible customers do not pre-exist but they should be created (Van de Ven,</p>		<p>X</p>	<p><b>E-government market consumption:</b> The market for e-government emerges as a result of the local governments’ efforts to utilize e-government services for management reform and provide services as demanded by stakeholders and regulations. Competition is not an element in the emergence of markets in e-government services because local governments do not compete</p>

<p>2004; Van de Ven, 2005; Van de Ven et al., 1999). There are three components involve in the market mechanism proposed by Van de Ven et al., (1999):</p> <ul style="list-style-type: none"> <li>• <b>Cultural norms:</b> Van de Ven et al., (1999) state that there are “<i>multiple possible interpretations and uses for products that may be different from those originally intended</i>”. Such product flexibility can be caused by cultural norms within a wider community. Firms need to adapt and shape strategies to connect with customers’ preference.</li> <li>• <b>Market and demand creation:</b> Van de Ven et al., (1999) argue that the market for commercialization of innovations should be intensively created. Consumers should be informed and educated about a new innovation product such as through promotion (Van de Ven et al., 1999). Such stakeholder education can improve their competency and shape their preference to utilize the innovation continuously. Van de Ven (2005) and Van de Ven, et al., (1999) suggest that demand for innovations should be created through creating competent stakeholders.</li> <li>• <b>Competition:</b> Van de Ven et al., (1999) argue that when firms engage in developing innovations, it is the paradox of cooperation and competition, which means each firm competes to establish a distinctive position, but at the same time they must cooperate</li> </ul>	<p>X</p> <p>X</p> <p>X</p>	<p>X</p>	<p>with other local governments in providing services. Government is a monopolistic power holder that is able to choose quantity, quality and timing to deliver services (Balogun, 2001). Local government is a sole organization that provides e-government services without need to compete</p> <ul style="list-style-type: none"> <li>• <b>Cultural norms:</b> The change and adaptation of the local governments’ cultural norms into e-government innovations has supported the improvement of public affairs capacity such as improve employees’ participation, decision-making, and democratic governance as found by Feeney &amp; Welch (2013). E-government is a relatively new innovation within the local government context which requires employees and stakeholders to adapt their cultural norms.</li> <li>• <b>E-government market and demand creation:</b> Local governments have to create market demand for e-government services to widen the use of e-government services. These require stakeholders’ education and e-government assimilation. Extending knowledge and skills shapes stakeholders’ demand to continuously utilize the e-government services. The assimilation of e-government increases the awareness of employees and stakeholders within the local government</li> </ul>
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<p>to establish the innovation infrastructures. This study found that local government did not compete in providing e-government services. Stakeholders cannot resist e-government services and they cannot chose to use e-government services from other local government because the local government is a sole provider for certain e-government products (Chan et al., 2010). This implies competition is absent in e-government market consumption.</p> <ul style="list-style-type: none"><li>• .</li></ul>				
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### **9.3 The roles of the social system components**

IS sustainability is an activity of making information systems work over time within an organizational setting (Braa, Monteiro, & Sahay, 2004). The information system is in continuous operation and development (Krishna & Walsham, 2005), which provides continuous values and benefits for an organization (Peppard & Ward, 2004). The sustainability of IS within an organizational community is determined by their availability of resources to support the sustainable use of the technology (Kettinger, et al. 1994). To access the resources, organizations create a social system and perform their functions collectively within the system. The sustainability of e-government systems is also determined by organizational capacity, such as technical and financial resources (Harder & Jordan, 2013). However, that capacity is unlikely to be able to be built by a single organization and few government organizations are able to perform all functions to succeed in e-government implementation and sustainable use alone. As a result, government organizations collectively perform their functions in the social system to sustain their e-government use. This section discusses how the different components of the social system framework (Figure 25) play a role in implementation and sustainable use of local e-government.

#### **9.3.1 The roles of institutional arrangements**

This study has confirmed that institutional arrangements play an important role in legitimizing, regulating and standardizing the implementation and sustainable use of e-government within local governments. In particular, the social system construct of socio-economic pressures contributes a significant role as a source of environmental pressure that forces a local government to implement and sustain use of e-government for organizational transparency and efficiency.

This study found that central government and local stakeholders' provide legitimacy to the local governments to improve administration and management performance as well as services delivery. This legitimacy is important in receiving supports as argued by Scott (1995). The central government supports the local government through resources or technical provision to sustain e-government. When central

government imposes the use of e-government on local governments, the central government then assists the local governments with support such as IT systems, financial, and human resources.

Central government also play a role when they exert supervision and controlling authority as stated by Elander (1991, p. 35) “*Central government may have restricted local autonomy through a number of supervising and controlling mechanisms*”. For example, Indonesian central government did not accept the local government annual financial reports if they did not conform to financial information system format. As a result, local government must sustain use of the financial information system within their work practices.

Even though the initial idea to use e-government systems within the local government came from the local leaders, the realization of the initiative was mostly supported by the central government roles. The central government provided resources in the early stage implementation and use of e-government such as human resources preparation, systems implementation and blue print establishment. This implies that the role of central government in the local e-government implementation and sustainable use is a result of the resources dependencies of the local government. This finding corresponds with DiMaggio & Powell, (1991) and Teo et al., (2003) findings that lower heirachies of organization rely on their parent organization’s resources supply.

Stakeholders, such as citizens and businesses, demand that local government implement and use e-government. The citizens’ and local businesses’ demand for online services have become a major pressure for local government to use e-government as found by Ho & Ni (2004) and Ruano de la Fuente (2013). The local government responded to the demands by implementing and sustaining use of various e-government systems to promote efficiency and transparency. For example, they have to reveal their work procedures to citizens and other stakeholders in order to be transparent as found by Bertot, Jaeger, & Grimes (2010). This type of transparency was found in the use of e-government procurement and licencing systems within the local governments.



Regulations were explicitly and formally shaped to structure the local government institutions to behave in certain ways such as for what purpose they have to use e-government. The regulations impose the local governments to implement and use various e-government systems. Failure to abide to the regulation led to sanctions. For example, local government budget annual reports might be rejected when it does not comply with the financial information system (SIADINDA) requirements. This implies that regulations are used to apply coercion and sanctions as well as claiming validity to seek the local government compliance.

Similarly, the prevalence of standards forces the local governments to implement and use the e-government according to specific processes and procedures that ensure the sustainability. The standards play roles as “*the rules of engagement*” (Garud, Sanjay, & Arun, 2002, p. 189) that covers detail form and function of actors in the social systems for implementation and sustainable use of local e-government. For example, a procedural standard assisted the local governments to manage their e-government systems use consistently as well as guide the IT staff and employees in maintaining the systems.

The availability of standards across the local government reduce uncertainty for long and short term of e-government use within both regencies. As stated by Van De Ven (1993) standards are important to reduce uncertainty and to direct resources investment for technology development. The availability of standards support the regencies’ actors to allocate resources and commit effort consistently to ensure sustainably.

Even though Gao, Song, & Zhu (2013, p. 176) found that “*local governments and bodies are always grounded in their own interests, going their own way, and applying different standards or norms in e-government*”, this study’s findings show different outcomes. Gao, et al.’s (2013) finding may applicable in certain countries where there is no specific institution that plays a role in local e-government implementation. In contrast, this study found that Indonesia has a specific institution (Ministry of Communication and Information) that plays a major role in local e-government with the power to establish e-government standards. This means that local governments in Indonesia have to comply with various national standards.

Socio-economic environment pressured the local government to be innovative to improve efficiency and transparency. The local governments utilized e-government systems as a new innovation to improve their well-being. This study found that the socio-economic environment pressured the local governments to innovate to improve their organization performance and provide better services for their citizens. The socio-economic environment encouraged the local government to take a collective action to achieve common goals of implementation and sustainable use of local e-government. The local governments collectively took actions to implement and use of e-government to cope with economic limitation and social pressures. The local government are able to improve administration efficiency and transparency.

### **9.3.2 The roles of resource endowments**

Innovation occurs as a result of advances in the supply of resources endowments (Van de Ven et al., 1999). This study found that the implementation and sustainable use of local e-government was influenced by three components of resource endowments: technology knowledge and skills development, financing mechanisms, and competent human resources. The three resource endowments are related to one another. Technology knowledge and skills activities support the pool of competent human resources for sustainable innovation, while financial mechanisms support the technology knowledge and skill activities as well as provide incentive to create a pool of competent human resources.

Resources have become a critical issue for most technological development and sustainability within the two local governments. This study found the resources were endowed collectively through the cooperation between the local government with central government, with other local governments, private sector and collaboration between internal local government actors. Resource endowments cause the regencies to coordinate and cooperate with various institutions.

The local governments built public private partnership to obtain human skills. Public and private engagements in human resources endowments have supported the availability a pool of competent human resources for e-government implementation

and sustainable use. For example, the outsourced IT staff have competencies to support online the auction process including technical, strategy, and legality which were transferred to government employees. Meanwhile, inter-local government cooperation resulted in collaborative human resources training to improve IT staff and employees' technology knowledge and skills.

The regencies endowed resources between internal institutions. These internal institutions collectively generated resources to support the e-government implementation and sustainable use. Resource endowments between internal local government institutions became more sustainable and contributed to continuous availability of resources, such as financial, to support the sustainability of e-government without reliance to other institutions. For example, costs to build and maintain the e-government infrastructures were successfully generated between internal the local government institutions. This collective financial contribution has increased the sense of responsibility among local institutions and reduced the local governments' budget burden.

### **9.3.3 The roles of governmental activities**

Governmental activities focused on supplying e-government for public benefits. The activities have resulted in the development of e-government, e-government services provision, and building resource channels to support the implementation and sustainable use of local e-government. The local government developed and maintained e-government systems as demanded by stakeholders and regulations. The local government are able to utilize various e-government systems to provide services for both government and stakeholders' benefits, which concurs with the findings of Axelsson, Melin, & Lindgren (2013). As the local government organizations and their community utilize e-government, they gain positive experiences and lead them to use the services continuously. This corresponds with Reddick & Turner's (2012) findings that users' positive experiences in using e-government services can lead to continual use.

E-government development is found to require the involvement of all relevant actors (e.g. policy makers, IT staff, employees, private companies, politicians and citizens) to form collective action. Collective action was found necessary to build and sustain innovation infrastructure that makes it possible for an organization to succeed as previously found by Van de Ven, 2005). Actors' involvement in e-government development helped the local government identify and articulate the benefits of the project as well as provide means for the local government actors' participation throughout the project life cycle.

The findings show that local politicians focused on supporting the local leaders and IT staff to obtain resources for e-government development such as Internet infrastructure, maintenances, and providing incentive for IT staff as found by Torres, Pina & Sonya (2005). The involvement of politicians has cleared political barriers in the implementation and sustainable use of e-government within local government.

Also, it is found that the importance of governmental activities has caused the local governments to focus more on providing services for public interest through budget allocation instead of market performance and making profit. The local governments have provided more e-government services that allow stakeholders access to 24/7 services such as the procurement website. They established websites which are fully functioned and can be accessed at all times by all stakeholders as previously suggested Chee-Wee, Benbasat, & Cenfetelli (2008). The websites also allow stakeholders to access community-based and local government information with a more user-friendly, comprehensive and convenient way.

The availability of a variety of e-government services that support interaction between government and stakeholders are crucial to make both local governments and stakeholders experience benefits from the services. This made all actors to continuously engage with e-government systems, which then impact the sustainable use of e-government. This corresponds with Braa, et al., (2004, p. 351) argument that *“as the use of the application increased, the cycles slowed down to cater for stability and more systematic versioning”*. This shows that sustainable use of e-government systems is achieved when the systems are continuously in use.

The resources channels to support e-government services and development were built through cooperation with various central government institutions, other local governments, public-private, and internal cooperation. Those resources channels provide financial, human resources, and infrastructures needed to support e-government implementation and use. Central government played roles as the main actor that control resources across the country. The local governments cooperate with central government institutions to access the resources. Previous studies (e.g. Mizruchi & Fein, 1999; Teo, Wei, & Benbasat, 2003) have also found that organization at lower level tend to gain resources from their parent organization.

However, this study finding also shows that the local government impose lower institutions, such as districts and villages, to contribute financial cost for e-government maintenances to ensure sustainable use. Each institution is required to allocate budget to maintain the systems and infrastructure within their organizations. Maintaining e-government systems and infrastructure is a huge burden for the local government IT team because of the lack in the local Department of Transport, Communication and Information's budget. However, when the financial burden was shared between local institutions, the e-government systems operation was sustained. IT personnel, skills, and knowledge were also distributed across departments, districts, and other institutions to support the implementation and maintenance.

#### **9.3.4 The roles of e-government market consumption**

Market for e-government services is important to ensure the services are utilized by all stakeholders. This has caused the local government to perform cultural changes and adaptation, inform and educate stakeholders as noted by Van de Ven et al. (1999). The change and adaptation of cultural norms included organizational work practices, and employees' and stakeholders' attitude toward e-government use. This was required because e-government products are new innovations within the local government context where most employees and stakeholders were not familiar with the technology. This study found that the change and adaptation of the local governments cultural norms in using e-government has improved employees' participation, decision-making, and democratic governance as found by Feeney & Welch (2013).

The local governments created market and demand for e-government services to widen e-government usage. These were carried out through stakeholders' education and e-government assimilation. The assimilation of e-government increased the awareness of employees and stakeholders within the local government. This was carried out through dissemination of e-government information across stakeholders groups. Information dissemination regarding the emergence of a new technology increases community awareness and lead to acceptance of the technology (Agarwal & Prasad, 1998) and diffuse the innovation into wider society (Carter & Weerakkody, 2008).

The stakeholders were educated to use the e-government services. They are provided with new skill to utilize the e-government systems, such as how to access certain services. The stakeholders skills to use e-government services become a key success factor to sustain their interest to use the services continuously as found by Olphert & Demodaran (2007). The improvement of knowledge and skills has shaped stakeholders' demand to continuously utilize the e-government services. This corresponds with Van de Ven et al., (1999) findings that competent customers increase their demand on innovation.

#### **9.4 Understanding the contribution of the social system components to coordination and cooperation**

E-government implementation and sustainable use is found to be enhanced by the emergence of a social system where each component continuously plays a role through the coordination and cooperation of various actors. The literature (e.g. Van de Ven, 2005; Van de Ven et al., 1999) suggests that no organizations are self-sustaining and although they may possess resources to develop and implement innovation alone, they engage with other organizations to share the resources and survive. Similarly, local governments coordinate and cooperate to access the resources they require to develop and sustain e-government.

Each component of the social system is inter-dependent and inter-related. For example, the institutional arrangements of regulations and standards that emerged

play a part in specifying the roles of various actors and institutions of the local government. The institutional arrangements also determine “*the rules of engagement*” (Garud, Sanjay, & Arun, 2002, p.198) that covers the details of form and function of actors in the social system. This includes the function of actors in resource endowments, governmental activities and market consumption for e-government.

Coordination among actors is mostly through the interactions between actors involved in the construction the social system infrastructures for implementation and sustainable use of e-government. The coordination functions “*as a process in which agents engage in order to ensure their community acts in a coherent manner*” (Nwana, Lee, & Jennings, 1996, p. 79). It integrates and links together different actors at all levels as well as parts of the local government organizations to achieve a set of collective tasks required to sustain the e-government. This is achieved through harmonization of work performance to complete the subdivided tasks according to actors’ roles and positions within the social system infrastructures. For example, central government institutions, local government, businesses, and citizens interact in resources endowments to support the building of e-government infrastructures in Jembrana regency

Contrary to Van de Ven (2005) who argues that actors cooperate and compete to access resources for innovation development, this study found that local government did not compete for resources to support implementation and sustainable use of local e-government. Instead the local government coordinates and cooperates with various actors to construct the social system infrastructures. This includes local government efforts to coordinate and cooperate to form collective action with various external and internal actors to support the resources endowments, governmental activities to develop e-government services and to build markets for e-government.

All the components of the social system collectively play roles through continuous coordination and cooperation of various actors in the implementation and sustainable use of local e-government. Local governments coordinate and cooperate vertically with central government institutions and horizontally with internal institutions to

harmonize task performance to build the social system infrastructure. The social system components (institutional arrangements, resource endowments, governmental activities, and e-government market consumption) emerged through coordination and cooperation of institutions and actors in the social system over time.

In conclusion, the social system framework for implementation and sustainable use of local e-government shows that various actors coordinate and cooperate to perform a set of actions to develop and make local e-government sustainable. Numerous actors have to rely on other actors to develop all the components of the social system infrastructures that are required to accomplish e-government functions in a sustainable way. Those actors are central government institutions, local governments, private companies, NGOs, citizens, businesses and local politicians. As a result, the implementation and use of e-government within local government organizations is not only sustainable in physical format but also sustainable in a social and political context for sustainable development of the local government and all stakeholders.

## **9.5 Summary**

This chapter has discussed the emergence of the components of the social system framework, the roles the components of the system play, and their contribution to coordination and cooperation for e-government implementation and sustainable use. The roles of each component of the social system have been discussed to provide insights on how they influence the social system and the implementation and sustainable use of local e-government. Relationships among the social system components have also been discussed. Continuous coordination and cooperation of various actors in e-government led to the emergence of the social system framework. The discussion above is presented to address the research questions posed in Chapter 1. The contribution of this study for theory and practice, as well as future research is addressed in the following chapter.



## **CHAPTER 10: Conclusions**

### **10.1 Introduction**

The conclusion presents a reflection on the research questions and gives a critical overview of the social system for implementation and sustainable use of local e-government. The contributions for theory and practice are discussed, followed by the strengths and limitations of this study and suggestions for future research.

### **10.2 Reflection on research questions**

Three research questions were proposed in Chapter 1 to understand the roles in a social system for the implementation and sustainable use of local e-government. The research questions addressed what components comprise the social system, how they play a role, as well as how they contribute to coordination and cooperation

The components are identified as (a) institutional arrangements that include regulation, legitimacy, standards and socio-economic pressures; (b) resource endowments for technology knowledge and skills, financing mechanisms and competent human resources; (c) governmental activities to develop and provide e-government, and resource channels; (d) market consumption for e-government that includes cultural change and adaptation, e-government markets and demand creation.

Some of the components and sub-components of the social system framework are new and others have emerged as an adaptation of the original model. For example, socio-economic pressures are a new sub-component of institutional arrangements. These pressures affect local government and result in the implementation of policies to accommodate local conditions.

Other components such as governmental activities (e.g. e-government development, provision of e-government services and building resource channels) were found to be a substitution for organizational proprietary activities to reflect the context of public sector organisations. Government organizations are unlikely to be involved in proprietary activities because the public sector focusses on loyalty to political

superiors rather than profitability. The political superiors include citizens and other stakeholders who elect the local leaders. This causes the local government to focus on government activities to develop and provide e-government services to the stakeholders.

Each component of the social system plays a role in the implementation and sustainable use of local e-government. Institutional arrangements play a role by legitimizing, regulating, and standardizing the sustainable use of local e-government. Socio-economic pressures play a role by pressuring the local government to sustain use of e-government for organizational transparency and efficiency. There are three inter-related resource endowments that play a role. Technology knowledge and skills activities support the development of a pool of competent human resources for sustainable innovation, while financial mechanisms support the technology knowledge and skill activities as well as providing incentive to create a to pool of competent human resources.

Governmental activities focus on supplying local e-government for public benefit. The activities have resulted in the development of e-government, e-government services provision and building resource channels. The local government develops and maintains e-government systems as demanded by stakeholders and the needs of the local government to support efficiency and transparency. The e-government systems are utilized for service provision for both government and stakeholders' benefits.

Market mechanisms for e-government were established through the change of cultural norms of organizational work practices, employees', and stakeholders' attitude toward e-government use. Employees work practices and attitudes towards e-government use were persuasively and coercively changed and adapted through incentives and punishment. Demand for e-government services was created through education and informing stakeholders. Educated and informed stakeholders were willing to use the e-government services continuously.

The social system has promoted coordination and cooperation in implementation and sustainable use of local e-government. For example, the findings show that resources were endowed collectively through the coordination and cooperation between the

regencies with central government, with other local government organizations, private sector organizations and collaboration between internal actors within the regencies. The coordination and cooperation assisted all actors to perform a collective actions within the social system because they harmonize relationship and resource sharing. As a result, the burden and risk were distributed among the actors across the social system infrastructures.

### **10.3 Critical reflections on the Social System**

This study findings reflect the view of Van de Ven (2005) who argues that “*technological innovation is fundamentally a collective action process*” (p.373) which requires collaboration among actors (such as public-to-private) to build and sustain it. In most cases a single actor does not have enough resources to effectively make changes. Many different actors are needed to collaborate and make active contributions to build and sustain innovation within organizations. The coalition among actors reduces constraints in respect to financial resources, skills, legislation and culture. This also requires political acumen to enable cooperation and collaboration within the social system.

Implementation and sustainable use of local government is therefore achieved through the continuous emergence and engagement of all actors in the social system, who facilitate the coordination and cooperation. They create and emerge the infrastructure of the social system collectively. For example, central government, internal local government actors, politicians, citizens, businesses, and private organisations coordinate and cooperate to endow human resources and e-government infrastructures. The local government collectively perform their functions in the social system to sustain e-government.

Collaboration among the various actors is more important than relying on a single actor or champion in sustaining innovation within public sectors. Previous studies in e-government (e.g. Farholt & Wahid, 2008; Ke & Wei, 2004; Kim, Kim, & Lee, 2009) argue that successful of e-government is strongly determined by a government leader or project champion. Van de Ven et al., (1999) state that the “*infrastructure for an innovation system does not emerge and change all at once by the actions of one or even a few key individuals*”. In contrast this study argues that the

implementation and sustainable use of local e-government is not only determined by a project champion (such as strong leadership and leader commitment) but also by collective commitment and responsibility of various actors. Those actors collectively perform actions to build the infrastructures in the social system such as institutional arrangements, resource endowments, governmental activities, and market for e-government.

This shows that reliance on strong leadership does not sustain e-government because most (may be all) local leaders are political leaders whose leadership is terminated after a certain period. However, when various actors collectively play roles through coordination and cooperation to create the social system, the local governments can collectively perform their function to build the social system infrastructures. A single organization seldom performs all the functions required to create this social system (Van de Ven et al., 1999). Similarly, a local government organization is unlikely to be able to perform all functions alone to create the infrastructures in the social system. The process to create the social system for implementation and sustainable use of local e-government involves many actors across the local government boundaries that include central government institutions, other local governments and municipalities, private companies, and donators.

## **10.4 Research contributions**

This study was carried out to produce knowledge that is scientifically and practically useful (Corley & Gioia, 2011; Van de Ven & Johnson, 2006) in implementation and sustainable use of local e-government.

### **10.4.1 Contributions to theory**

Whetten (1989) suggests that a study should contribute to theory development though understanding what factors (variable, concepts, constructs) can be used to understand social and individual phenomena, how they are related, and why the factors are selected and cause the relationship. The contributions for theory are:

- This study contributes a social system framework to inform the implementation and sustainable use of local e-government. The framework is adapted from an existing framework developed in a commercial/industrial

context (Van de Ven et al, (1999). The components of the original framework were compared to the public sector context and substitutions made in accordance with the case studies' findings. These substitutions are adjusted to fit the local government context. The adaptation enhances theoretical understanding of how different social system infrastructures arise in a local e-government context.

- This study also contributes to the extension of the social system framework in both private and public sector contexts. While the study identifies new constructs that apply to sustainability of local e-government, it also determines that certain elements are applicable within all organizational contexts. For example, institutional arrangements of regulations, standards and legitimacy also emerged in this study. This means all organizations, public or private face similar institutional pressures. Therefore, while the public sector requires a specific lens to understand implementation and sustainable use of local e-government, there is a requirement for a broader organizational context to be considered.
- A further contribution is the identification of the range of actors who coordinate and cooperate to emerge and evolve the social system, and the roles they play as a major factor in the sustainability of e-government. The importance of this finding is that previous theory regarding successful e-government sustainability states that success is strongly determined by a project champion. However, local e-government is not sustainable without the actions of coordination and cooperation generated by a wide range of actors from many organizations.
- Final contribution of this study is that the identification of factors that affect the sustainability of e-government at local level. Previous literatures (e.g. Best & Kumar, 2008; Dada, 2006; Dong, Yu, Wang, & Zhang, 2012; Gichoya, 2005; Heeks, 2002; Nawi, Ibrahim, & Rahman, 2013; Pade, Mallinson, & Sewry, 2009) have acknowledged that e-government sustainability is influenced by factors such as institutional, resources (e.g; human, financial, and infrastructures), cultural, social, and political. This study found that local e-government sustainability is affected by broader

factors which are grouped into three main dimensions; institutional, resources, and governances.

Governance is a main dimension that contributes to the local e-government implementation and sustainable use because e-government sustainability mostly relates to governmental activities in retaining the e-government for long term operational for benefit both government and stakeholders. The factors that affect the local e-government implementation and sustainable use within this study context are summarized in table 53 as follows.

Table 53. Factors affect the local e-government sustainability

No	Factors	Description
1.	<b>Institutional</b>	
a.	Legimacy	Pressures from central government and local stakeholders
b.	Regulation	Availability of regulation (national and local) that force and guide the implementation and use of e-government within local level
c.	Standards	Availability of standadards (national and local) that guide the planning, implementation, use, and evaluation of e-government at local level
2.	<b>Resources</b>	
a.	Local political support	Support from local political institution to allocate resource regularly
b.	Infrastructures	the availability of insfrastructures within local government institutional includes in villages areas
c.	Human skills	the availability of human skills who were recruited from formal institution, regular training, and learn from other local government.
d.	Financial	Other than regularly allocated, financial source is also obtained from local institutions volunteer collaboration.
3.	<b>Governance</b>	
a.	Partnership	Local government built partnership with private organizations, inter local government, and NGOs
b.	Promotion	e-government is disseminated and diffused to all level of local stakeholders
c.	Incentives	Provide incentives for IT staff

d.	Cultural norms change	Local government employees and stakeholders cultural norms were changes through persuasive and coercive. The stakeholders were persuaded and forced to utilize e-government in daily work practices.
e.	Involvement	local stakeholders were involve in e-government through volunteer financial collaboration. The inscrease feeling of ownership among local stakeholders.
f.	Sharing responsibility	responsibility and burdens were shared among local actors
g.	Coordination	regular coordination between local institutions to overcome challenges
h.	Cooperation	Dinamic cooperation with central and local institution to obtain resources

### 10.4.3 Contributions to practice:

- This study supports local government organizations to solve common problems of the failure of e-government sustainability such as institutional, human, financial, and infrastructures resources challenges. This study provides practical knowledge to government organizations on how they should coordinate and cooperate in a social system to eliminate those challenges.
- The study contributes guidance for government organizations on how they should coordinate and cooperate in implementation and sustainable use of local e-government. For example, the social system guides local government organizations to understand the resources they need and the actors they require to identify in an e-government initiative. This enables them to collectively engage, coordinate and collaborate to sustain e-government to realise benefits for both government organizations and stakeholders.
- This study also provides practical knowledge on how local governments perform collective actions in the social system to reduce burden and risk in implementation and sustainable use of e-government. The local governments can apply the findings in practicing coordination and cooperation in the social system to share responsibilities and burdens to develop the social system

infrastructures that support implementation and sustainable use of e-government.

- This study provides practical knowledge and lesson regarding how to sustain e-government at local level. In previous cases (e.g; Best & Kumar, 2008; Dong, Yu, Wang, & Zhang, 2012; Nawi, Ibrahim, & Rahman, 2013, Pade, Mallinson, & Sewry, 2009) efforts to sustain e-government were mostly focused institutional, resources, and social, cultural and political issues. The findings, however, show that local government should also focus on governance issue such as building sustainable partnership, coordination, cooperation, involvement to increase the feeling of local ownership, and sharing responsibility among local actors to reduce burdens.

### **10.5 Reflection on research strength and limitation**

Many previous studies (e.g. Best & Kumar, 2008; Dada, 2006; Dong, Yu, Wang, & Zhang, 2012; Heeks, 2002; Nawi, Ibrahim, & Rahman, 2013) have acknowledged that the majority of e-government implementations, particularly in developing countries, have not been sustainable. The failures are held to be due to institutional, human, financial, and infrastructures resources challenges.

This empirical study was carried out in local governments that have successfully sustained their e-government for organizational efficiency and provision of services to stakeholders. The local governments coordinated and cooperated with various institutions and developed a social system infrastructure. This provides evidence on how implementation and sustainable use of local e-government is influenced by the emergence of social system infrastructures. This means the social system framework for implementation and sustainable use of local e-government was validated in a rich data case context. This has contributed understanding and in-depth learning (Stake, 1995, 2006) of implementation and sustainable use of local e-government.

The study is able to produce a “*naturalistic generalization*” (Stake, 1978, p.6); the outcomes are for “*generating understanding*” (Stenbacka, 2001, p. 551) that can be applicable in similar contexts of local government beyond the case studies. The result of this study is a product of “*live experience*” (Murphy & Yelder, 2010, p.65)



through the engagement of the researcher with participants and with the case studies. As a result of the in-depth study of the cases, the results can potentially contribute valuable theoretical and practical knowledge to the community (Myers, 2000).

This study also has limitations. The framework was implemented in two local governments that have successfully sustained their e-government. The two cases may generate limited insight and experiences. As argued by Stake (2006) a multi-case study produces limited benefits if it is carried out within fewer than 4 cases and neither show “*sufficient interactivity between programs and their situations*” (Stake, 2006, p. 22). As this study was carried out within two local governments in Indonesia, the findings may not provide strong bases for generalization to another context.

The use of a social system framework requires researchers to learn from multiple lenses because the social system involves institutional, management, social, and economic issues. This is a challenging process because it requires different areas of knowledge to carry out the research. These challenges have been addressed by Okhuysen & Bonardi (2011) who argue that researchers are required to integrate all different lenses to understand a phenomenon. These challenges may influence the overall outcome of this study.

This study also acknowledge that the research was carried out in a developing country which government, political, economy, and social characteristics may differ from other developed and less developed countries. As a result, the outcomes may relevant the countries with similar characteristics and context. However, since the research produce interesting results, the outcomes provide interesting lesson and knowledge that potentially can be applied beyond Indonesia context.

## **10.6 Addressing research objectives**

In chapter I section 3.1, it was mentioned that this study has three objectives which are: (1). Provided theoretical and practical knowledge on how a social system infrastructure emerge and play roles in sustaining local e-government; (2) provided guidances to practitioners how government should coordinate and cooperate to sustain local e-government implementation and sustainable use; (3). Applied a social

system framework within two cases of local e-government implementation and sustainable use to understand the sustainability of e-government at local level.

The objectives of this study have been achieved as follows:

1. First objective has been achieved through providing theoretical and practical guidances for academic and practitioners regarding local e-government implementation and sustainable use. The theoretical and practical contributions were dicussed in section 10.4 above. This study provides insight on what social system components were emerged, how they emerged as well as what roles they play in local e-government implementation and sustainability use.
2. Second objective has been achieved through the discussion how actors in the social system infrastructures coordinate and cooperate in section 9.4 above. The actors collectively coordinate and cooperate within the social system to leverage resources and reduce constraints in implementation and sustainable use of local e-government.
3. Third objective has been achieved through successfully application of the social system framework to study the sustainability of e-government at local level. The result is the building of social system framework for local e-government sustainability (see figure 25 page 296). The social system has been successfully adapted to the study context to fit technology context as stated by Van de Ven, 2005, p. 367) that “*the specific characteristics of an industrial infrastructure vary according to the technology on which it is based*”. The social system framework has produced a new insight on how local e-government can be sustained.

## **10.7 Suggestions for future research**

Local government organizations are able to encourage internal actors to collectively share financial responsibility to build and maintain e-government. This means implementation and sustainable use of local e-government is a collaborative project that requires involvement of various actors. Future research is required to focus on understanding the role of collaboration in sustaining e-government. Collaboration in

e-government has been identified as a new, interesting topic (e.g. Chun, et al. 2013; Williams & Fedorowicz, 2013). Such research offers significant contribution to the sustainability of e-government within government organizations, in particular local government with resources limitations, as found by Okubo (2010).

A number of actors played roles in the implementation and sustainable use of local e-government. For example, central government institutions, businesses, politicians, and private sectors were found to be involved. Future research should focus on the roles of these actors in the sustainable use of e-government.

This study identified number factors affect the sustainability of e-government at local level relate to governance activities. I suggest future research also need to focus on governance dimension of local government efforts to sustain e-government. Future research should expand the study into broader dimension of governance process of local government implementation and sustainable use of e-government within broader context of local government in different countries such as developed, developing, and less developed countries to enable generalizability.

## **10.8 Final concluding remarks**

The implementation and sustainable use of local e-government depends on various actors. Reliance on single actors, regardless a project champion or strong committed local leader, will not sustain e-government because the leader might be removed due to election or political appointment. Public sector organizations experience high turnover of leaders. Local e-government is more sustainable through coordination and cooperation of various actors to emerge the social system infrastructures. Financial and institutional challenges can be eliminated through collaboration, which can reduce reliance on a local leader or single institutions.

The findings are relevant to the e-government definition defined in Chapter 2 which is *the implementation and the use of collaborative information technology for sustainable government and the development of its stakeholders*. Currently, there is a concern that government organizations need to collaborate in e-government implementations to improve collaborative well-being. For example, United Nation (2012) urged governments around the world to utilize e-government as an instrument

for sustainable development for both government and stakeholders. The findings can be an important contribution to reduce sustainability failure of e-government particularly at local levels where institutions' challenges on resources limitation are common (Okubo, 2010). The findings of this study support the United Nations' aim of sustainable e-government.

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## Appendices:

### Appendix A: Ethics Approval

**From:** Sheila Hamilton-Brown <shamiltonbrown@swin.edu.au>

**Date:** Thursday, 9 May 2013 4:35 PM

**To:** Nurdin Nurdin <nnurdin@swin.edu.au>, Swinburne University  
<rstockdale@swin.edu.au>

**Cc:** RES Ethics <resethics@swin.edu.au>, Nadine White <nwhite@swin.edu.au>

**Subject:** SUHREC Project 2010/286 Final Report Acknowledgement

To: A/Prof Rosemary Stockdale; FICT, Mr Nurdin Nurdin

Dear Rosemary and Nurdin,

**SUHREC Project 2010/286 Analysis of organizational barriers influencing mandatory local electronic government adoption and implementation: The case of local government in Indonesia** (*original title*)

Assoc. Prof Rosemary Stockdale, Mr Nurdin Nurdin, Assoc. Prof Helena Scheepers;  
FICT

Approved duration: 1/03/2011 to 31/08/2011

Thank you for your final report on the above project received in this office on 6 December 2012. The report will be formally noted by Swinburne's Human Research Ethics Committee (SUHREC) in due course.

Please note that data are to be stored as stated in the approved protocol and the minimum period for data storage is 5 years post-publication.

Best wishes for the future.

Yours sincerely,

Sheila for

Sandra Mosca,

Director of Research

\*\*\*\*\*

Sheila Hamilton-Brown

Research Administration Officer

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## **Appendix B: Interview Format**

### **Outline protocol for semi-structured interviews**

Interviews are planned to take between 45 minutes to one hour, but time will be left to the discretion of the interviewee. The interviews will take place in local government offices and will be recorded if agreed to by the interviewee.

The following subjects are intended to be covered in the interview, although all replies are voluntary and are the opinion of the interviewee. Where answers stray into other aspects of working for local government adoption and implementation, they will be removed from transcripts.

#### **A. General questions on e-government policy**

- Can you tell me what do you know about e-government?
- How e-government implementation and use within the regency was initiated?
- What are the reasons behind the implementation and use of e-government?
- Can you describe the purpose of electronic government implementation?
- Who were involved in implementation and use of e-government?

#### **B. Institutional arrangements:**

- How the regency environments influence the decision to implement and use of e-government?
- What regulations influence e-government implementation and use?
- How the regulations influence the implementation and use of e-government?
- What standards contribute to e-government implementation and use?
- How the standards influence e-government implementation and use?
- How stakeholders influence the implementation and use of e-government?
- How the central governments influence the implementation and use of e-government?

#### **C. Resource Endowments**

- What resources are required to support the implementation and use of e-government?

- How the resources influence the implementation and use of e-government?
- How this regency obtained the resources required to support implementation and use of e-government?
- How important is participation of all relevant staff in electronic government implementation and use to you?
- How important is collaboration with other government institutions during implementation and use to you?
- Describe how employees commit to the electronic government project implementation and use.
- Describe how the leaders play roles in e-government implementation and use?
- How the tasks of IT staff involved in the electronic government implementation and use are distributed and monitored?
- How do government employees learn about electronic government implementation and how do they learn to use it?

#### D. Proprietary activities

- What are the regency strategies to support the implementation and sustainable of e-government?
- How the strategies influence the implementation and sustainable use of e-government?
- How do develop and maintain e-government implementation and use?
- How do you use electronic government systems to serve stakeholders?
- How has government organization structure changed before and after implementation of electronic government?
- How has government management strategies changed before and after the implementation of electronic government?
- How does local government and employees coordinate and cooperate between departments and with central government to support e-government implementation and use?

#### E. Market consumption

- How do government staffs express their awareness of the presence of electronic government?
- How do stakeholders express their awareness of the presence of electronic government?
- How the regency utilizes e-government services?
- How does the regency make stakeholders use the e-government?
- How do stakeholders use e-government?

## **Translation:**

Garis-garis besar protokoler wawancara dengan menggunakan pertanyaan semi-struktur. Wawancara ini akan memakan waktu sekitar 45 menit, namun demikian kepastian waktu yang pasti tergantung kesepakatan pihak peneliti dan partisipan. Wawancara akan berlangsung diruang kantor para pegawai dan akan direkam dengan menggunakan alat perekam.

Berikut ini sejumlah topik yang akan diwawancarai dan semua jawaban terserah menurut pendapat masing-masing partisipan. Jika jawaban dan komentar melenceng dari topik penelitian ini maka akan dihapus dari rekaman dan transkrip.

### **A. Pertanyaan umum terkait kebijakan e-governmen**

Tolong sebutkan apa yang anda ketahui tentang e-governmen?

Bagaimana awal mula penerapan dan penggunaan e-government dikabupaten ini?

Apa yang melatar belakangi penerapan dan penggunaan e-government?

Mohon dijelaskan kegunaan enerapan dan penggunaan e-government disini?

Siapa saja yang terlibat penerapan dan pemanfaatan e-government?

### **B. Element institusi:**

- Bagaimana pengaruh lingkungan kabupaten ini terhadap keputusan penerapan dan pemanfaatan e-government?
- Regulasi apa saja yang mempengaruhi penerapan dan pemanfaatan e-governmen?
- Bagaimana regulasi tersebut berperan dalam penerapan dan pemanfaatan e-governmen?
- Standar apa saja yang berkontribusi dalama penerapan dan pemanfaatan e-governmen?
- Bagaimana standar tersebut mempengaruhi penerapan dan pemanfaatan e-governmen?
- Bagaimana pengaruh stekholder dalam penerapan dan pemanfaatan e-governmen?
- Bagaimana peran pemerintah pusat dalam penerapan dan pemanfaatan e-government?

### **C. Pengadaan sumberdaya**

- Sumber daya apa saia yang diperlukan untuk mendukung penerapan dan pemanfaatan e-governmen?
- Bagaimana pengaruh sumber daya tersebut dalam penerapan dan pemanfaatan e-governmen?
- Bagaimana cara kabupaten ini mengadakan sumber daya tersebut?



- Seberapa penting partisipasi pegawai pada semua level dalam penerapan dan pemanfaatan e-government?
- Seberapa penting kolaborasi dengan institusi pemerintah lain dalam penerapan dan pemanfaatan e-government?
- Mohon dijelaskan bagaimana peran pimpinan dalam penerapan dan pemanfaatan e-government?
- Bagaimana pembagian tugas staf IT dalam penerapan dan pemanfaatan e-government ini?
- Bagaimana pegawai memperoleh ketrampilan teknologi terkait penerapan dan pemanfaatan e-government ini?

#### D. Kegiatan propitari

- Apa strategy pemerintah daerah dalam mendukung penerapan dan pemanfaatan e-government?
- Bagaimana strategy tersebut mempengaruhi penerapan dan pemanfaatan e-government?
- Bagaimana anda mengembangkan dan memelihara e-government?
- Bagaimana pemanfaatan e-government untuk kepentingan stakeholder?
- Seberapa jauh struktur pemerintahan berpengaruh setelah penerapan e-government?
- Seberapa jauh strategi manajemen pemerintah berubah setelah penerapan dan pemanfaatan e-government?
- Bagaimana pemerintah daerah ini beserta pegawainya melakukan koordinasi dan kerjasama antar dinas dan dengan pemerintah pusat guna mendukung penerapan dan pemanfaatan e-government?

#### E. Pemberdayaan pasar

- Bagaimana pegawai mengetahui kehadiran e-government di daerah ini?
- Bagaimana para stakeholder mengetahui adanya e-government?
- Bagaimana pemanfaatan e-government?
- Bagaimana caranya pemerintah daerah ini membuat para stakeholder mau memanfaatkan e-government?
- Bagaimana para stakeholder memanfaatkan e-government?

### Appendix C: Publications

- Nuridin N. Stockdale R. & Scheepers H. (2010). Examining the Role of the Culture of Local Government on Adoption and Use of E-Government Services. *Proceedings of International Federation for Information Processing Conference on e-Government*. M. Janssen et al. (Eds.): *EGES/GISP 2010, IFIP AICT 334*, pp. 79–93.
- Nuridin N. Stockdale R. & Scheepers H. (2011). Understanding Organizational Barriers Influencing Local Electronic Government Adoption and Implementation: The Electronic Government Implementation Framework. *Journal of Theoretical and Applied Electronic Commerce Research*, 6(3) pp.13-27.
- Nuridin N. Stockdale R. & Scheepers H. (2012). Internal Organizational Factors Influencing Sustainable Implementation of Information Systems: Experiences from a Local Government in Indonesia. *Proceedings of 12<sup>th</sup> Australasian Conference on Information Systems (ACIS), Melbourne, Australia*.
- Nuridin N. Stockdale R. & Scheepers H. (2012). Organizational Adaptation to Sustain Information Technology: The Case of E-Government in Developing Countries. *Electronic Journal of e-Government*, 10(1), pp.70-83
- Nuridin N. Stockdale R. & Scheepers H. (2012). The Influence of External Institutional Pressures on Local E-Government Adoption and Implementation: A Coercive Perspective within an Indonesian Local E-Government Context. *Proceedings of International Federation for Information Processing Conference on e-Government*. H.J. Scholl et al. (Eds.): *EGOV 2012, LNCS 7443*, pp.13–26.
- Nuridin N. Stockdale R. & Scheepers H. (2012). Benchmarking Indonesian Local E-Government. *Proceedings of Pacific Asia Conference on Information Systems (PACIS), Paper 115*. Available online at: <http://aisel.aisnet.org/pacis2012/115>
- Nuridin, N. Stockdale, R. & Scheepers, H. (in press) The Role of Social Actors in the Sustainability of E-Government Implementation and Use: Experience from Indonesian Regencies. *Proceedings of the 47<sup>th</sup> HICSS (paper 722)*. Hawaii, January 2014