PUBLIC E-SERVICE FRAMEWORK TOWARDS SUSTAINABLE SERVICE DELIVERY

HASLINDA SUTAN AHMAD NAWI

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Ibubapaku,

Luth Iman Daniel @ Adam,

Afief Hazimi, Aiman Zikri, Aira Maisarah, Alief Muhaimin, Alya Zulaikha,

Anis Syafiza, Faiz Yusri, Minhalena, Muhammad Ilman, Nur Zuyyin Alisha,

& Siti Fatimah.

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ABSTRACT

E-service enables citizens to interact and receive services from most government agencies which are convenient, dependable, and less costly. To promote efficient and effective service delivery, the Malaysian government is targeting zero face-to-face service delivery with 90% of all government services to be available online by 2015. It is reported recently, that at least half of the Malaysian public sector's 1,500 websites of e-service applications could not be sustained and will be shut down by 2016. Due to high investment allocated by the government, it is important to ensure that the public e-service is sustained and continues to evolve. Limited research has been done on how to sustain the e-service or provide effective methods to aid implementer to reach this goal. This research developed a framework to sustain the government's public e-service delivery in Malaysia. This study employed qualitative method approach within an interpretive paradigm. A case study was conducted at the Inland Revenue Board of Malaysia to explore the public e-service sustainability criteria as it is perceived as a role model of a successful e-service provider. Soft Systems Methodology (SSM) was adopted as a conceptual lens to gain deeper insights into the data collection and analysis. Qualitative data collected through interviews, observations and document analysis were analysed verbatim using thematic analysis. Two regulators, three implementers, two e-service providers, nine users and one representative from a non-profit organization were interviewed to get a better understanding of the public e-service sustainability. The technological, institutional, and environmental dimensions with seventeen elements that emerged from the case study are: information confidentiality; software quality; ubiquitous services; personalization; integrated services; IT governance; business process improvement; legislative issues; benchmarking; top management support; awareness; trust; community empowerment; user expectation and satisfaction management; government; as well as political influence. Based on the findings, a Public e-Service (PeS) Framework consisting of cultural and logic-based streams which influence each other was developed. In addition, several recommended actions on how to use the framework as a means of assessing their current public e-service or as a guide for future public e-service initiative were proposed to assist government agencies.

ABSTRAK

E-perkhidmatan membolehkan rakyat berinteraksi dan menerima perkhidmatan daripada agensi kerajaan yang menjadikan penyampaian perkhidmatan awam lebih mudah, dipercayai dan murah. Bagi meningkatkan kecekapan dan keberkesanan penyampaian perkhidmatan awam, kerajaan Malaysia mensasarkan 90% perkhidmatan awam secara atas talian dengan sasaran sifar bagi penyampaian perkhidmatan secara bersemuka pada tahun 2015. Baru-baru ini dilaporkan bahawa sebahagian daripada 1,500 laman sesawang aplikasi e-perkhidmatan milik agensi kerajaan tidak dapat dilestarikan dan akan ditutup menjelang tahun 2016. Akibat daripada peruntukan pelaburan yang tinggi oleh kerajaan, adalah sangat penting untuk memastikan e-perkhidmatan dilestarikan dan terus berkembang. Kajian yang telah dilakukan terhadap bagaimana melestarikan e-perkhidmatan atau menyediakan kaedah efektif dalam membantu pelaksana mencapai tujuan ini adalah terhad. Kajian ini membina sebuah kerangka kerja yang bertujuan untuk melestarikan penyampaian e-perkhidmatan kerajaan dalam konteks Malaysia. Kajian ini mengguna-pakai kaedah kualitatif dalam paradigma pentafsiran. Kajian kes telah dijalankan di Lembaga Hasil Dalam Negeri Malaysia yang dianggap sebagai model peranan bagi penyedia e-perkhidmatan yang berjaya bagi meneroka kriteria kelestarian e-perkhidmatan awam. Metodologi Sistem Lembut (SSM) diguna pakai sebagai lensa teoritikal bagi mendapatkan kefahaman yang mendalam terhadap data yang dikumpul dan dianalisa. Data kualitatif yang dikumpul melalui temubual, pemerhatian dan analisa dokumen telah dianalisa kata demi kata menggunakan pendekatan analisa tematik. Dua pengawal atur, tiga pelaksana, dua penyedia e-perkhidmatan, sembilan pengguna dan seorang wakil daripada organisasi tanpa untung telah ditemubual bagi mendapatkan pemahaman yang lebih baik bagi kelestarian e-perkhidmatan awam. Dimensi teknologi, keinstitusian dan persekitaran bersama dengan tujuh belas elemen telah timbul daripada kajian kes iaitu: kerahsiaan maklumat; kualiti perisian; perkhidmatan sentiasa ada; personalisasi; perkhidmatan bersepadu; tadbir urus teknologi maklumat; pembaikan proses perniagaan; isu legislatif; penandaarasan; sokongan pengurusan atasan; kesedaran; kepercayaan; pemerkasaan komuniti; pengurusan jangkaan dan kepuasan pengguna; kerajaan; dan juga pengaruh politik. Berdasarkan hasil penemuan, Kerangka Kerja e-Perkhidmatan Awam (PeS) yang mempunyai aliran budaya dan aliran berasaskan logik yang saling mempengaruhi antara satu sama lain telah dibangunkan. Selain itu, beberapa cadangan tindakan tentang bagaimana kerangka kerja ini dapat digunakan sebagai cara menaksir e-perkhidmatan awam semasa atau sebagai panduan masa depan bagi inisiatif e-perkhidmatan awam telah diusulkan untuk membantu badan-badan kerajaan.

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GLOSSARY OF TERMS

e-Government	-	Electronic Government
e-Service	-	Electronic Service
EGDI	-	E-Government Development Index
ETP	-	Economic Transformation Plan
G2B	-	Government-to-Business
G2C	-	Government-to-Citizen
G2E	-	Government-to-Employee
G2G	-	Government-to-Government
GTP	-	Government Transformation Plan
ICT	-	Information Communication Technology
ICTD	-	ICT for Development
IRBM	-	Inland Revenue Board of Malaysia
IS	-	Information Systems
IT	-	Information Technology
MAMPU	-	Malaysian Administrative Modernization and Management Planning Unit
MSC	-	Multimedia Super Corridor
NKEA	-	National Key Economic Areas
PeS	-	Public e-Service
SSM	-	Soft Systems Methodology
TBL	-	Triple Bottom Line
UN	-	United Nations
10MP	-	10th Malaysia Plan

CHAPTER 1

INTRODUCTION

1.1 Overview

This is a study that investigates how a Public e-Service (PeS) Framework is developed and could be adopted by stakeholders in the Malaysian public sector. This research study of the criteria of the public e-service aims to provide an understanding of sustainable public e-services in Malaysia. This introductory Chapter provides an overview of the study's focus together with the primary motivation of this study. It first examines the research background followed by the statement of the problem. Section 1.4 discusses the rationale of the research. Key research questions and objectives of the research are then outlined in Section 1.5 and Section 1.6 respectively. The Chapter then provides the significance of the study based on its contributions in Section 1.7. The scope of the research is outlined in Section 1.8 while the remaining Chapter's description in Section 1.9 highlights the outline of this thesis.

1.2 Background of the Problem

Over the last decade, the government has globally started to reforms and has witnessed a growth in digital government services that has contributed to the successful government transformation. These initiatives are complex change efforts intended to use new and emerging technologies in order to support the transformation programme in the operation and effectiveness of government. Pardo and Jiang (2007) have supported the idea of information and communication technologies (ICT) since it has the potential to transform government structures and to improve the quality of government programme and services. Prior studies by Gil-Garcia and Pardo (2005) have mentioned that many national, state, and local governments are struggling to make better decisions about ICT investments as part of their transformation agendas. Government organisations are progressively seeking new tools to expand their performance and to deliver better services to their citizens. For example, many governments around the world are greatly supporting the electronic delivery of public services to their citizens and the businesses (Sharifi and Manian, 2010). It enables the government to maximum their transactions within the government via the electronic channels i.e. electronic government (e-government). According to Reynolds and Regio (2001) the delivery of electronic and integrated public services will decrease the digital divide and offer the benefits of lifelong learning to the citizens. Furthermore, it also strengthens government-customer relationship, foster economic development and creates more government participation.

Traditional methods of service delivery over the counter are no longer adequate to fulfil citizen satisfaction. Currently, citizens are more IT literate than ever and understand the benefit of online services. They are getting familiar to use electronic means of government services. By successfully implementing electronic services, government organisations could provide value-added and integrated services among their agencies. For example, rather than visiting several different offices to acquire a government permit, citizens and businesses can complete all transactions from a single point of access, that is available and accessible 24 hours a

day. By doing this, governments could use new technologies to serve their citizens as individuals and provide them personalised services. Furthermore, governments could help their citizens access new technologies available as well as provide computer literacy education, especially to the young and elderly people. This allows their citizens to improve their relationships with their governments and re-gain their trust and confidence in the public sector.

However, putting government ICT or specifically e-services into practice is not an easy task. In fact, over 60% of all e-government projects are unsuccessful (Holmes, 2001). According to Heeks (2003), the majority of e-service implementation in developing countries have failed, with 35% of them being classified as total failures (e-government or e-service was not implemented or was implemented but immediately abandoned), and 50% as partial failures (major goals were not attained and / or there were undesirable outcomes). It was found that 70% of ICT projects did not deliver as expected. Only 16% of the projects were delivered on time and according to the budget (Read, 2004). Previous research found that more than 50%, of the large IS projects had exceeded their original budgets and timelines, and this has occurred frequently in the government than in the private sector (Keil *et al.*, 2000; Wright and Capps, 2010). In addition to that, there is much evidences that "runaway" projects have happened repeatedly, and new empirical evidence has shown that they have happened more often in government organizations (Wright and Capps, 2010). International e-Government studies have discovered a number of public e-service projects that have been unsuccessful (Carter and Weerakkody, 2008; Chan *et al.*, 2010; Jaeger, 2003). It could be concluded that most ICT / IS initiatives in the public sector could not be sustained or had partially failed after their implementation in developing countries. Partial failures were associated with the sustainability failure whereby an initiative would first succeed, but was often then abandoned after a year or so (Gichoya, 2005; Heeks, 2002a). Furthermore, according to Hawari and Heeks (2010), the main reason of the high failure rates of IS initiatives often appeared partial, focusing only on some aspects of system outcome and/or focussing only on certain specific implementation factors.

The government of Malaysia has many agendas in order to materialize the government transformation programme. ICT has become one of the key areas that may support the transformation programme. For example, e-service is one of eight projects launched to date under the e-Government Flagship since it was first started in 1997. All these projects will use ICT and multimedia technologies in order to transform the way the government operates, coordinates and enforces its governance. In fact, it is clearly mentioned in the 2011 budget announced by the Prime Minister of Malaysia on 15 October 2010 that the enhancement of the Information Communication Technology (ICT) would form the first strategy of the budget an allocation of RM119 million. In addition to that, the 10th Malaysia Plan (10MP) has clearly articulated the central role of ICT as a foundation for the nation to vault itself forward towards a high-value economy. In line with that, the Malaysian government has listed ICT as their 12 National Key Economic Areas (NKEAs) in the new economic model. This is intended to build the foundation for the 10th Malaysian Plan. This means that ICT has a key strategic role to play as an enabler of the national infrastructure, education and human capital development for the new economic model. With this government target to make all government services available electronically, pressure is increasing daily for the stakeholders to ensure a successful implementation of e-service that has been renowned for its high failure rate. According to a study by Arshad in 2003 conducted among 108 software companies in Malaysia surveying software project success, it was focused that only 9.2% of the projects were successful (Arshad, 2003). According to a report in 2006, the Royal Malaysian Customs had spent RM290 million for underutilized systems (Yeo, 2002). To overcome this problem they appointed Deloitte Consulting firm to prepare a plan that worth RM 451 million (Yeo, 2002). On top of this, Ministry of Health has invested in ICT for the MyHealth project but resulted in the project being extended from 2007 to 2012 (Lee, 2007). This is a serious calling for the public sector agencies to concentrate on how to overcome the ICT project failures by emphasizing its sustainability.

The implementation of the public e-service has been found to bring benefits to the citizen, businesses and the public agencies itself. As for the citizen, cost saving in term of monetary and time is the main reasons to use the e-service. There is a

rapid growth in the development and launching of the new public e-service over the web for the citizens' use by the Malaysian government. According to Malaysian Public Sector ICT Strategic Plan (2011 – 2015) that was launched on 7th July 2011, five programmes and 22 main initiatives were identified as follows (Institut Tadbiran Awam Negara, 2011):

a. Enhancement of Service Delivery (5 initiatives);
b. Enhancement of Capacity and Capability (3 initiatives);
c. Enhancement of Performance Measurement Capability (3 initiatives);
d. The establishment of a Connected Government (4 initiatives); and
e. The provision of Sustainable and Resilient ICT (7 initiatives).

With the Government Transformation Plan (GTP) and the Economic Transformation Plan (ETP) as the nation transformation agendas, there are 6 targets set out in order to align them in the direction and aspiration of the stakeholders. One of the targets is towards zero face-to-face service delivery with 90% of all government services being available online by 2015 and 90% of total transactions for the on-line services are made on-line by 2015 (Institut Tadbiran Awam Negara, 2011). In addition to that, in the United Nations (UN) E-Government Survey 2014, Malaysia was ranked fourth among top countries for online service delivery by the middle income group (United Nations, 2014). It means that the Malaysian public sector should focus in expanding the sustainability of the public e-service initiatives implementation and operations. This shows that the government must have proper planning for any e-service initiatives implementation and should have a strategy in order to sustain their investments.

1.3 Statement of the Problem

The role of ICT in the transformation of the public agencies is well understood. The Malaysian public sector is currently adopting ICT in their government transformation programme. In line with the targets towards zero face-to-

face service delivery by 2015 (Institut Tadbiran Awam Negara, 2011), the Malaysian government should retrieve the competitive advantage and should have the ability to transform their operations and services through the use of ICT. However, according to The Star Online recently, at least 750 websites of the Malaysian public sector's will be shut down by 2016 (Singh, 2015). These large amount of government websites are the platform of their e-services application (MAMPU, 2015) also need an improvement and have not been well maintained (MAMPU, 2013; Singh, 2015). Therefore, it is a must for the stakeholders to reduce the amount for ICT based project failures and increase the sustainability of its implementation especially e-service initiatives. In addition to that, there has been limited research done regarding how to sustain the e-service and to provide effective methods to aid developers to reach this goal (Aichholzer, 2004; Bengtsson, 2008; Heeks, 2002a, 2003). Thus, there is a need to investigate and have an appropriate way to assess the e-service sustainability that would lead to the development of public e-service sustainability framework based on lessons learned from the existing projects and initiatives locally and internationally. This could allow the relevant stakeholders to tackle issues related to the e-service sustainability and other related concerns of the Malaysian government service delivery.

1.4 Research Rationale

This section briefly discusses the rationale for this research. A more detailed discussion of the rationale is developed in Chapter 2. There are two research rationales which are:

a. Research Rational 1: Limited previous research studying in the public e-service sustainability

b. Research Rationale 2: Need to identify e-service sustainability elements and dimensions for the public agencies as a means to support continuous improvement of the government service delivery

There have been many studies of sustainability in various contexts. Notable of most past studies of sustainability in IS areas include those for:

- Business strategy domain (Avital *et al.*, 2006; Baker *et al.*, 2011a; Baker *et al.*, 2011b; Chung *et al.*, 2003; Elliot, 2011; Evans and Smith, 2004; Gericke *et al.*, 2010; Greenaway and Chan, 2005; Hackney *et al.*, 2000; Haes and Grembergen, 2008; Kettinger *et al.*, 1994; Piccoli and Ives, 2005; Roquilly, 2011; Schryen, 2010);
- Green IT / IS domain (Cater-Steel and Tan, 2010; Corbett, 2013; Dedrick, 2010; Hilpert *et al.*, 2013; Loos *et al.*, 2011; Molla and Cooper, 2009; Molla *et al.*, 2011; Pernici *et al.*, 2012; Seidel *et al.*, 2013; Vykoukal *et al.*, 2010; Watson *et al.*, 2010); and
- IT / IS projects domain (Braa *et al.*, 2004b; Chengalur-Smith *et al.*, 2010; Feldman and Horan, 2011; Kifle *et al.*, 2006; Marett *et al.*, 2013; McLoughlin *et al.*, 2012; Parmar *et al.*, 2009; Titlestad *et al.*, 2009).

However, past researchers have stated that there has been very little research done regarding how to sustain the e-service and to provide effective methods to aid developers to reach this goal (Aichholzer, 2004; Bengtsson, 2008; Heeks, 2002a, 2003). In addition to that, Dao et al have claimed so far that IS research on sustainability has been conquered in the domain of green IT, which has focused mostly to reduce energy consumption of corporate IT systems (Dao *et al.*, 2011). This research study hopes to fill this literature / research gap.

Numerous studies have explored the perspectives of the successes and failure, of the e-government initiatives but not in the context of the sustaining e-service initiatives. Research to date has focused on e-government failure, management and delivery issues (Heeks, 2003; Holmes, 2001; Scott and Robbins, 2010; Wright and Capps, 2010), and perspectives of e-government challenges and opportunities (Gronlund and Horan, 2005; Smith *et al.*, 2010). According to The Star Online Malaysia in 2015, studies conducted by MAMPU has shown that at least 750 of the

public sector's websites served as the platform of e-service applications in Malaysia would need to be shut down by 2016 due to not been well maintained and needed a lot of improvement (Singh, 2015). This study was looking at the level of services provided by public agencies at the mentioned websites.

In identifying the public e-service sustainability, this research hopes to provide a proper guidance to the government agencies when developing and implementing their e-service applications. Furthermore, the identified e-service sustainability process might provide a guideline for other organizations (i.e. non-government organizations) in order to emulate the success of other public e-service providers.

1.5 Research Questions

In accordance with the above discussion, this research answers the following principal research question:

How to sustain service delivery through public e- service?

To respond to the principal question, the following research questions are therefore addressed:

RQ1: What is the scenario of the public e-service sustainability in the context of the Malaysian government?

RQ2: What are the elements and dimensions of the public e-service sustainability and how they can influence its sustainability?

RQ3: How can the elements and dimensions guide the sustainability of the public e-service?

1.6 Research Objectives

This study embarks on three main objectives as follows:

RO1: To understand the scenario of the public e-service sustainability in the context of the Malaysian government.

RO2: To understand how the elements and dimensions of the public e-service sustainability can influence its sustainability.

RO3: To recommend the framework on sustainability of the public e-service based on identified elements and dimensions.

1.7 Significance of the Research

The three broad research objectives above hope to address the wider implication of the e-service sustainability knowledge and application where it hopes to potentially contribute to the theoretical and practical implications as discussed in the section below.

1.7.1 Theoretical Implication

This research hopes to contribute to the body of knowledge by amplifying the relatively limited research studies done on the public e-service sustainability. The stages of Soft Systems Methodology (SSM) proposed by Checkland in 1981 were used in this research as a lens and a guiding method in order to develop the framework. This theoretical approach has been identified as a well-established analytical tool that is capable of capturing the complexity of the unstructured problem situation of the public e-service sustainability.

1.7.2 Practical Implication

This research hopes to make a significant contribution to the knowledge in the area of the public e-service sustainability. The results from this study can be used as a means of assessing the current public e-service and as a guide for future public e-service project implementation in Malaysia. As part of that, the intention of this research is to support the continuous improvement of the government service delivery for the Malaysian public sector through the use of ICT. Failure to sustain this critical public e-service may result in large investments in systems that have a low payoff, or failure to invest in systems that might potentially have a high payoff.

1.8 Scope of the Research

The scope of the research defines the boundary of this research as below:

a. The unit of analysis of this research is the organization (public e-service organizations) that leads to the analysis of the public sector. The public e-service organizations in the context of this research encompass the Malaysian public sector agencies which will be implementing the e-service.

b. The study will target respondents consisting of stakeholders who are involved in the e-service implementation and operation.

c. This study is also focused on the public e-service that have any combination of the criteria as suggested by the Malaysian Administrative Modernization and Management Planning Unit (MAMPU) (a central agency in Malaysia that is responsible in 'modernizing and reforming' the public sector) below:

   i. the e-service of the federal statutory bodies located in the Klang Valley;

ii. a complete cycle of the e-service process (transaction or full electronic case handling);

iii. the selected e-service has an updated statistics usage report shared in their portal; and

iv. the e-service should offer benefits to the citizens and is most widely used by the citizens.

1.9 Thesis Structure

Chapter 1 – Introduction: This section provides an overview on how the remainder of this thesis is structured. An overview of each of the remaining chapters is presented below.

Figure 1-1 shows the mapping of the research objectives to the research questions and the thesis chapters.

Chapter 2 – Literature Review: This Chapter reviews and presents prior academic literature relevant to the e-service sustainability. It shows the gaps and confusions in the e-service sustainability area that may have been influenced by other related concepts. The Chapter provides an overview of e-service implemented in seven public agencies in Malaysia. It also discusses how the Soft Systems Methodology (SSM) is applied in the study in order to construct the conceptual framework.

Chapter 3 – Research Methodology: This Chapter describes the overall research design and methodology used in this study. It discusses the interpretive perspective and the qualitative case study adopted by the researcher. This Chapter

also details out the methods utilized to collect and to complete the data analysis undertaken in this research.

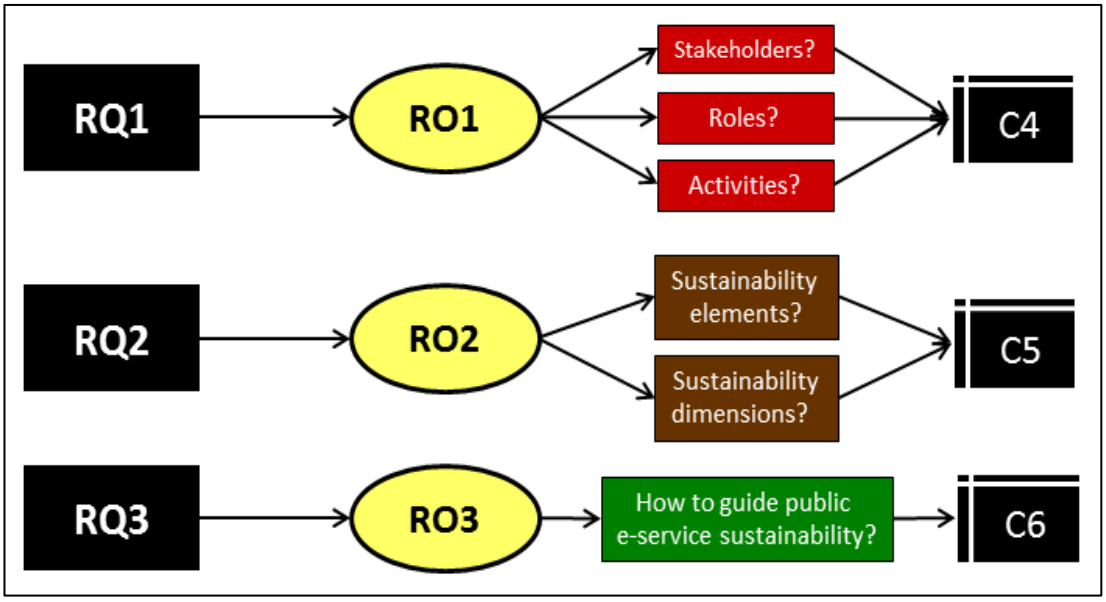

Figure 1.1: Mapping research questions to the research objectives and thesis chapters

Chapter 4 – Initial Study: An initial study was conducted early on in this study with the main aim of exploring the scenario of the e-service sustainability in the Malaysian context as shown in Figure 1.1. This Chapter reports the findings from the initial study conducted. The public e-service stakeholders were identified, the e-service sustainability issues were highlighted in the rich picture and the e-service sustainability activities model was then constructed. At the end of this Chapter, an initial Public e-Service (PeS) Framework was developed.

Chapter 5 – Case Study: Malaysian Public E-service This Chapter describes a case study of the Inland Revenue Board of Malaysia which have successfully implemented the e-Filing and e-Bayaran. Through the detailed analysis of this case study, this Chapter presents the findings respectively and reports the e-service sustainability elements and dimensions (as shown in Figure 1.1).

Chapter 6 – PeS Framework: This Chapter presents the discussion of the finding from the case. The comparative analysis with findings of the initial study identifies points of similarity and differences in the identified e-service sustainability derived, leading to the identification of shared perceptions and patterns as well as differences. As depicted in Figure 1.1, this Chapter also presents and describes the framework verification session and the final refined version of Public e-Service (PeS) Framework and its recommendations of action.

Chapter 7 – Conclusion: This concluding Chapter summarizes the results of this study, aligning these results with the research questions, and discusses these results in relation to the objectives of the research. This Chapter also discusses the contributions and limitations of the study, and proposes directions for future research.

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