FACTORS INFLUENCING SUCCESS OF MALAYSIAN E-GOVERNMENT
IMPLEMENTATION FOCUSED ON WEBSITES ASSESSMENT,
INFRASTRUCTURE READINESS AND CHANGE MANAGEMENT

GAYAH GULAM HAIDAR

A thesis submitted in fulfilment of the
requirements for the award of the degree of
Doctor of Philosophy (Computer Science)

Faculty of Computing
Universiti Teknologi Malaysia

APRIL 2014

FACTORS INFLUENCING SUCCESS OF MALAYSIAN E-GOVERNMENT
IMPLEMENTATION FOCUSED ON WEBSITES ASSESSMENT,
INFRASTRUCTURE READINESS AND CHANGE MANAGEMENT

GAYAH GULAM HAIDAR

A thesis submitted in fulfilment of the

Requirements for the award of the degree of

Doctor of Philosophy (Science Computer)

Faculty of Built Environment

Universiti Teknologi Malaysia

APRIL 2014

ACKNOWLEDGEMENT

My sincere thank you to UTM for the offer and opportunity to enrol in the post graduate programme.

I would like to acknowledge and extend my heartfelt gratitude to Prof Dr Ahmad Zaki for his support and persistent assistance in completing the paper. Prof Dr Ahmad Zaki, my earlier supervisor had been instrumental to the start of a new beginning for me in this academic journey. So is Prof Dr Rose Alinda who has lent me the support when needed and continued the struggle to guide through the completion of the paper. Both are my supervisors who had assisted and assured that this is a possible endeavour.

My most special appreciation is to my husband, Sulaiman for his support, and sons Basil and Danial for their understanding and perseverance and made this effort possible for a working mother.

To all my team mates at my former office, MDeC and the related government agencies and officers, a big thank you for their cooperation and great team spirit in the respective EG projects assumed based on the vision to provide the best service in the areas that we were assigned. Hope this study is an achievement to all ICT related officers in making EG relevant and a step further to transform government agencies towards transparency, productivity and efficiency.

ABSTRACT

The thesis explores the three main activities of websites assessment, infrastructure readiness test and change management as factors influencing the implementation of Electronic Government (EG) or Digital Government in Malaysia. The objectives of this research include understanding key factors that influence EG success in Malaysia, investigating the use of indicators within the factors that could facilitate measuring or monitoring the delivery and usage of online services, and developing a model based on factors and indicators that would help government agencies to deliver online services in EG. It is to facilitate delivery of online services and drive usage for the convenience of users or public at large. Mixed methods through triangulation evaluation approach where real life activities were emphasised with theoretical definitions for the case studies were used in seeking success of EG implementation. The first factor is the case study of the annual nationwide assessment and ranking of government agencies' websites or portals. Websites were assessed based on a set of criteria and scored accordingly. These scores were then ranked according to 1-5 star ranking. The second factor is the case study with the activity of infrastructure readiness test for the bandwidth required for EG transactions over the internet. This was a crucial exercise since internet infrastructure is the basic requirement for EG implementation. The third factor is the case study of change management activity where awareness programmes and motivation practices towards respective agencies can be translated into usage increase of online services for the users. These case studies were conducted independently. Amongst the factors, the websites assessment was the key case study as it involved all government agencies nationwide and data of online services yearly could be gathered. The other two factors were to promote EG usage and have indirect contribution towards the delivery of online services. Selected agencies were used to correlate with the number of online services offered for a period of time against star ranking. A positive correlation between online services and the websites assessment rankings attained by the respective agencies was found. This is in line with the findings that using these factors increased number of online services and usage. A directional model illustrates the use of factors and indicators for future activities in implementing EG successfully.

ABSTRAK

Tesis ini meninjau pengaruh tiga aktiviti utama iaitu penilaian laman sesawang, ujian kesediaan infrastruktur dan pengurusan perubahan sebagai faktor yang mempengaruhi pelaksanaan Kerajaan Elektronik (KE) atau Kerajaan Digital di Malaysia. Objektif kajian adalah untuk memahami faktor utama yang mempengaruhi kejayaan KE di Malaysia, menyiasat penggunaan petunjuk dalam faktor yang boleh memudahkan pengukuran atau pemantauan penyampaian dan penggunaan perkhidmatan dalam talian, dan pembangunan model berasaskan faktor dan petunjuk yang dapat membantu agensi kerajaan untuk menyampaikan perkhidmatan dalam talian KE. Ia adalah untuk membantu penyampaian perkhidmatan dalam talian dan menggalakkan penggunaan bagi memudahkan pengguna atau orang ramai. Kaedah gabungan melalui pendekatan penilaian triangulasi di mana aktiviti sebenar ditekankan dengan takrifan teoretikal bagi kajian kes yang digunakan untuk mencari kejayaan dalam pelaksanaan KE. Faktor pertama ialah kajian kes penilaian dan penarafan tahunan laman sesawang atau portal agensi kerajaan. Laman sesawang dinilai berdasarkan satu set kriteria dan diberi skor berkaitan. Skor ini di beri penarafan 1-5 bintang. Faktor kedua ialah kajian kes dengan aktiviti ujian kesediaan infrastruktur bagi keperluan lebar jalur untuk transaksi KE menerusi internet. Ini adalah usaha penting kerana infrastruktur internet adalah keperluan asas untuk pelaksanaan KE. Faktor ketiga ialah kajian kes pengurusan perubahan di mana program-program kesedaran dan amalan motivasi kepada agensi terlibat boleh membawa kepada peningkatan penggunaan perkhidmatan dalam talian untuk pengguna. Ketiga-tiga kajian kes dilakasanakan secara tidak bersandar antara satu dengan yang lain. Di antara kesemua faktor, penilaian laman sesawang adalah kajian kes utama yang digunakan kerana ia melibatkan semua agensi kerajaan di seluruh negara dan data perkhidmatan dalam talian setiap tahun dapat dikumpulkan. Dua faktor lain adalah untuk menggalakkan penggunaan KE dan menyumbang secara tidak langsung ke arah penyampaian perkhidmatan dalam talian. Agensi terpilih digunakan untuk korelasi dengan bilangan perkhidmatan dalam talian yang ditawarkan dalam tempoh masa tertentu terhadap penarafan bintang yang di perolehi. Satu korelasi positif antara perkhidmatan dalam talian dan kedudukan penerapan laman sesawang agensi tersebut telah ditemui. Ini sejajar dengan hasil penemuan bahawa penggunaan faktor-faktor ini menambah bilangan perkhidmatan dalam talian dan penggunaannya. Satu model berarah menggambarkan penggunaan faktor dan petunjuk bagi aktiviti masa hadapan dalam melaksanakan KE secara jayanya.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

GLOSSARY OF TERMS

EG	-	Electronic Government
eKL	-	Electronic Klang Valley
EPU		Economic Planning Unit, Prime Minister's Department
FAQ	-	Frequently Asked Questions
GOM	-	Government of Malaysia
ICT	-	Information, Communication and Technology
IS	-	Information Systems
ISP	-	Internet Service Provider
IT	-	Information Technology
G-B	-	Government to Business
G-C	-	Government to Citizen
G-G	-	Government to Government
KPI	-	Key Performance Indicator
MAMPU	-	Malaysian Administrative Modernisation and Management Planning Unit, Prime Minister's Department
MDeC	-	Multimedia Development Corporation
MGPWA	-	Malaysia Government Portals and Websites Assessment
MPSepang	-	*Majlis Perbandaran Sepang* (Sepang Municipality Council)
MSC Malaysia	-	Multimedia Super Corridor, Malaysia
myGov	-	myGovernment
N/A	-	Not Accessible
NA		Not Available
PCN	-	Putrajaya Campus Network
RSS	-	Really Simple Syndication
SMS	-	Short Messaging Service
UNPAN	-	United Nations Public Administration Network
URL	-	Uniform Resource Locator

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1　Overview

The thesis analyses the activities of websites assessment, infrastructure readiness test and change management as factors influencing success of E-Government (EG) in Malaysia. Factor by definition is one of the elements contributing to a particular result or situation. This thesis attempts to illustrate the factors involved will result in influencing success of EG implementation. The activities undertaken were part of delivering EG in Malaysia. EG is one of the four Flagship applications launched to spearhead MSC Malaysia. The other three were Telehealth, Smart School and Smart Card. EG is most often referred as EG applications. EG applications success which is the expected result of their respective implementations has the final outcome of delivering of online services rendered by the government agencies to the public or their respective users.

The success measurement in the thesis is in the viable factor implementation and analysis. Factor analysis refers to statistical techniques whose common objective is to represent a set of variables by a smaller number of assumed variables (Kim and Mueller, 1986; Bryman and Cranner, 1990). Factor analysis also attempts to identify the factors that are affecting or playing a part in influencing a particular result. Success of EG is an outcome, ultimately indicated by the result of delivering of online services offered by the government to the public that brings about convenience and efficiency to users. In the real environment, such user experience is an indication of success by the government in providing their online services.

Dekkers (2003) mentioned that activities, whether through scope or approaches taken with certain tools, vital in ensuring the success. The thesis attempts to establish tools for measuring or monitoring from the factors in the implementation of EG.

The thesis demonstrates an industry driven activity by Multimedia Development Corporation (MDeC) which was setup to assist and facilitate government agencies in delivering and deploying EG. The thesis addresses the EG initiatives with the intention to guide development and future deployment of EG nationwide or elsewhere globally.

1.2   EG Initiatives

EG initiative in Malaysia is a nation-wide vision to provide automation, efficiency and productive mechanism by the government agencies in delivering services to the users. It is based on world-wide trend. At the launch of MSC Malaysia, seven (7) applications were established, namely, E-Procurement, E-Syariah (The Syariah court system), E-Services (emphasising on police summons and some of the road transport payment of fines), Generic Office Automation (GOE), Human Resource Management Information System (HRMIS), electronic labour exchange (or later called Jobs Malaysia) and Project Monitoring System (PMS) (MAMPU, 1997). These applications resided at the respective agencies within the government. They were monitored in phases of implementation. The first phase of implementation was more towards the development of the applications. These applications were developed in modules or pilot stages. The first phase of MSC Malaysia ended end of year 2002.

Phase two begun in 2003 (The MSC: Next Leap, 2004). Some applications were able to be deployed according to its plan. Meanwhile ICT development expanded at other agencies. Currently, EG is in the third phase where EG had been extended as all other ICT initiatives within the government agencies. Rolling out or deploying EG will enable government to be more efficient (Gichoya, 2005) but it also posed numerous problems such as human and technical resource and also

demand from the citizen (Siddiquee, 2006). But the main concern at MSC Malaysia was that EG applications performances and the benefit to the citizen.

Since EG is a global initiative, many countries worldwide embarked into EG. Some of these were illustrated in the literature reviews. The EG studies of these countries were mostly to gauge and compare performances or activities undertaken within the components of EG in the forms of information systems such as the security, performance, and resources of an application. Many studies were about the initiatives of EG within a region or across countries. Thus far, through the references made as in the literature reviews and attending some EG conferences, no mention of activities conducted across respective EG projects were undertaken to measure success. It was components of EG or information systems or channels in delivery of EG. This was probably due to EG is an evolution of the applications within the information systems that requires respective development, access over internet, web-based user interface and awareness necessities within the application itself.

1.3   EG Developments

During the MSC Malaysia launched in 1996, EG applications were developed through political vision, to assist the country in moving towards the knowledge economy with the 2020 Vision. United Nations (2010) illustrated that many countries implemented EG through development of modules and pilot projects in a country. Once tested, these modules or pilot projects were rolled out to other related agencies nationwide. The ultimate deliverables of these modules and pilot projects are the provision of more online services that can be benefitted by the users and bringing convenience to them.

EG implementation began with simple steps or limited number of modules as proof-of-concept (POC). Thereby rolling out of completed EG applications with successful online services to be adopted by other agencies needed the understanding of the various components of EG such as interface, infrastructure capabilities and awareness of each agency of their respective online services that need to be offered to the users. At this point of Phase 2 MSC Malaysia, there were only about 100 online services gathered from the various Federal and States' agencies in a green

brochure (MDeC, 2006) and presented at the *Mesyuarat Panel 3P* chaired by the Secretary General.

EG has normally been measured based on its individual performance, example for E-tax system where the application itself, performance of the systems are being addressed and how best the usage of the system. So is E-procurement (Omar, 2006), where promotion is towards addressing of having more service providers using the system (Rais and Nazariah, 2003). In these cases, issues such as the hardware, application development with bug fixing on coding, specific network readiness and many times on financial implications are being studied independently to address their respective successful implementation. These elements were addressed in studies of Information Systems (Yusof, 2003).

Various EG applications have been developed by government agencies but the successful implementation was not comprehensively gauged. The typical areas of development of EG applications by government agencies were within the Service Oriented Architecture (SOA) of Information System as Figure 1.2 below.
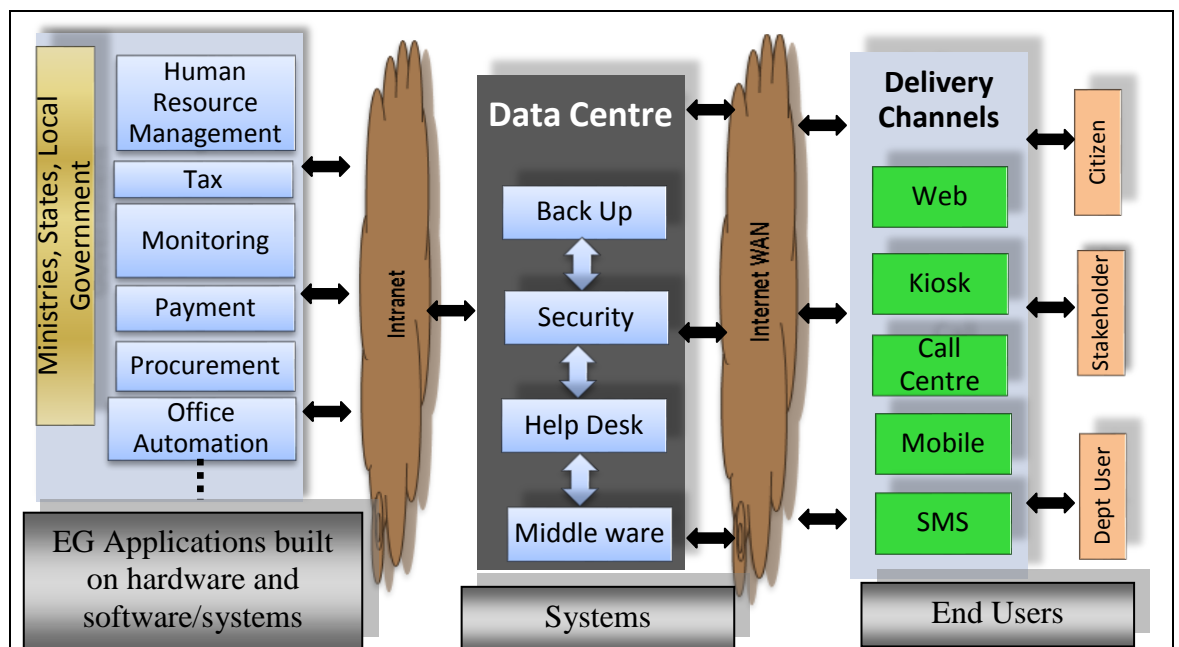
Figure 1.1 : Contextual View of Service Oriented Architecture (SOA)

SOA of Information Systems builds applications out of web/software services. It allows the "reuse of existing IT Infrastructure" (Kim and Kim, 2007).

SOA is an evolution in systems development that brings a paradigm shift to how systems should be developed. SOA aspects meet new business requirements from the perspectives of services. There is much to be uncovered from the SOA and Schenk (2011) mentioned that these are the expected components of delivering services.

The thesis examines the main outcome of having EG and driving it further, the delivery of online services. These services through the EG applications developed by the government agencies offered to users or citizens through internal and external (intranet and internet) communications. The diagram depicts interaction of various applications and systems, with the end-game of users assessing the system with the different delivery channels. These systems deliver these services for end-users which are the citizen (G-G), businesses (G-B) or within the government agencies (G-G) (UN, 2005). In the conceptual view of SOA the online services, cross issues within the applications and systems were not apparent, beyond the delivery channels or at the EG applications component.

As depicted in the SOA, the emphasis of EG implementation has been in the existence of hardware, software and the applications that build up into an information system (IS) or generally termed systems. Thereby studies had often been embodied within these areas (Hussein et al, 2007). But, delivering online services to the users and ensuring the success factors of the EG implementation is the focus of the thesis which is not the norm of such IS studies or even understanding the various components within or across the SOA. The activities undertaken by the EG team of MSC Malaysia is beyond these understandings. It had introduced the element of innovation for future measurement or monitoring across the existing components of SOA.

The activities undertaken were extension to such available practices of within SOA. It is an innovation to ensure EG is well accepted and used by the respective users. These were the deployment of activities that were not merely within one system, specific channels or communication devices that could provide certainty in the EG implementation. In this thesis, a model was conceptualised with the activities which were used as case studies. The three case studies identified in the

thesis were to provide a cohesive approach where EG's success can be assured. These were through the assessment of websites, infrastructure readiness test and change management activities.

1.3.1   Definition of Success in Implementation EG

Definition of success had been collated through various workshops and discourses. One was that it has the element of collation of various data through systems as in the SOA to understand the interaction of all levels using IS. It creates a culture of compliance, improves service quality and even reduced government role. (UN, 2003).

Successful IS systems are normally defined as the use of respective system, the quality of system and its information, and the various impacts on individual and organizations (Hussein et all, 2007). This often includes the successful systems being end-to-end automation, availability of backup systems and security checks within the applications. This is well depicted by the IS Model of DeLone-McLean (DeLone & McLean, 1992). The model consists of six interrelated dimensions of IS success dimensions namely information, system and service quality, (intention to) use, user satisfaction, and net benefits of a system. These dimensions form the characteristics that have effect on the subsequent use or intention to use and user satisfaction. As a result of using the system, certain benefits can be achieved. The net benefits will (positively or negatively) influence user satisfaction and the further use of the information system and acceptance by the stakeholders.

Stakeholders comprise of users or end-users that could benefit from the IS implementation such as through online services (Rais and Nazariah, 2003). This is much discussed contention for the implementation of EG in Malaysia and facilitating EG by the MSC Malaysia team. Questions on whether there were sufficient online services provided by government; was the infrastructure ready; and were there motivations for government agencies to provide these online services? To ensure sustainability of implementation, the next steps were to provide continuous measures or analysis to guide the EG implementation and assure its successes. How

can MSC Malaysia undertake initiatives differently from the government agencies and provide innovation? Innovation is most desirable as to give maximum impact using current trends and technology. Measuring or monitoring tools or indicators can make the difference and be used across agencies.

1.3.2 Factors and Indicators

Factor in general is anything that contributes causally to a result and normally a number of factors determine the outcome. In extracting factors, the goal is to consider the common part. Kaplan (2009) articulated and described use of factors through a thesis. This referenced study of Information System (IS) on consultant engagement presented an analysis of benefits of integrating case study and survey research methods as success factors. The emphasis was on the qualitative case study method and how it can complement more quantitative survey research. Benefits were demonstrated through specific examples of using the case studies against the research method from the referenced study of consultant engagement.

The factor model is one of the several attempts to define approach in Information Systems (IS) (Westell, 1993). The principal aim is to distinguish the independent variables (e.g. users' education, participation and satisfaction) that have a causal relationship to the outcome of a process. There was no attempt made to rationalize the outcomes, but merely to associate certain the factors with the outcome. Factor studies of implementation have tried to identify variables associated with some measure of implementation success.

In this thesis, factors were the identified case studies used to demonstrate the success of EG implementation. They demonstrated eventual benefit of an outcome over a period of time. The outcome was delivery of online services delivered by the respective agencies to benefit users. In attaining the outcome a measureable or monitoring tool is required. This is the indicator that had been acknowledged by the stakeholders of committees or taskforce set to monitor the progress of EG in Malaysia.

1.3.3   Online Services

Online services offered by government agencies have thus far been studies on usage and take-up rates by users of the respective EG application. In Malaysia, an example is the E-Procurement of EG application by Omar (2006). In the international arena, these were listed part of the websites offerings such as in the UNPAN report (2012) has a separate index on online services for each country analysed. In a country study such as in Canada by Kumar (2007) had illustrated narrowly of factors for successful e-Government through transacted websites and perceived usage by users. But this thesis examines the promotion and motivation activities within EG applications and its components in delivering online services irrespective of application or interface and to drive it further across various government agencies to be benefitted by users or citizens.

At the point of initiating the activities to assist government agencies in deploying and offering their online services to the users or citizens by MSC Malaysia, many of the staff within the agencies were not aware of their own available online services. This was when the author had compiled the green brochure (2006) and alerted the central agencies of the low numbers, about 100 online services at federal and state levels. This sparked interest and desire to promote their online services. The activities undertaken by MSC Malaysia accommodated the interest.

For the promotion purposes, the green brochure had also defined online services. It was not only for downloadable forms or information displayed on websites, but they should be able to be transacted end to end. Users should be able to browse information from the websites, find the online services and transact with the respective government agencies without physical efforts of sending the forms manually or offline. This brought about the convenience to users, no cost of postage, or even if possible, forms made available online should be free-of-charge. MSC Malaysia with the assistance from the central agency MAMPU pursued this aggressively and persistently.

1.4   Background of the Problem

The thesis is based on real experiences of undertaking EG by the EG team at MSC Malaysia. Whilst government agencies were implementing EG applications at their respective sites, MSC Malaysia function was to drive and facilitate these implementations and ensure usage. The EG services rendered by government agencies must reach users or public-at-large and indirectly to bring success in EG implementation nationally.

It was at the 2nd Leap or second phase of MSC Malaysia in 2005 that spurred a more rigorous effort and addressing the perceived non-progressive of EG implementation. At this juncture, the highest level of government, the honourable Prime Minister himself was also not convinced of EG success. He had questioned it through a meeting, the 19th Implementation Committee Meeting (ICM) in 2006. Whilst the progress of EG was presented, the honourable PM questioned how can the implementation of EG be assured success?

Through such doubt, a directive was mandated from the ICM meeting that MSC Malaysia to undertake measures or activities to ensure the success of EG. This drove MSC Malaysia to innovate and do things differently. These then were translated into activities done differently and across government agencies to ensure that EG applications could be undertaken well by the implementing government agencies and all their services rendered could be transacted by users or citizens at their convenience.

EG was also subjected to global attention. International rankings of countries' performances were being compared. These were yearly ranking published by world renowned institutions such as United Nations, Brown University and Wasada University. The rankings demonstrated priorities, adequate efforts or measures undertaken by countries to deploy EG. At this point, EG ranking of Malaysia had not been ranked well especially by Brown University (West, 2005). This too sparked the need to look at the various efforts of EG and how MSC Malaysia could facilitate the better EG international ranking.

EG in Malaysia is a national drive towards automation of government services. By driving the automation, it is aspired that government services can be rendered to the users more efficiently, productively and promotes transparency. Automation of service delivery is through providing government services through online. The more online services rendered to the users, it was expected that EG implementation can be perceived as successful.

The focus of the thesis differs from the common trends of understanding EG. The latest study of EG done with the West Balkan on Regional Comparative eGovernment Study (Millard and Thomasen, 2013) addressed support and common trends of EG within the region. But the focus was towards knowledge, skills of human capital knowledge and other societal impact of using current technologies such mobile devices for EG services in the region.

The thesis also trailed Schenk, (2011) who questioned that with over 20 years of practical experience in the field of public sector services, much of the trends, strategies and government master plans had evolved, but the outcome has hardly met expectations. What do leading e-government countries and organisations do, that is so different and so much better? Some of the focus areas mentioned was comprehensive software requirements and service levels that had not solved the organisational problem and lack of flexibility with lengthy lead times, even of requirements that change constantly. Schenk's observation included that the EG implemented had limited view of the whole issue where installation of many small information technology islands to create a fast way to achieve initial results and consumed all budgets if these islands have to be connected.

A very prominent source of reference for this thesis in the implementation of EG was also gathered from the United Nations (UN) through its periodic survey. In the United Nations E-Government Survey 2010 (UN, 2010), leveraging e-government at a time of financial and economic crisis, there was a mention of a need towards consensus or indicators to measure EG. The United Nation EG Survey itself is an exercise to examine countries' EG progress within its member countries, but it did not provide measurements or mechanism in ensuring successs implementation of EG. Methods or guides mentioned were in addressing infrastructure issues,

manpower resources required amongst ICT implementation and funding requirements in implementing EG.

Although these methodological work from the United Nations EG survey has helped clarify some of the issues in EG measurement, there was no formal agreement on a common international framework. It was only to draw, review and facilitated intergoverntal bodies for joint courses of action to address emerging global challenges which includes technology. There was also no single view of how EG can be implemented successfully or use of indicators to be developed or should be designed so that EG remains relevant and practical over time. Some other important common discourses on EG were on country's economic strength, technological development and aggregate level of education (UN, 2010).

Generating these case studies from the activities done to ensure successful implementation of EG, the thesis aspires to provide appropriate form of factors that could result in indicators to be analysed and used continuously for the successful implementation of EG. These were done within specific activities or projects across agencies. This initiated and addressed the needful successful implementation of EG within its context of delivering services to its users or citizens.

Whilst analysing the case studies as factors for the implementation of EG in a real environment, this thesis also enables sharing of knowledge and industrial practices to researchers and government bodies in implementing EG. Such shared knowledge can be deliberated to determine more research areas or derivation of further case studies to be used by government agencies or any other organisations. Thereby it can provide a cyclic approach of enhancement to benefit the final beneficiary, the public at large with more online services.

Thereby the EG initiative at MSC Malaysia had been driven further and differently with innovation introduced. Using current available resources and way of doing things, activities were conducted that took advantage of global trends and technologies. These were the activities translated into case studies in the thesis.

1.5   Statement of the Problem

The thesis explores the influence of three main activities of websites assessment, infrastructure readiness and change management in the implementation of Electronic Government (EG) or Digital Government in Malaysia. It was to facilitate delivery of online services and drive usage for the convenience of users or public at large. It will indirectly promote efficient, transparent government and boost confidence amongst its stakeholders.

This was also to bring about new light and assist the many thoughts worldwide that EG's progress has not been apparent. Although EG started more about 20 years ago, there was a need to drive EG further, away from the mere understanding of the normal endeavors, development of applications and to provide automation of services (UN, 2010).

In undertaking the drive and facilitation role of implementing EG nationwide, the EG team at MSC Malaysia envisioned that global trends, adherence to technology and usage of government online services were vital. Thereby, a more comprehensive and innovative approach of projects were undertaken to have the national success impact. It was also implemented differently than EG projects implemented at the agencies. This proved in line with Schenk (2011) who questioned how can EG be done differently and rolled out and perceived as success? Are there substantial efforts in terms of activities to counter such question? This thesis attempts to analyse using activities such as assessments and tests as factors to analyse the success implementation of EG.

1.6   Research Questions

The main aim of the thesis is to put forward factors with indicators as a form of possible mechanism in the implementation of EG. This is demonstrated in the three case studies undertaken individually or proposed be taken cohesively where visibility of successful implementation can be gauged. The three case studies identified were in the areas of user interface ie through websites or portal assessment

where criteria of number of online services and updated information are gauged, infrastructure readiness test on the bandwidth required to run the applications and change management activities to motivate agencies in delivering the online services.

The scenario setting for the activities to be undertaken and to ensure that the EG applications were well implemented, utilized and benefitted by the respective users in Malaysia were that government agencies have websites or portals that were ready to deliver online services, the EG applications developed can be transacted with the readily available infrastructure nationwide and there were motivations for government agencies to provide more online services through the Change Management activities. Thereby these form the 3 factors contributing to a particular result or situation. The result was to generate more online services through continuous and repeated process of measurement or monitoring using indicators.

From the above scenario, the needful research questions to be addressed in implementing EG are as listed in the research questions (RQ) below:

RQ 1: How are websites assessments, infrastructure readiness test and change management activities become factors influencing EG success?

RQ2: What are the indicators within the factors that could facilitate measuring or monitoring delivery of online services?

RQ 3: Should activities be undertaken individually or cohesively to ensure successful implementation of EG?

RQ 4: How can the factors be represented in a model to generate online services and establish quality?

The thesis illustrates the undertaking of the three identified factors as case studies by the author to provide direction towards delivering of more online services at the various government agencies. The factors generated indicators that can be used as measurements or continuous monitoring tool in EG implementation. The eventual result of the thesis is a model that affirmed the case studies used through

the assessments and testing can be used to assist government agencies in the rollout of EG successfully.

1.7   Research Objectives

The thesis proposes mechanism using factors and indicators in encouraging the delivery of more online services offered by the government that brings about convenience and efficiency to the public. These factors are in the form of activities that can be enhanced or evolved through current trends and technology.

The main outcome of such mechanism is to develop a directional model for EG success that has sustainable measurements or monitoring tools and can be benefitted by the users or the citizens. This means generating of more online services which users can transact with the government agencies to bring the convenience to them. In addressing such expected outcome and the problem statements, the objectives of the research are as follows:

RO 1: To understand websites assessment, infrastructure readiness test and change management activities as factors influencing EG success in Malaysia.

RO 2: To investigate the use of indicators within the factors that could facilitate measuring or monitoring the delivery or usage of online services.

RO 3: To develop a model based on factors and indicators that would help government agencies to deliver online services in EG.

Thereby the thesis leverages on activities that formed the case studies that were undertaken alongside the implementation of the EG Flagship applications by the government agencies by the author. These activities constituted the extended contribution by MSC Malaysia in assisting agencies to roll out EG applications respectively. These activities generated the possible indicators that can be enhanced and used repeatedly for the implementation of EG to be benefitted by the users or the public at large. These activities had promoted more number of online services

delivered by the government as an efficient mechanism to bring convenience to the public.

1.8   Selection of Case Studies

Yin (2003) illustrated that case studies are of specific programs, projects, initiatives, or sites which are integral part of evaluation research. In this evaluative (as in evaluation research methods) context, the cases studied generally have been used to document and analyse implementation process or outcomes of public or privately supported interventions. Yin also mentioned that such case studies research has attained least attention and guidance.

In case studies, the researcher explores in depth a program, an event, an activity, a process, or one or more individuals (Creswell, 2003). The cases are bounded by time and activity, and researchers collect information using variety of data collection procedures over a sustained period of time (Stake, 1995).

It is also noteworthy to understand that since EG is an effort undertaken by many countries around the world, further activities to ascertain its deployment is useful for its community. EG performance of a country in the international ranking has wide implication such as the country's readiness to market ICT products and services. In United States, The American Customer Satisfaction Index (ACSI) reports on an array of industry-specific measures that encompass key elements of the customer experience. It benchmarks include call centre and website satisfaction, service reliability, and factors such as HD picture quality for subscription TV service or battery life for cell phones. In 2011, it has the mention of E-Government Satisfaction Index on the topic of *Making the Case for E-Gov*. It was mentioned that such index can drive the image of increase of efficiency and economic returns on investment of a country.

Many countries undertook EG as a strategic and visionary political will to provide convenience to its citizens and businesses whilst bringing efficiency within the implementing agencies. An example of a country effort to measure success of

EG is in Bangladesh (Hossan, 2006). The study examined the success and failure factors of implementing EG. Factors gauged were awareness on the projects itself, perceptions of benefits by the government, promotional events and influencing factors such as dominance of politics, overall vision and technological infrastructure were being analysed and measured through feedback mechanisms. The conclusions were more of driving factors and role of government, political will and awareness towards the successful implementation of EG within a country or across countries.

Other than the political factors, technological measures were more visible and feasible. From the literature reviews, it was noted that efforts in EG and undertaking disparate activities had been quite common and apparent around the world. Countries were undertaking programmes and activities to bring government information and services online. Much of these efforts were activities in silos in nature, whether it was the applications themselves or the programmes. Such examples are the e-procurement and e-monitoring applications where the focus was the delivering of online services to its stakeholders or users. Whilst within the activities such as infrastructure and awareness programmes were undertaken, none were seen to be taken in a holistic view to contribute to measurements or indicators to ensure the successful implementation.

In this thesis, the case studies undertaken alongside the EG implementations in Malaysia, were used to monitor and check the delivery of government services and its usage. The three case studies were selected based on such efforts, to explore an initiative or specific programs to form an integral part of an evaluation process.

Indicators were derived from the various case studies to introduce analysis and repetitive use. Indicators were outcomes of the activities acknowledged by the committee or taskforce members. Users were also defined. Thereby these case studies were to demonstrate and ensure that the EG systems were being utilized and benefitted by the respective users.

1.9   Significance of Research

The significance of the research is that the activities or case studies undertaken by across EG applications that can be benefitted by agencies implementing EG and researches in dwelling with EG development. It can support future directions where EG can remain robust and relevant. The thesis provides the theoretical, methodological and the better part of it is the practical approaches taken with the intention to ensure continuity and sustainability of EG implementation. This significance is as follows:

1.9.1   Theoretical Implications

This research promotes mixed methods through triangulation evaluation approach. It promotes ontological real world knowledge and design as it involved the author undertook the various activities with results that were stipulated and analysed outcomes. Theories form qualitative approach where studies of others were inferred whilst data from tests and assessments for quantitative approach done in the line of duty were analysed. Theories of IS models were also discussed and applied. Thereby providing multiple realities with social construct. It was an innovative way of addressing a problem in EG implementation and has the potential of future research that can be explored.

1.9.2   Methodological Implications

The methodological approach is quantitative with statistical analysis. The case studies have a purposeful impact of data collection using current trends and technologies of assessment and testing. Indicators used were derived from factors for the measuring or monitoring tools, acknowledged by the respective agencies through committees or taskforce set. This can then be developed as framework by proposing a directional model with factors and indicators for measurement used in a real environment.

1.9.3   Practical Implications

With the emphasis of EG to bring convenience to users and to be benefitted by the citizen at large for all government activities, the research value is to provide indication using indicators in moving forward with EG implementation. It provides the truth of the practical solutions as a control and progress to address EG implementation in a real and current environment.

Users or in some instances are implementers from the government agencies can then use the system that has definite indicators to gauge the success or potential accomplishment of implementing their respective EG applications. This can then lead to cost effective measures, consistency of direction by all government agencies in implementing EG, and most glaringly is to facilitate easier decision making for future strategic approach.

1.10   Scope of Research

The approach presented in the thesis has been from the activities undertaken by the author in assisting government agencies in their implementation of EG. It was to provide an extended scope of work to facilitate the implementation of EG to ensure success of deployment, within or away from the setup infrastructure. The normal operational duties of EG implementation at the various government agencies were specific to their needs of the application development such as the E-Tax by the Income Tax department of Inland Revenue, E-Procurement by Ministry of Finance, etc to deliver their respective online services.

The EG team at MSC Malaysia monitored and facilitated the respective applications across agencies irrespective of technical or management requirements. The main aim was to bring about knowledge, skills and success of EG. In doing so, it was envisaged that add-on activities were needed across different agencies for the generation of online services that could be benefitted by the users or public at large. Public will be able to transact and provide feedback conveniently without the hustle of making trips to the government agencies This will also reflects government efficiency and transparency, an encouraging outlook for the implementation of EG.

Thereby, three main activities had been undertaken to ensure the success implementation of EG across agencies and nationwide impact. A cross factor analysis was undertaken to develop correlation across a factor, the independent variable and a common outcome, the dependant variable. Amongst the three activities, the websites assessment is the key factor used as it involved all government agencies nationwide and data of online services yearly could be gathered. The other two case studies were further activities conducted to promote EG usage and have indirect contribution towards the delivery of more online services. Thereby selected agencies were used to correlate with the number of online services offered for a period of time against the star ranking. Positive correlation means the desired outcome, where activities correlate with the increase of online services. This is in line with Structural Equation Modelling, or SEM. SEM in its general definition is chiefly linear and cross-sectional statistical modelling technique. Factor analysis, path analysis and regression all represent special cases of SEM. Indicators were developed based on consensus of the various committee or taskforce members and acknowledged as in **Appendix A**.
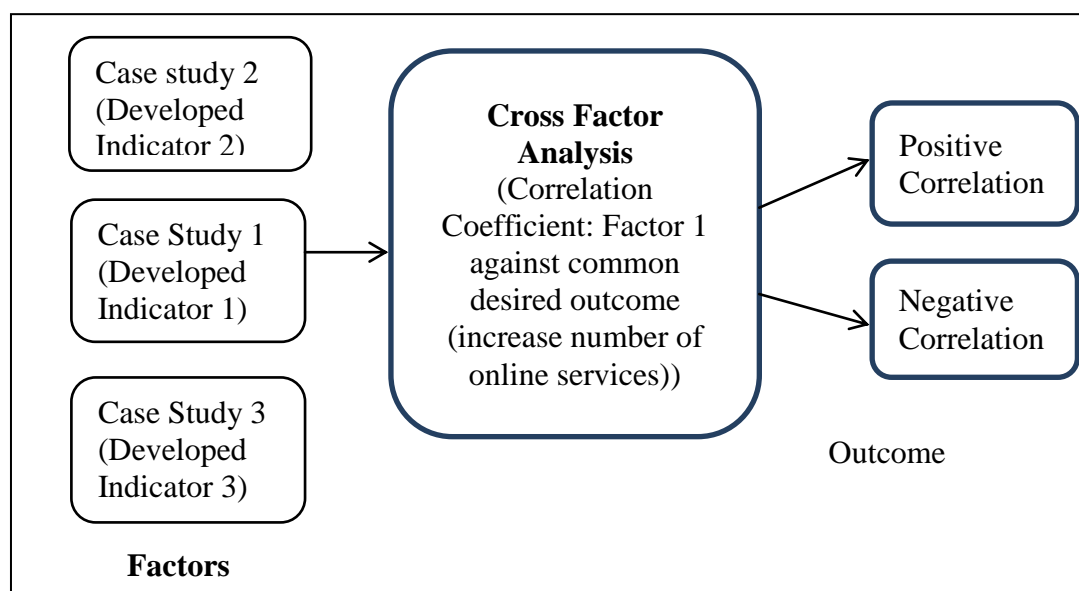
Figure 1.2: Scope of Research

1.11   Limitations of Research

The approach in this thesis evolved around the three case studies taken in understanding some of the main issues of rolling out EG by the respective government agencies. EG applications that were selected differed from one another. But the common approach is to choose EG applications that were easily accessed by users and have wider impact of usage. This could influence the analysis and solution to be proposed.

This thesis does not address the development and Information Systems component of EG which resided at the respective government agencies. It merely illustrates an end game of EG that is the availability of more online services for the convenience of users. Thereby these case studies described in these chapters are essential to move EG forward cohesively to be the effective government and providing convenience to users.

In terms of location of tests as in the infrastructure test and change management activities, the thesis covers activities that can be carried out within the Klang Valley area, where most of the Federal agencies and one state level agency are located. It is within this area that EG is developed and having the most number of users, identified under the project of eKL (e-Kuala Lumpur) (MAMPU, 2008-2009).

1.12   Structure of Thesis

The thesis is organised in 8 Chapters. Reading from beginning till end will give a wider picture of the purpose of the thesis. Chapter 1 provides the introduction information of EG in Malaysia and internationally, problem statements, objectives, scope of activities and limitations. Background and literature reviews are in Chapter 2, whilst Chapter 3 introduces the methodology adopted.

Case studies undertaken with the introduction of factors and indicators are in Chapters 4-6. These are the assessments and tests of the various activities. As the thesis is also meant for sharing of information, these topics can be selected and read separately. This follows Yin (2003) in illustrating and selecting case studies. Readers will be able to read and understand the different case studies that constitute towards the factors in pursuing further and exploring other potentials derived from the chapters separately.

Chapter 7 illustrates the statistical inference and significance of the thesis. A relation of the main output of the factors, which is the online services, is correlated against the ranking of the websites. Chapters 8 provides an encompassing overview of what were done, analyse results, significance and contribution of thesis. This is the highlight of the thesis with a conclusion of a real life environment using case studies and generating indicators as tools for measuring or monitoring for repetitive use in deploying EG. A directional model on EG success is also illustrated.

REFERENCES

Abdullah, A Hanan, Namroush, Salahedin Ali and Ithnin, Norafida (2007) *E-government services and citizen adoption.* University Teknologi Malaysia.

Al Shibly, Haithan Hmoud., Hani Al Dmour. (2010). *Assessing Electronic Government Success – An Integrated Framework.* UTM

Alias, R.A., and Wood-Harper, T. (1997). *Multiple Perspectives of Information Systems Quality: Case Study of Malaysian University.* Malaysian Science and Technology Congress 97, Malaysia.16-17 October.

Thomas A. Horan., Tarun Abhichandani., Raghuvira Rayalu. (2006). *Assessing User Satisfaction of E-Government Services: Development and Testing of Quality-in-Use Satisfaction with Advanced Traveler Information Systems (ATIS).* Claremont Graduate University.

Avgerou, C. (2000). *Information Systems: What Sort of Science Is It?* Omega: The International Journal of Management Science, 28 (5, 1): 567-69.

Avison, D.E. and Wood-Harper, A.T. (1991). *Information Systems Developmet* An exploration of Ideas and Practice. Computer Journal, Vol 34(2), 98-112.

BCG Report. (2009). *Bolton Consulting Group, Study on the Economic Impact of MSC Malaysia.* EPU, Contributions to Socio-Economic Development, pg 12.

Brent. (2011). *Cities With The Fastest Internet Speeds, Brent Radcliffe*, 14 October 2011, www.yahoo.com.

Brooke, C. (2002). *What does it mean to be 'critical' in IS research?* .Journal of Information Technology, 17, 49-57.Brown, S., Massey, A., Montoya-Weiss, M., & Burkman, J. (2002). *Do I really have to? User acceptance of mandated technology.* European Journal of Information Systems 11, 283–295.

Bryman, A and Cramer, D. (1990). *Quantitative Data Analysis for Social Scientist*. London, Routledge.

Carlopio, J., Andrewartha, G., & Armstrong, H. (1997). *Developing management skills in Australia.* Melbourne: Longman.

Carroll, J., & Swatman, P. (2000). *Structured-case: a methodological framework for building theory in information systems research.* European Journal of Information Systems 9, 235–242. 238

Carroll, J., Howard, S., Peck, J., & Murphy, J. (2002). *'No' to a free mobile: when adoption is not enough. Thirteenth Australian Conference on Information Systems (ACIS'2002),* Melbourne.4-6 December, 533-546.

Cecez-Kecmanovic, D. (2001). *Doing critical IS research: the question of methodology. In E., T. (Ed.), Qualitative Research in Information Systems: Issues and Trends (pp. 142–163).* Hershey: PA: Idea Group Publishing.

Checkland, P.B. (1981). *Systems Thinking, Systems Practice*. Chichester.: Wiley.

Checkland, Peter. (2005). *Soft Systems Methodology (SSM).* Wiley.

Cherry, K. (2011). *What Is Applied Research? [Everything Psychology Book](#) (2nd Edition).*

Choudrie, J., & Dwivedi. (2005). *Investigating the Research Approaches for Examining Technology Adoption Issues.* Journal of Research Practice, 1(1).

Coleman, J. (1986). *Social Theory, Social Research and Theory of Action.* American Journal of Sociology, 91(6), 1309-1335.

Compeau, D., Higgins, C.A., & Huff, S. (1999). *Social cognitive theory and individual reactions to computing technology: A Longitudinal Study.* MIS Quarterly, 23(2), 145-158.

Cooper, R.B., & Zmud, R.W. (1990). *Information Technology Implementation Research: A Technological Diffusion Approach. Management Science, 36(2), 123-138.* The University of Michigan, Ann Arbor, Michigan.

Creswell, J. W. (2003). *Research Design Qualitative, Quantitative and Mixed Methods Approaches* (Second ed.). California: Sage Publications,Inc.

David, E. Gray. (2009). *Doing Research in the Real World.* (Second ed.). London: Sage Publications, Inc.

Dasgupta, S., Agarwal, D., Ioannidis, A., & Gopalakrishnan, S. (1999). *Determinants of Information Technology Adoption: An Extension of Existing Models to Firms in a Developing Country.* Journal of Global Information Management, 7(3), 1-16.

Davis, F.D., Bagozzi, R.P., & Warshaw, P.R. (1989). *User Acceptance of Computer Technology: A Comparison of Two Theoretical Models.* Management Science, 35(8), 982-1003.

DeLone, W.H., and McLean, E.R. (2004). Measuring E-Commerce Success: Applying the DeLone & McLean Information Systems Success Model. International Journal of Electronic Commerce. (9:1), Fall, pp 31-47.

Dekkers, C., & Forselius, P. (2003). Increase ICT *Project Success with Concrete SCOPE Management. IEEE International Conference on e-Business Engineering.*

Dennis, A., Wixom, B. H., & Roth, R. M. (2010). *Systems Analysis and Design* (Fourth Edition ed.): John Wiley & Sons, Inc.

Denzin, N.K., & Lincoln, Y.S. (2005). *The Discipline and Practice of Qualitative Research. In Denzin, N. K. & Y. S. Lincoln (Eds.), The Sage Handbook of qualitative research (3rd ed.). Thousand Oaks:* CA: Sage.

Downs, George W., Jr., & Mohr, Lawrence (1976). *Conceptual issues in the study of innovation.* Administration Science Quarterly, 21, 700-714.

Evans, P. (2000). *Blown to Bits, Philip Evans & Thomas Wurster, Boston Harvard Business School Press.* International Federation for Information Processing (IFIP).

Galliers, R.D., & Sutherland, A.R. (1991). *Information Systems Management and Strategy Formulation: the 'Stages of Growth' Model Revisited.* Journal of Information Systems, 1, 115-128.

Garfield, M.J. (2005). *Acceptance of Ubiquitous Computing. Information Systems Management, 22(4), 24-31.*

Gibbs, J.L., & Kraemer, K.L. (2004). *A Cross-Country Investigation of the Determinants of Scope of E-commerce Use: An Institutional Approach.* Electronic Markets 14(2), 124-137.

Gichoya, David. (2005). *Factors Affecting the Successful Implementation of ICT Projects in Government.* The Electronic Journal of e-Government, vol. 3, issue 4, pp175-184.

Grönlund, Åke. (2010). *EGOV: Ten Years of E-Government: TH End of History and New Beginning.* International Federation for Information Processing (IFIP).

Hashim, Hayati. (2007). *Interoperable E-Government in Malaysia : A Framework for Transparent Public Delivery System.* University of Malaya.

Hearn, Gregory N., Foth, Marcus.,(2005). *Action Research in the Design of New Media and ICT Systems.* Hampton Press, 2009.

Heeks, Richard. (2006). *Understanding and Measuring eGovernment: International Benchmarking Studies.* " *UNDESA workshop,"E-Participation and E-Government: Understanding the Present and Creating the Future", Budapest, Hungary*. 2006.

Hirschheim, R., & Klein, H.K. (1989). *Four paradigms of information systems development Communication of the ACM 32(10), 1199-1216.*

Hong, W., & Zhu, K. (2006). Migrating to internet-based e-commerce: Factors affecting e-commerce adoption and migration at the firm level. *Information & Management, 43*, 18.

Hossan, Choudhury Golam. (2006). *Success and Failure Factors for e-Government projects implementation in developing countries: A study on the perception of government officials of Bangladesh.* Proceedings of the 2nd European Conference on Mobile Government, Mobile Government Consortium International. 2006.

Hussein, R., Karim, Nor Shahriza., Mohamed, Norshidah., Ahlan, Abdul Rahman., (2007). *The Influence of Organizational Factors on Information Systems Success in E-Government Agencies in Malaysia.*

Kaplan, B., & Duchon, D. (1988). *Combining Qualitative and Quantitative Methods in Information Systems Research: A Case Study. MIS Quarterly, 12(4), 571-586.*

Kaplan, David. (2009). *Structural Equation Modelling: Foundations and Extensions.* British Journal of Mathematical and Statistical Psychology 38, no. 2 (1985): 171-189.

Karim, M Rais., and Khalid, M Nazariah., (2003), *E-Government in Malaysia.* MAMPU, Putrajaya, Malaysia.

Kasimin, Hasmiah. (2008). *Approach and Method of E-Government Application Assessment: A Critical Analysis From The System Development Life Cycle Perspective.*

Kearns, B. (2004). Technology and Change Managemnet. *School of Computing Research Paper (ITSM)*, 24. Dublin Institute of Technology.

Kim, J.W and Kim, K.J. (2007) *An approach to service-oriented architecture using web service in BPM in the telecom-OSS domain.* Internet research, vol. 17, no1, pp99-107.

Kim, J. and Mueller, C.W. (1996) *Introduction to Factor Analysis – What IT Is and How To Do IT*. London: Sage Production.

Kumar V, Mukerji B, Butt I and Persaud A (2007). *Factors for Successful e-Government Adoption: a Conceptual Framework.* The Electronic Journal of e-Government Volume 5 Issue 1, pp 63 – 76.

Lallmahomed, Muhammad Z. I., Rahim, Nor Zairah., Ibrahim, Roliana., Rahman A, Azizah. (2014) *Impact of Different Conceptualisations of System Use on Facebook Continuance,* International Journal of Web Based Communities. 2014;10(1):69-93.

Larsen, K. (2003). *A Taxonomy of Antecedents of Information Systems Success: Variable Analysis Studies*, Journal of Management Information Systems, 20 (2): 169-246.

Liamputtong, P., & Ezzy, D. (2005). *Qualitative Research Methods (2 ed.). New York:* Oxford University Press.

Loudon, K.C., and Jane P Laudon (2012). *Management Information Systems, Managing The Digital Firm*. Pearson.

Lubbe, S. (2003). *The Development of a Case Study Methodology in the Information Technology (IT) Field: A Step by Step Approach.* Ubiquity, 4(27).

Lyytinen, K. (1987). *Different perspectives on information systems: problems and solutions. ACM Computing Surveys (CSUR), 19(1), 5-46.*

Maarop, Nurazean., Khin, Than Win. (2012). *Understanding the Need of Health Care Providers for Teleconsultation and Technological Attributes in Relation to the Acceptance of Teleconsultation in Malaysia: A Mixed Methods Study,* Journal of Medical Systems. 2012;36(5):2881-2892.

MAMPU. (2003). *Public Sector Information and Communications Technology (ICT) Strategic Plan.* MAMPU, Kuala Lumpur.

MAMPU. (2006). *Pekeliling Am Bilangan 1 Tahun 2006 Pengurusan Laman Web/Portal Sektor Awam,* Putrajaya, Malaysia.

MAMPU. (2007). *Government of Malaysia – Electronic Government Flagship Application: Blueprint for EG Government Implementation.* Putrajaya, Malaysia.

MAMPU. (2008-2009). *Malaysia Electronic Government Report.* MAMPU, Putrajaya, Malaysia.

MAMPU. (2010). *Directive on displaying Online Services usage by all agencies.* MAMPU, Kuala Lumpur.

MAMPU, (2011). *The Malaysian Public Sector ICT Strategic Plan 2011-2015.* MAMPU, Kuala Lumpur.

Martin, Beckinsale., Monder Ram., (2005). *Delivering ICT to ethnic minority businesses: an action-research approach,* Leicester, United Kingdom.

MDeC. (2006). *Green Brochure on Online Services for Federal and State agencies.* MSC, Malaysia.

MDeC. (2008). *Kaji Selidik Pengurusan Perubahan eKL 2/2008 Report*. MSC Malaysia.

MDeC. (2010). *Multimedia Development Corporation, Assessment of eKL Initiatives: Usage and Adoption of Government Online Services.* MSC Malaysia.

MDeC, MGPWA, (2007, 2009, 2010, 2011, 2012). *Malaysia Government Portals and Websites Asessment.* MSC, Malaysia.

MDeC, (2011). *32nd Flagship Coordination Report on EG Online Services on the 22nd April 2011*. MSC, Malaysia.

Miles, M.B., & Huberman, A.M. (1994). *An Expanded Sourcebook: Qualitative Data Analysis (2nd ed.).* Thousand Oaks: Sage Publications. 254.

Microsoft. (2003). *Achieving E-Government: How Do We Judge Success.* Microsoft, USA.

Millard, Jeremy., & Thomasen, Louise (2013). *ResPa Regional Comparative eGovernment Study.* Regional School of Public Administration, West Balkan & European Union.

Mohamed, Norshidah., Hussin., Hussein, Ramlah., (2006). *Enabling Change Factors and IT Success in the Malaysian E-government Implementation.*

Mohamed, R.Malik (1990). *Designing a methodology for an office communication and information system for executives in the Malaysian public sector: A Case for the Prime Minister's office.* Aston Business School, Birmingham.

Moore, G.C., & Benbasat, I. (1991). *Development of an Instrument to Measure the Perception of Adopting an Information Technology Innovation. Information Systems Research, 2(3): 192-222.*

Morgeson, Forrest V (2009). *Does E-Government Measure Up to E-Business? Comparing End-User Perceptions of U.S. Federal Government and E-*

Business Web Sites. Public Administration Review 69.4 (2009): 740-752. MLA.

MSC, (2004). *The MSC: Next Leap*. MSC Malaysia.

MSC, (1996). *The launch of Multimedia Super Corridor (MSC) Malaysia.* http://www.msc.com.my.

Namroush, Salahedin Ali (2011). *Modeling user's intention to use e-government to citizen services in Malaysia. Faculty of Computer Science and Information System.* PhD thesis, University Teknologi Malaysia.

Nathalie. Lemelin., Rachel. Gendron., (2009). *Action Research for ICT integration: How to involve classroom teachers in meaningful professional development.* Open Conference Systems, Canada.

Obi, T. (2010). *World e-Government Ranking,* Tokyo: Waseda University, 2010.

Omar, Muhammad Abkari. (2006). *Pelaksanaan Projek Kerajaan elektronik (Electronic Government-EG) Satu Penilaian*. Public Sector ICT Management Review. Vol 1, No. 1.

Orlikowski, W.J. (1992). *The Duality of Technology: Rethinking the Concept of Technology in Organizations. Organization Science, 3(3), 398-427.* Cambridge, Massachusetts.

Orlikowski, W.J. (1992). *Learning From Notes: Organizational Issues in Groupware Implementation. Paper presented at the CSCW'92: In Conference Proceedings on Computer- Supported Cooperative Work, Oct.31-Nov.4.*

Prima, Silviana (2010) *Information personalization for e-government service in Malaysia.* University Technologi Malaysia (UTM).

Patton, M.Q. (1990). *Qualitative Evaluation Methods (2nd ed.). Thousand Oaks,* CA: Sage. 258. Sage consultancy Publication.

Pozzebon, M., & Pinsonneault, A. (2005). *Challenges in Conducting Empirical Work Using Structuration Theory: Learning from IT Research. Organization Studies, 26(9), 1353–1376.*

Premkumar, G., Ramamurthy, K., & Crum, M. (1997). *Determinants of EDI adoption in the transportation industry. European Journal of Information Systems, 6, 107-121.*

Rahim, Nor Zairah, A.R. (2009). *Multiple Perspectives of Open Source Software appropriation In Malaysian Public Sector*, Universiti Teknologi Malaysia.

Hussein, R., Karim, N, S., Rahman, N (2007). *The Influence of Organisational Factors on Information Systems: Success in E-Government Agencies in Malaysia.* International Islamic University Malaysia.

Reason, Peter., & Bradbury H., (2001). <u>*Handbook of Action Research*</u>, *p2*. Sage Publications.

Saha, Parmita., and Esmail, Salehi-Sangari. (2010). *EGOV Success of Government E-Service Delivery: Does satisfaction matter?* International Federation for Information Processing (IFIP).

Sahari, Noraidah., Mohd Noor, Zulridah., Kasimin Hasmah. (2009) *E-Government Service Performance from the User's perspective.*

Seddon, P.B., Staples, S., Patnayuki, R., & Bowfell, M. (1999). *Dimensions of Information Systems Success. Communications of the Association for Information Systems, 2(20), 1-60.*

Sekaran, U. (2003). *Research Methods for Business A Skill Buliding Approach (Fourth ed.):* John Wiley & Sons, Inc.

Schenk, Markus. (2011). *Re-Thinking E-Government: 5 Cornerstones of Successful E-Government Projects*: Publication from Fabasoft eGov-Suite.

Seidman, Irwing. (1998). *Interviewing as Qualitative Research: A Guide for Researchers in Education and Social Science (2nd. ed.).* New York: Teachers College Press.

Siddiquee, Noore Alam., (2006). *The Role of Public Administration in Building a Harmonious Society - Innovations in Governance and Service Delivery: E-Government Experiments in Malaysia*. University of South Australia, Adelaide, Australia.

Silverman, D. (1993). *The Logic of Qualitative Methodology. In Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction (pp. 21).* London: Sage.

Silverman, D. (2004). *Qualitative Research: Theory, Method and Practice (2nd ed.).* London: Sage Publication.

Stake, R.E. (2005). Qualitative Case Studies. In Denzin, N. K. & Y. S. Lincoln (Eds.), *The Sage Handbook of qualitative research (3rd ed.).* Publication of Thousand Oaks, CA.

Stallman, R. (1996, 19 December (2008). *The Free Software Definition.* Retrieved from http://www.gnu.org/philosophy/free-sw.html .

Wixom, B.H,. and Todd, P.A. (2005). *Theoretical Integration of User Satisfaction and Technology Acceptance. vol.16 no.1 85-102.* Journal of Information Systems Research.

Yin, R. K. (2003a). *Applications of Case Study Research* (Second Edition ed. Vol. 34). Thousand Oaks, California: Sage Publication, Inc.

Yin, R. K. (2003b). *Case Study Research Design and Methods* (Third Edition ed. Vol. 5). Thousand Oaks, California: Sage Publication, Inc.

Yin, R. K. (2009). *Case Study Research Design and Methods* (Fourth ed. Vol. 5). California: Sage Publication, Inc.

Yusof, M. M., Haniff, R.W., & Chua, C.O. (1998). Implementing Information Systems Plan in Malaysian Government Organisation: a Multiple Perspective Framework. Malaysia Journal of Computer Science, 11(1), 32-40.

Yusof, Mokhtar. (2005). *Information systems and executives' role:The Pre-electronic Government Era Experience.* University of Salford.

Yusuf, Yahaya., Gunasekaran, A., & Abthorpe, M. S. (2004). *Enterprise information systems project implementation: A case study of ERP in Rolls-Royce.* International Journal of Production Economics, 87, 251–266.