

# The Activities , Drivers and Barriers of ‘Electronic Public Service Delivery’ in Dubai’s public organisations

*by*

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A Dissertation

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- ii - **Declaration**

“I, **Ammar M Rashed** , hereby declare that the dissertation, entitled The Activities , Drivers and Barriers of ‘Electronic Public Service Delivery’ in Dubai public organisations, that I have submitted for the PhD degree, at Norwich Business School at the University of East Anglia, is my own original work and that it has not previously been submitted to any other Institution. All sources used or quoted are indicated and acknowledged by means of a comprehensive list of references”.

A handwritten signature in black ink, consisting of a large, stylized loop at the top, followed by several sharp, intersecting lines that form the letters 'A', 'M', and 'R' in a cursive style.

(Signed) A. M. Rashed

Date: 16<sup>th</sup> April 2012

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## Abstract

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The quest to transform the delivery of government services through innovative and electronic means has been embraced by public organisations worldwide in an ever rising phenomenon, sought after to reap some of the potentially rewarding benefits of the digitisation of government services. In this study, the author reports the experiences of four major public organisations in Dubai as its governing office have imposed a deadline for all of its public agencies to transform and deliver 100 per cent of their services electronically by the end of year 2009.

Notably, despite the fact that worldwide reports have placed Dubai as the leader among its Arab peers in the provision of e-government services, technological infrastructures, government's transparency and internet and mobile penetration rates. Yet, Dubai has missed its 2005 target of transforming 70 per cent of its services electronically facing a dilemma with its digital implementation efforts with achieving less than 45 per cent transformation rate.

With e-government deployment failure rates reaching levels of 60 per cent worldwide, the challenges arising from the development of e-government initiatives have proven to be extensive. The complexity of the nature of e-government initiatives as well as the ambiguity surrounding its e-services development process makes reasonable justifications for the high failure rates associated with its deployment efforts all over the world and not just in Dubai. Furthermore, the lack of a universal model and theoretical studies to guide the deployment of this phenomenon have lead researchers and practitioners alike to focus their attention on finding ways and means of improving the adoption and implementation of e-government initiatives. Thus, it was established that it was necessary to find answers for the following questions: *How are public organisations in Dubai are going about the diffusion of their e-government initiatives and what determinates are necessary to be considered in the development process to achieve the initiatives' success?*

In response to the aforementioned issues and in order to respond to the research's objectives and questions, a theoretical framework guided by Roger's (1995) Organisation Innovation Process theory and extended by Tornatzky and Fleisher's Technological, Organisational, Environmental (1990) model have been developed to gain a holistic understanding of the phenomenon. The author reported using a multiple in-depth case study research design, drawing on empirical data from semi-structured interviews with e-government participants and gathering evidence from organisations' documents and proceedings from local and regional Arabic e-government conferences, as well as on-site participants' observations. This study documented the e-service development activities and identified the influential attributes driving the e-government phenomenon using both a descriptive and exploratory research strategy. Content analysis of the interview transcripts was used to extract answers given during the semi-structured interviews and to identify new themes that emerged from the data.

Revision of research findings and comparison with literature have taken place from May, 2011 till April, 2012. The review has contributed to adding over 100 pages to the literature review chapter and over 20 pages to the final chapter of recommendation and conclusion.

Upon the conclusion of the study's data presentation and analysis, a further literature review has provided a significant improvement in refining the study's conceptual framework. It has provides additional theoretical elaboration of key ideas, clearer definition and articulation of the e-services development process and contributed towards the formation of fourteen propositions. The empirical findings indicated three main stages (planning, transformation and deployment) similarly delineated by Rogers' (1995) Organisation's Adoption Process theory (initiation, adoption and implementation). However, the stages emerged in a more interactive looping patterns unlike Rogers' linear model. Additionally, fourteen technological, organisational and environmental factors were indicated as being responsible for influencing the development process of e-services in Dubai public organisations. These propositions are to provide concerned academics with some guidance for further investigation into the e-services' development practices in the region. This study also attempts to assist and guide government reformers, technological innovations' team leaders and the implementing staff in Dubai in initiating, deploying, and sustaining their technologically integrated initiatives in a systemic and educated manner.

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**Keywords** *e-Government initiatives, Dubai, Diffusion Of Innovation, Technology Organisation Environment Framework ,Diffusion Process, technological Innovation, E-services*

## CHAPTER 1

### 1.1 Introduction

Like many contemporary concepts there are multiple definitions of E-government among the field's scholars and practitioners (cf. Ho, 2002; Moon, 2002; West, 2004), but major international bodies and researchers have settled on defining electronic government as the government use of information technologies to deliver its services and improve the efficiency, effectiveness, transparency and responsibility of public government (Aicholzer & Schmutzer 2000; Devadoss et al. 2002; OECD,2003; Kraemer and King, 2003; World Bank, 2010).

Given the aforementioned definition, it is evident that e-government is not merely the computerisation of a government system, but it is viewed as a transformational mechanism for public organisations' reform (West,2004; Scholl, 2005) as well as a renovational apparatus for governments' provision of information and services to its different user groups (OECD e-Government Studies 2005; Irani & Elliman & Jackson 2007). Making it a drastic, yet an inevitable transformation venture (Jaeger, 2003).

Considering the multifaceted, ambiguous and enduring nature of transformation, the implementation of e-government initiatives has generated an increasing volume of research literature as it is believed to constitute one of the most important challenges of the next decades (Warkentin et al., 2002; Marche and McNiven, 2003; Grönlund and Horan, 2005). With the aim of reducing governmental costs (Jaeger and Thompson 2003, Pieterse and van Dijk, 2006), making access to governmental information easier (Akman et al. 2005, Bertot & Jaeger 2008) and improving citizen participation in the political system (Macintosh, 2006, Pieterse & Ebbers 2008).

Hence, electronic government services became an indispensable innovation apparatus for government worldwide in the 21<sup>st</sup> century (Wimmer & Traunmuller, 2000, UNDESA, 2008). According to the United Nations Development Programme, e-government initiatives are already helping save 2% of the annual United States' GDP due to efficiency gains in services' provision (UNDP, 2003, UN E-Government Survey 2010b).

Yet, World Bank (2003) figures indicate the government are only capturing 20 per cent of the real potential of these systems. Several contemporary E-government scholars have also indicated that E-government programs not only present arduous challenges in reaping its latent rewards, but also are difficult to successfully execute (e.g. Jorgensen and Cable, 2002; Norris and Moon, 2005; Andersen and Henriksen, 2006; Dada, 2006; Heeks, 2006; Niehaves, 2007; Coursey & Norris, 2008).

Accordingly, Thomas B Riley, Executive Director and Chair of Commonwealth Centre for Electronic Governance have stated that e-government initiatives are facing implementation difficulties around the world; the success rate varies from country to country (Riley, 2003). A Gartner (2002) study, suggests that as much as sixty per cent (60%) of government agencies have failed or fallen short of e-government modernisation efforts. The report also concluded that only ten per cent (10%) of governments would be able to move toward e-government by 2005 (Di Maio and Baum, 2002). Furthermore, examples of implementation problems, delays and failures in the area of e-government can be found in practically all countries (cf. Heeks 1999: pp. 50-58). According to Richard Heeks, Professor of Development Informatics in the Institute for Development Policy and Management at the University of Manchester, e-

government projects in developing countries are 35 per cent total failures, 50 per cent partial failures, and only 15 per cent are successes (Heeks, 2003).

Hence, E-government proper adoption and implementation has become an important research issue over the past decade (Schware and Deane, 2003; Traunmüller and Wimmer 2003, Schönberger and Lazer, 2006), as it became a necessity for government agencies to understand the activities, policies and processes involved in deploying such initiatives in order to cope with the uncertainties of such turbulent and complex technological innovations.

## **1.2 Specific Research Issues & Motivations**

As other countries continue to demonstrate the potential of e-Government initiatives to both simplify and improve public services, the argument grows for public sector organisations in Dubai to follow suit. Notably, while Dubai's public organisations are attempting to provide a hundred per cent (100%) of their services online by the year (2009) and achieve a fifty per cent (50%) usage rate of its online services (Al-Bastaki and Geray, 2005), there has been no unifying theoretical framework for understanding the phenomenon or guiding the public organisations implementation efforts in their endeavours since e-government documentation and literature is quite new (Andersen, 2004; Gronlund 2005; Ridley, 2008). Notably, the field of e-government is still in its infancy as it has only come to be recognised around the year (1996) (Coursey and Norris, 2008), while e-government research papers first appeared in the year (1999) (Norris and Lloyd, 2006).

Furthermore, research concerning the Arabic gulf countries is quite scarce (Al-Essa, 2002; Kostopoulos, 2003; Saidi & Yared, 2004; Sahraoui, 2005) as universities in the region have little interest in being more than teaching institutions (Ali, 2005, Al-Rashdan, 2009). On average, Arabic countries spend less than 0.5 % of their public income over research (UNDP, 2009; Elsayed, 2010).

Moreover, since the adoption and implementation of a new technology varies between countries (Maitland & Bauer, 2001; Kovačić, 2005), the existing literature on e-government is based on experiences of countries, which actually differ quite drastically based on the cultural , political , economical and social contexts within which these e-government initiatives are developed and implemented (Sahraoui, 2005). Chen et al., (2006) argue that most if not all e-government strategies in the literature were presented from the perspective of developed countries and not from the developing countries (Chen et al., 2006). Hence, it became apparent for the researcher that in order to fill this gap, a uniquely tailored e-government initiatives' adoption and implementation model is required to be developed for the emirate of Dubai to help guide its public organisations in their e-services' development endeavours.

The second motivation to this study has a theoretical offset. Upon reviewing the e-government literature, the researcher deduced that there was critical need for theoretical and empirical research on the topic of e-government in the region (Al-Qirim, 2004; Sahraoui, 2005). Moreover, due to the lack of information transparency in the region (Kamli, 2002; Kirat, 2005), government information accessibility and its reliability make studies and even government's publications rare and dubious (Zaki, 2010). Dubai being relatively more transparent to researchers (Kamli, 2004), ranked

as the top among Arab nations in terms of its digital economy and 32 globally (The Economist, 2010) and ranked 2<sup>nd</sup> among Arab countries in e-government initiatives' implementation (Rutgers University E-government Survey, 2003; U.N. E-government Survey, 2010a), could serve well as an appropriate and affluent subject of study and provide further insights to other governments in the region and developing world. The unique political, cultural and economic attributes relevant to this study of Dubai and the perceptiveness of its individuals make the subject of considerable value in its potential to add new insight to theories that were developed in different contexts.

The final motivation for this study stems from Dubai public organisations' need to gain a deeper and holistic understanding of the e-government diffusion process. Despite the emirate of Dubai ranking among the top cities in Internet penetration, user's experience with IT/IS, sophistication of e-government services, Internet Presence and Information and Communication Infrastructure (Kamli, 2004; United Nations Global E-readiness Report, 2005; CIA country report, 2005). Dubai has also managed to outrank several digitally advanced cities in the world, including Dublin, Paris and Copenhagen, in terms of privacy and security of its official portal (Rutgers University E-government Survey, 2003). Dubai still suffered a significant setback in achieving its 2005 target of transforming 70% of services online (Alshaer, 2005). Only 45% of digital service provision was realised by 2005. Dubai, once the e-government provision leader among other gulf countries council (United Nations Global E-readiness Report, 2005; Rutgers University E-government Survey, 2003), is quickly losing its status to its neighbours who are quickly closing the gap with Dubai as it struggles to establish its e-services and content delivery; it is in the contention of the author that the 100% services transformation target by the year 2009 can only be

achieved if the Dubai's government agencies adopt coherent strategies in their e-services deployment efforts, beginning with an examination of the organisations' current e-services deployment processes, resources and ability of the organisation and their employees to make use of planned technologies.

Hence, the specific problems that this research addresses are:

- \* Lack of a specifically tailored e-government initiatives' development model that can offer guidelines for Dubai government agencies in the transformation endeavours of their e-government initiatives.

- \* Lack of research relevant to the political, cultural and economic attributes influencing e-government initiatives' transformation in Dubai public organisations.

### **1.3 Research focus & Purpose**

The present research focuses on understanding processes and activities as well as identifying the influential attributes surrounding the adoption and implementation processes of e-government initiatives by public organisations in the city of Dubai. The objective is reached by combining theoretical approaches from two mainstream innovation adoption theories to establish the conceptual framework for this study: Roger's (1995-2003) Organisation's Innovation Process (OIP) framework and (TOE) technology, organisation and environment model proposed by Tornatzky and Fleischer (1990). The two theoretical approaches complement each other as their integration facilitates the understanding of the stages individuals and organisations go

through as well as identifying the contexts and related factors influencing the transformation and deployment of e-government initiatives.

Consequently, the main purpose of this study can be summarised as an interpretative approach to understand the social processes involved in transforming e-government initiatives leading to efficient and successful adoption and implementation of the innovation. More specifically, the author wishes to contribute to the comprehension of the e-services' (i.e. e-government initiatives) transformation process by exploring organisational perceptions of this phenomenon by (G1) documenting the development stages of e-services in a descriptive manner as well as (G2) develop a holistic understanding of e-government initiatives' development by identifying relevant activities, entities, processes, and attributes that encompass e-government initiatives' development in Dubai public agencies.

### 1.4 Overview of Research Questions & Objectives

The intellectual puzzle (Mason, 2002:13) is presented in the form of the major research question, research objectives and subsidiary questions (c.f. table 1-1, below). As mentioned previously, this study addresses the lack of holistic understanding of the complex activities, entities, processes, and attributes that comprise e-government initiatives development process in Dubai's public agencies. Hence, the basic question motivating the research in the absences of a conceptual framework, model or theory guiding e-services' transformation and in the light of the high failure rates of e-government initiatives' deployment particularly but not exclusively in the Arabic gulf countries (GCC) was: (RQ1): "*How are e-government initiatives developed within Dubai's public organisations?*". The answer to this question may provide the grounds necessary to develop an e-government initiatives' transformation model to help guide public organisations' employees in their services' transition into electronic form.

Without an empirical and conceptual understanding of the complex and multifaceted e-services' transformation process, government agencies efforts to revolutionise their services by providing speedy, economically and effective services may turn out to be disastrous, costly burden and a technological set back, a move back words instead of forwards. Given the gaps in the pertinent literature, the research needed to gain a holistic understanding of e-services transformation process. In doing so, the research needed to understand the issues relevant to the political, cultural and economic attributes surrounding the e-services' adoption and implementation. Hence the second question was: (RQ2): "*What are the technological, organisational and environmental*

*determinants that can facilitate or obstruct the adoption and implementation of e-government initiatives in Dubai public organisation?”.*

Finally, due to the lack of e-government research in the region and due to the nature of this research being exploratory in guiding Dubai's public agencies and other regional governments in adopting and implementing their e-government initiatives, the author decided that it was helpful to provide emerging hypotheses from the empirical investigation to be subsequently tested and used as part of survey and questionnaires in future research and to obtain more data about e-government in the region. Hence, the third question was: RQ3: *“What working hypotheses are warranted based on Dubai's e-services' development experiences to guide future research?”*

Notably, this research does not begin with a set of hypothesis to test nor it intends to test the generalisability of the preliminary conceptual framework. The researcher intends to identify a set of working hypothesis from the exploration and description of e-government initiatives' transformation process, the developed hypotheses based on the study findings are intended to propose relationships between the factors and their influences in each stage of the e-services development process.

Main Research question	Research objectives	Subsidiary questions
<p><b>How are E-government Initiatives Developed within Dubai's public organisation?</b></p>	<p><b>Using literature and empirical data, Identify determinates and describe activities outlining the development of e-government initiatives in Dubai public agencies</b></p>	<p>RQ1: What are the activities and processes of adoption and implementation of e-government initiatives in Dubai?</p>
	<p><b>Develop an e-services development model based on Roger's (2003) OIP and Torotazky and Fleischer (1990) models And from emprical findings to provide some Practical guidance into deploying e-government initiatives in Dubai organisations and similar contexts</b></p>	<p>RQ2: What are the technological, organisational and environmental determinants that can facilitate or obstruct the adoption and implementation of e-government initiatives in Dubai public organisation?</p>
	<p><b>Develop working hypotheses from e-government Initiatives development experiences in Dubai's public agencies to test and explore in future governmental technological innovation diffusion studies</b></p>	<p>RQ3: What working hypotheses are warranted based on Dubai's e-services development experiences to guide future research?</p>

**Table (1-1):** *The intellectual puzzle adopted from Mason, (2002)*

The research questions were closely related to the conceptual framework as they will serve to operationalise it. They also provided directions for selection of cases, data collection and set provisional boundaries for analysis. The results anticipated from this study is model building and generation of hypotheses, which may lay the groundwork for subsequent research in e-government and public sector's technological innovation diffusion.

### **1.5 Relevance & Significance of the Study**

The research findings are expected to provide a valuable and useful resource for researchers and practitioners concerned with understanding the adoption and implementation of information technology based projects in public agencies in the region and in particularly e-government initiatives, for three main reasons:

First, the field research study, through the proposition of an e-government initiatives' development model, intends to provide an in-depth description of the essential activities and identify the determinants that can facilitate or obstruct the adoption and deployment of successful e-government initiatives.

Second, the field research study extends the research to focus on the adoption and implementation of e-government initiatives in a traditional society where political, social, economic and cultural contexts differs markedly from developed countries, which have already implemented e-government initiatives with some success.

Third, the research examines the adoption of new technology in cities like the emirate of Dubai; therefore, contributing to the body of the innovation diffusion research and adding to the limited literature on e-government initiatives (cf. Margolis & Resnick, 2000; Ho, 2002; Moon, 2002; Heeks, 2003; West, 2004) as new knowledge will be generated from the perspective of e-government personnel in Dubai.

Without understanding the complex phenomenon of e-government diffusion, undesired consequences are most likely to follow. Such as : the i) loss of considerable

public organisation's expenditure; ii) failure in adopting and implementing e-government initiatives and realising it sought out benefits; and finally, iii) a delay in achieving e-government targets. Hence, such an understanding of e-government initiatives' deployment is necessary, in the light of scarcity of research of the phenomenon, as it provides an empirical basis for organisations and individuals interested in understanding e-services deployment process and identifying attributes that may affect e-government initiatives' transformation in their relevant environment. Table (1-2) below presents an overview of a miniature number of studies about e-government diffusion relevant to the topic region.

Table (1-2) below also helps to show that this study is (i) relevant, because some of its components concur with some of the listed research studies of e-government initiatives in the region in terms of the general topic of interest, incorporating some aspects of the diffusion theory and (ii) that it is unique, because it is interdisciplinary and combines the fields of innovation diffusion to better understand *process and activities* with the field of information technology to identify *attributes related to a technological enabled innovation*. It is also unique in being a multiple case study of Dubai's public organisations' experience of e-government adoption and implementation from an innovation diffusion perspective.

Table 1.2 Related public sector technological diffusion studies in the Arabic Gulf Countries Region (part 1/3)

Authors	Theoretical framework	Methodology	Level of analysis	Technology	Variables or key concepts	Main results or arguments
Kostopoulos, 2003	review of e-government initiatives in the Arabian Gulf	Conceptual Study	Article describing cases from Kuwait, Bahrain, Saudi Arabia, Qatar, the United Arab Emirates and Oman	E-government Initiatives	Change Management, Cadre Creation and Public's Cyber Literacy	No clear distinction between stages of e-services development. Recommended forming a government entity to oversee implementation
Al-Ruzaiqi, 2003	innovation diffusion perceived attributes theory identified by Evert Roger (1995)	Qualitative exploratory case study	DBA study utilising Face-to-face interviews, focus group meetings, analysis of other countries' e-government strategies	E-government Initiatives	Identifying technological and organisational determinates in Oman public agencies	Agencies with a well established IT department, qualified technical personnel and a well-developed IT infrastructure, Management Support. Organisations with successful adoption history displayed a greater willingness to adopt e-government initiatives.
Saidi and Yared, 2003	The Networked Readiness Index (NRI)	reviewed and assessed the evidence and information on the extent of e-Readiness	Assessing MENA countries e-Readiness for E-government Adoption based on predetermined factors	E-government websites	e-leadership, Connectivity, e-business climate, eHuman capital, Trust, Information security and privacy	region face a multitude of daunting challenges in achieving economic development and growth, requires a dedicated policy strategy and leadership
Holzer and Kim, 2003	an e-government model developed by Moon (2002)	Content analysis evaluated the official Web sites of 100 selected cities	United nations assessment of government websites using predetermined standards for website evaluation	E-government websites	information dissemination, two-way communication, services, integration, political Participation and security	Dubai ranked top among Arab countries. Overall Results of Evaluation ranked 18 <sup>th</sup> after Dublin and before Sydney

Table 1.2 Related public sector technological diffusion studies in the Arabic Gulf Countries Region (part 2/3)

Authors	Theoretical framework	Methodology	Level of analysis	Technology	Variables or key concepts	Main results or arguments
Arif, Talhami and Alshawi, 2006	Literature review to define value indicators important to evaluate the extent to which a government initiatives have to be implemented in order to harness maximum value from them.	Case study utilising interviews with Dubai Municipality officials evaluate the most value e-government initiatives to implement	Insider Researcher in a single organisation to lay down blue prints for choosing most valuable e-government initiatives and consideration of success factors	E-government initiatives	(1) development of performance indicators; (2) Identification of high value services; (3) selection of services that are highly visible; (4) all inclusive service development; and (5) post-implementation support.	Implementation Success factors are : (1) Support of senior management, (2) Good planning, (3) Focused applications, (4) Adopting various dissemination and communication channels, (5) Creating an internal support. (6) Implementation strategy.
AlShihh, 2006	Literature review to define the barriers to the uptake of e-government from the experiences of advanced nation with e-government	exploratory case study using semi-structured interviews and face-to-face administered questionnaires as primary data collection methods	PHD study with a purpose of identifying non-technical and country-specific factors for e-government	E-government initiatives	investigate the effects of cultural and other country-specific factors on the development and diffusion of e-government in Oman.	users' lack of IT knowledge and the absence of marketing campaigns, frequent structural changes within ministries, being prone to short-term planning have had negative effects on e-government adoption and diffusion
Aldosari R.& King M, 2007	Critical analysis of the proposed e-government development stages in current literature	Interpretive case study	26 Interviews, Observations and official documents	E-government websites	Visibility ,Volume, IT readiness, Complexity, Revenue, Cost affect choice of e-services	No clear distinction between stages of e-services development. Recommended forming a government entity to oversee implementation
AlAwadhi and Morris, 2009	Amended version of the Unified Theory of Acceptance and Use of Technology, UTAUT model	Focus group methodology was used to qualitatively explore factors that affect the adoption of e-government services in Kuwait from the user's perception	Users' perception of 249 students using thematic analysis	E-government Initiatives	usefulness, ease of use, reforming bureaucracy, cultural and social influences, technology issues and lack of awareness.	The likely adoption of e-government services by student subjects is well predicted by many factors, including technical issues, trust and awareness.

Table 1.2 Related public sector technological diffusion studies in the Arabic Gulf Countries Region (part 3/3)							
Authors	Theoretical framework	Methodology	Level of analysis	Technology	Variables or key concepts	Main results or arguments	
Al-Busaidy and Weerakkody, 2009	Literature review based upon of the findings of other studies results of e-government benefits and challenges	quantitative survey-based empirical study in three key public service agencies in Muscat	Ten independent variables that were identified and structured around key themes using Likert scale style questions	E-government Initiatives	Identify the factors that are currently influencing the development and implementation of e-government in Oman	The most salient of these factors was the Omani IT workforce capability and the citizens' trust and confidence in using e-services	
Al Bakr, 2009	Technology Acceptance Model (TAM), the Diffusion of Innovation Theory (DOI) and the Lens of Max Weber's Theory of Bureaucracy.	three questionnaires on a sample of 1500 equally distributed respondents of citizens/customers, business employees and government employees	Regression analysis of survey questionnaire	E-government Initiatives	Customers level of usage and acceptance and explore challenges related to user's adoption of e-services in Dubai	proposed rocket ship model Al Bakr eGovernment Model of implementation	
Alhujran, 2009	Determinants of e-government services adoption in developing countries	multi-site questionnaire survey of 335 Jordanian citizens, and case study interviews with e-government officials	Structural equation modelling and regressions analysis	E-government Initiatives	extends the Technology Acceptance Model (TAM) (Davis et al., 1989) by adding a set of social, political, and cultural constructs	citizen attitude towards using e-government services is the most significant determinant of citizen intention to use e-government services	
This Study	Framework based on Roger's (2003) Diffusion of Innovation (DOI) and Torozakzy and Flicher (1990) TOM model	4 Descriptive and Exploratory cases studies using semi-structured interviews as primary data collection method	PhD thesis, using thematic analysis of interview data to provide description for the activities and identify influential attributes	E-government Initiatives	5 stages of Adoption and Implementation and 3 contexts : Technological, Organisational and Environmental	Propose a modified model and Hypothesis that can help guide e-government deployment in Dubai public agencies and future studies	

**TABLE (1-2):** Related public sector technological diffusion studies in the Arabic Gulf Countries Region.

## 1.6 Methodology Overview

Given the lack of empirical research on e-government initiatives' diffusion especially in the context of Dubai, the intention of this study became to *describe the activities and identify determinates* comprising the e-services development process in Dubai's public agencies. Notably, due to the scarceness of government documentations and erroneous published government statistics (Zaki, 2010); it was in the contention of the author that an exploratory qualitative study seemed like the most suitable approach to carry on the research investigation. However, a descriptive strategy was also seen as appropriate since detailed descriptions of activities were called for to provide in-depth accounts of: '*How e-government initiatives are being diffused in Dubai public organisations?*'. Moreover, a descriptive research strategy was also essential as there was a need to include some historical context due to the limited life span of the empirical study and the nature of e-government initiatives.

The research's aim was not to test predefined dependent or independent variables, only to gain a deeper understanding of the phenomenon through the meanings that people assign to it. In doing so, the researcher created research questions that were very open-ended, allowing the observations from the field to be recorded, classified, and analysed, to detail the stages of the diffusion process and find the attributes that will be used to build the e-services' development model and generate hypotheses.

Consequently, to support the objectives and answer the questions outlined in this research the author adopts a research methodology that advocates a subjectivist approach. The approach is adopted given that the extent of the development (i.e. electronic transformation) of electronically enabled services in government agencies

today necessitates a drilling down into the real human and cultural issues affecting the deployment of e-government initiatives in the public sector. This approach takes both socio-technical and socio-cultural aspects, the formal and informal parts of the development process into consideration. Accordingly, the research assumes the existence of multiple, apprehensible and sometimes conflicting realities that are products of human intellect and may change as the producers become more informed and sophisticated. So, being both subjectivist and relativist, the paradigm of my research is interpretative (Neuman, 2003; Klein and Myers 1999).

In an initial attempt to answer the research questions, to reconcile the literature gaps and provide analysis of the four cases, a hybrid framework is proposed. The theoretical framework becomes the main vehicle for generalising the results of the case study (Yin, 2003). '(Ph.D.) research, even when narrowly and tightly defined, should be guided by some explicit theoretical or conceptual framework' and without this, the thesis becomes a 'mindless ... theoretical wasteland' (Adams and White, 1994, pp. 566, 574). In the case of this study, the main objective of the framework is to provide analytical generalisation, in which a number of previously developed theories are used as a template with which to compare the empirical results of the studied cases (Yin, 2003).

The research data collection activities are guided by the theoretical framework which has been developed from the study's literature review. Participants' observations, various written texts, face-to-face interviews were selected as data collection methods. Data analysis follows the guidelines suggested by Crabtree and Miller (1999) and Miles and Huberman (1994), utilising different levels of coding schemes based on the

conceptual framework. Thematic analysis or template analysis was considered appropriate technique of breaking-down concepts and themes derived from description and exploration of e-government initiatives' development process in Dubai. The data analysis is guided by the preliminary codes to identify themes and trends common to the implementation across the four cases. To ensure trustworthiness and authenticity in the study, member checks, peer reviews and data triangulation was employed.

### **1.7 Research Scope & Limitation**

As with any field research, it is not possible to consider all aspects of interest (Merriam, 1989). In the case of this study, the problem area has been approached from a social constructionist perspective, whereby the research investigation has focused on cognitive structures regarding the phenomenon of the development process activities. Hence, the author's concern has been to utilise constructions in order to reach a deeper understanding of the innovation. The limitations for the study are as follows:

- a) The literature reviews in Chapter (2) of the thesis consist of theories that were generated in other countries. The fact that these theories are applied to Dubai's context could be considered a limitation of this study.
  
- b) This findings of this study may not be generalisable to other institutions. Being a case study, certain variables such as the organisational culture, individuals, conditions, resources and environment are unique to the cases in this research.

c) An additional limitation is due to the fact that this study does not explore one specific research question in depth, but rather covers a broad spectrum of research questions on a macro level in order to reach a holistic understanding of the various components of e-government initiatives development process.

d) Even though the study aims to integrate various theories as means of better understanding the e-government initiatives development process, its richness in terms of a multiple faceted focus on information technology and innovation diffusion could give an impression of fragmentation and lack of focus.

f) Furthermore, the scope of study is limited by the type of the e-government initiatives intended to be studied. Hence, the researcher wishes to outline the terrain of e-government initiatives investigated by this study will be based on any of the following technologies:

- \* Web Based Initiatives.

- \* Telephone and Mobile Cell phones Based Services.

- \* Kiosks (e.g., standalone terminals in shopping centres).

- \* Other Electronically based Initiatives deployed by local level public agencies and administrated by the government of Dubai.

Finally, this research is bounded by the number of interviews, case studies and empirical research time.

### 1.8 Definition of Key Terms

The terms e-services, development, activities, adoption, implementation and process are used throughout this document.

Component	Definitions/Generalisations
<i>E-government Initiatives/ E-services</i>	Public services delivered to society, commerce partners and suppliers, and those functioning in the government sector by electronic media including information, communication, interaction and contracting, and transaction (Ranerup, 2005).
<i>Innovation</i>	Is a process involving the generation and implementation of new ideas, practices or artefacts within an organisation (Van de Ven, Angle, & Poole, 1989).
<i>Adoption</i>	The decision of any individual or organisation to make use of an innovation (Rogers, 2003)
<i>Implementation</i>	The actual use of an innovation in practice (Fullan, 1996)
<i>Innovation Development Process</i>	Innovation Development Process involves a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. (OECD,2009)
<i>Process</i>	Van de Ven and Poole (1995) refer to process as the progression (i.e. the order and sequence) of events in an organizational entity's existence over time. Focus is on development.

**Table (1-3):** Definitions and description of major key terms of the for the e-government diffusion model.

## 1.9 Thesis Structure

This dissertation comprises six chapters. **Chapter (1)** provides a basic introduction to the study and briefly presents the motivation for the study, problem statement, its focus, conceptual shortcomings, research purpose and objectives, research questions, research justification, research approach, intended research contributions, defining important terms for the study and finally the organisation of the thesis as well as an illustration of the thesis structure in Figure (1-1) below.

In **chapter (2)** the author outlines the phenomenon (i.e. innovation) to be studied as electronic government initiatives or as it is widely recognised as e-services. The researcher provides a definition, review and criticism of related literature. The chapter brings to a close with recommendations to probe and scrutinise related literature for a model or theory to guide the diffusion of e-government initiatives.

This chapter also provides the theoretical basis for the study. It identifies an appropriate theoretical lens to provide a suitable departure for investigating the research's phenomenon. The purpose of this chapter is to present the research's hybrid framework.



**Figure (1-1): Schematic overview of dissertation**

**Chapter (3)** explains the philosophical assumption, research design, approach, methodology, and justification for the selection of respondents, sample, as well as the description of the data collection methods, the development of the interview protocol, trustworthiness, the researcher's biases and analysis techniques intended for this study.

**Chapter (4)** displays the research data collected from the four cases. Within-case analysis includes comparing data against the research conceptual framework. With every case the stages and related determinates are displayed. This procedure is concurrent with the data analysis strategy suggested by Miles and Hubberman (1994): Data display, data reduction and conclusion drawing and verification.

In **Chapter (5)**, findings are compared alongside the data in the other cases. A discussion of the results of the initial framework derived from literature is modified upon these findings. This chapter presents the results of the research as it provides a historical reconstruction of e-government diffusion process in the four cases under study. Documentary evidence such as minutes of meetings, reports, regional conferences proceedings, public agencies publications and correspondences have contributed in forming the basis for the reconstruction of the e-government development process and provide sufficient data to be able to describe the process in details.

Finally, **Chapter (6)** presents the insights, conclusions, contribution and hypotheses to be tested for future research arising from this study. It also includes: a restatement of the research questions and method, review of the findings by research question,

insights, contribution to literature, and a set of working hypotheses for future research.

### **1.10 Summary**

This chapter has provided an overview of the research under study. This study demonstrates the challenges as well as opportunities for conducting research on complex and "messy" social and technological phenomenon such as e-government initiatives and its adoption and implementation processes in Dubai's local organisations. The researcher had assumed that the e-government initiatives' development process was a complex, multifaceted social process, yet he had the belief that it was a process that could be successfully studied and analysed through the interpretation of the individuals involved in its deployment.

The chapter identified the problems that necessitate conducting this research. Moreover, the purpose, objectives, research questions, an outline of the research method and the significance of this research were also discussed. Finally, outlines of the remaining chapters within this dissertation have been presented. Next, chapter two provides an overview of the important concepts and conceptual framework for this study as well as an analysis of the literature related to the innovation diffusion theory and e-government.

## CHAPTER 1

### 1.1 Introduction

Like many contemporary concepts there are multiple definitions of E-government among the field's scholars and practitioners (cf. Ho, 2002; Moon, 2002; West, 2004), but major international bodies and researchers have settled on defining electronic government as the government use of information technologies to deliver its services and improve the efficiency, effectiveness, transparency and responsibility of public government (Aicholzer & Schmutzer 2000; Devadoss et al. 2002; OECD,2003; Kraemer and King, 2003; World Bank, 2010).

Given the aforementioned definition, it is evident that e-government is not merely the computerisation of a government system, but it is viewed as a transformational mechanism for public organisations' reform (West,2004; Scholl, 2005) as well as a renovational apparatus for governments' provision of information and services to its different user groups (OECD e-Government Studies 2005; Irani & Elliman & Jackson 2007). Making it a drastic, yet an inevitable transformation venture (Jaeger, 2003).

Considering the multifaceted, ambiguous and enduring nature of transformation, the implementation of e-government initiatives has generated an increasing volume of research literature as it is believed to constitute one of the most important challenges of the next decades (Warkentin et al., 2002; Marche and McNiven, 2003; Grönlund and Horan, 2005). With the aim of reducing governmental costs (Jaeger and Thompson 2003, Pieterse and van Dijk, 2006), making access to governmental information easier (Akman et al. 2005, Bertot & Jaeger 2008) and improving citizen participation in the political system (Macintosh, 2006, Pieterse & Ebbers 2008).

Hence, electronic government services became an indispensable innovation apparatus for government worldwide in the 21<sup>st</sup> century (Wimmer & Traunmuller, 2000, UNDESA, 2008). According to the United Nations Development Programme, e-government initiatives are already helping save 2% of the annual United States' GDP due to efficiency gains in services' provision (UNDP, 2003, UN E-Government Survey 2010b).

Yet, World Bank (2003) figures indicate the government are only capturing 20 per cent of the real potential of these systems. Several contemporary E-government scholars have also indicated that E-government programs not only present arduous challenges in reaping its latent rewards, but also are difficult to successfully execute (e.g. Jorgensen and Cable, 2002; Norris and Moon, 2005; Andersen and Henriksen, 2006; Dada, 2006; Heeks, 2006; Niehaves, 2007; Coursey & Norris, 2008).

Accordingly, Thomas B Riley, Executive Director and Chair of Commonwealth Centre for Electronic Governance have stated that e-government initiatives are facing implementation difficulties around the world; the success rate varies from country to country (Riley, 2003). A Gartner (2002) study, suggests that as much as sixty per cent (60%) of government agencies have failed or fallen short of e-government modernisation efforts. The report also concluded that only ten per cent (10%) of governments would be able to move toward e-government by 2005 (Di Maio and Baum, 2002). Furthermore, examples of implementation problems, delays and failures in the area of e-government can be found in practically all countries (cf. Heeks 1999: pp. 50-58). According to Richard Heeks, Professor of Development Informatics in the Institute for Development Policy and Management at the University of Manchester, e-

government projects in developing countries are 35 per cent total failures, 50 per cent partial failures, and only 15 per cent are successes (Heeks, 2003).

Hence, E-government proper adoption and implementation has become an important research issue over the past decade (Schware and Deane, 2003; Traunmüller and Wimmer 2003, Schönberger and Lazer, 2006), as it became a necessity for government agencies to understand the activities, policies and processes involved in deploying such initiatives in order to cope with the uncertainties of such turbulent and complex technological innovations.

## **1.2 Specific Research Issues & Motivations**

As other countries continue to demonstrate the potential of e-Government initiatives to both simplify and improve public services, the argument grows for public sector organisations in Dubai to follow suit. Notably, while Dubai's public organisations are attempting to provide a hundred per cent (100%) of their services online by the year (2009) and achieve a fifty per cent (50%) usage rate of its online services (Al-Bastaki and Geray, 2005), there has been no unifying theoretical framework for understanding the phenomenon or guiding the public organisations implementation efforts in their endeavours since e-government documentation and literature is quite new (Andersen, 2004; Gronlund 2005; Ridley, 2008). Notably, the field of e-government is still in its infancy as it has only come to be recognised around the year (1996) (Coursey and Norris, 2008), while e-government research papers first appeared in the year (1999) (Norris and Lloyd, 2006).

Furthermore, research concerning the Arabic gulf countries is quite scarce (Al-Essa, 2002; Kostopoulos, 2003; Saidi & Yared, 2004; Sahraoui, 2005) as universities in the region have little interest in being more than teaching institutions (Ali, 2005, Al-Rashdan, 2009). On average, Arabic countries spend less than 0.5 % of their public income over research (UNDP, 2009; Elsayed, 2010).

Moreover, since the adoption and implementation of a new technology varies between countries (Maitland & Bauer, 2001; Kovačić, 2005), the existing literature on e-government is based on experiences of countries, which actually differ quite drastically based on the cultural , political , economical and social contexts within which these e-government initiatives are developed and implemented (Sahraoui, 2005). Chen et al., (2006) argue that most if not all e-government strategies in the literature were presented from the perspective of developed countries and not from the developing countries (Chen et al., 2006). Hence, it became apparent for the researcher that in order to fill this gap, a uniquely tailored e-government initiatives' adoption and implementation model is required to be developed for the emirate of Dubai to help guide its public organisations in their e-services' development endeavours.

The second motivation to this study has a theoretical offset. Upon reviewing the e-government literature, the researcher deduced that there was critical need for theoretical and empirical research on the topic of e-government in the region (Al-Qirim, 2004; Sahraoui, 2005). Moreover, due to the lack of information transparency in the region (Kamli, 2002; Kirat, 2005), government information accessibility and its reliability make studies and even government's publications rare and dubious (Zaki, 2010). Dubai being relatively more transparent to researchers (Kamli, 2004), ranked

as the top among Arab nations in terms of its digital economy and 32 globally (The Economist, 2010) and ranked 2<sup>nd</sup> among Arab countries in e-government initiatives' implementation (Rutgers University E-government Survey, 2003; U.N. E-government Survey, 2010a), could serve well as an appropriate and affluent subject of study and provide further insights to other governments in the region and developing world. The unique political, cultural and economic attributes relevant to this study of Dubai and the perceptiveness of its individuals make the subject of considerable value in its potential to add new insight to theories that were developed in different contexts.

The final motivation for this study stems from Dubai public organisations' need to gain a deeper and holistic understanding of the e-government diffusion process. Despite the emirate of Dubai ranking among the top cities in Internet penetration, user's experience with IT/IS, sophistication of e-government services, Internet Presence and Information and Communication Infrastructure (Kamli, 2004; United Nations Global E-readiness Report, 2005; CIA country report, 2005). Dubai has also managed to outrank several digitally advanced cities in the world, including Dublin, Paris and Copenhagen, in terms of privacy and security of its official portal (Rutgers University E-government Survey, 2003). Dubai still suffered a significant setback in achieving its 2005 target of transforming 70% of services online (Alshaer, 2005). Only 45% of digital service provision was realised by 2005. Dubai, once the e-government provision leader among other gulf countries council (United Nations Global E-readiness Report, 2005; Rutgers University E-government Survey, 2003), is quickly losing its status to its neighbours who are quickly closing the gap with Dubai as it struggles to establish its e-services and content delivery; it is in the contention of the author that the 100% services transformation target by the year 2009 can only be

achieved if the Dubai's government agencies adopt coherent strategies in their e-services deployment efforts, beginning with an examination of the organisations' current e-services deployment processes, resources and ability of the organisation and their employees to make use of planned technologies.

Hence, the specific problems that this research addresses are:

- \* Lack of a specifically tailored e-government initiatives' development model that can offer guidelines for Dubai government agencies in the transformation endeavours of their e-government initiatives.

- \* Lack of research relevant to the political, cultural and economic attributes influencing e-government initiatives' transformation in Dubai public organisations.

### **1.3 Research focus & Purpose**

The present research focuses on understanding processes and activities as well as identifying the influential attributes surrounding the adoption and implementation processes of e-government initiatives by public organisations in the city of Dubai. The objective is reached by combining theoretical approaches from two mainstream innovation adoption theories to establish the conceptual framework for this study: Roger's (1995-2003) Organisation's Innovation Process (OIP) framework and (TOE) technology, organisation and environment model proposed by Tornatzky and Fleischer (1990). The two theoretical approaches complement each other as their integration facilitates the understanding of the stages individuals and organisations go

through as well as identifying the contexts and related factors influencing the transformation and deployment of e-government initiatives.

Consequently, the main purpose of this study can be summarised as an interpretative approach to understand the social processes involved in transforming e-government initiatives leading to efficient and successful adoption and implementation of the innovation. More specifically, the author wishes to contribute to the comprehension of the e-services' (i.e. e-government initiatives) transformation process by exploring organisational perceptions of this phenomenon by (G1) documenting the development stages of e-services in a descriptive manner as well as (G2) develop a holistic understanding of e-government initiatives' development by identifying relevant activities, entities, processes, and attributes that encompass e-government initiatives' development in Dubai public agencies.

### 1.4 Overview of Research Questions & Objectives

The intellectual puzzle (Mason, 2002:13) is presented in the form of the major research question, research objectives and subsidiary questions (c.f. table 1-1, below). As mentioned previously, this study addresses the lack of holistic understanding of the complex activities, entities, processes, and attributes that comprise e-government initiatives development process in Dubai's public agencies. Hence, the basic question motivating the research in the absences of a conceptual framework, model or theory guiding e-services' transformation and in the light of the high failure rates of e-government initiatives' deployment particularly but not exclusively in the Arabic gulf countries (GCC) was: (RQ1): "*How are e-government initiatives developed within Dubai's public organisations?*". The answer to this question may provide the grounds necessary to develop an e-government initiatives' transformation model to help guide public organisations' employees in their services' transition into electronic form.

Without an empirical and conceptual understanding of the complex and multifaceted e-services' transformation process, government agencies efforts to revolutionise their services by providing speedy, economically and effective services may turn out to be disastrous, costly burden and a technological set back, a move back words instead of forwards. Given the gaps in the pertinent literature, the research needed to gain a holistic understanding of e-services transformation process. In doing so, the research needed to understand the issues relevant to the political, cultural and economic attributes surrounding the e-services' adoption and implementation. Hence the second question was: (RQ2): "*What are the technological, organisational and environmental*

*determinants that can facilitate or obstruct the adoption and implementation of e-government initiatives in Dubai public organisation?”.*

Finally, due to the lack of e-government research in the region and due to the nature of this research being exploratory in guiding Dubai's public agencies and other regional governments in adopting and implementing their e-government initiatives, the author decided that it was helpful to provide emerging hypotheses from the empirical investigation to be subsequently tested and used as part of survey and questionnaires in future research and to obtain more data about e-government in the region. Hence, the third question was: RQ3: *“What working hypotheses are warranted based on Dubai's e-services' development experiences to guide future research?”*

Notably, this research does not begin with a set of hypothesis to test nor it intends to test the generalisability of the preliminary conceptual framework. The researcher intends to identify a set of working hypothesis from the exploration and description of e-government initiatives' transformation process, the developed hypotheses based on the study findings are intended to propose relationships between the factors and their influences in each stage of the e-services development process.

Main Research question	Research objectives	Subsidiary questions
<p><b>How are E-government Initiatives Developed within Dubai's public organisation?</b></p>	<p><b>Using literature and empirical data, Identify determinates and describe activities outlining the development of e-government initiatives in Dubai public agencies</b></p>	<p>RQ1: What are the activities and processes of adoption and implementation of e-government initiatives in Dubai?</p>
	<p><b>Develop an e-services development model based on Roger's (2003) OIP and Torotazky and Fleischer (1990) models And from emprical findings to provide some Practical guidance into deploying e-government initiatives in Dubai organisations and similar contexts</b></p>	<p>RQ2: What are the technological, organisational and environmental determinants that can facilitate or obstruct the adoption and implementation of e-government initiatives in Dubai public organisation?</p>
	<p><b>Develop working hypotheses from e-government Initiatives development experiences in Dubai's public agencies to test and explore in future governmental technological innovation diffusion studies</b></p>	<p>RQ3: What working hypotheses are warranted based on Dubai's e-services development experiences to guide future research?</p>

**Table (1-1):** *The intellectual puzzle adopted from Mason, (2002)*

The research questions were closely related to the conceptual framework as they will serve to operationalise it. They also provided directions for selection of cases, data collection and set provisional boundaries for analysis. The results anticipated from this study is model building and generation of hypotheses, which may lay the groundwork for subsequent research in e-government and public sector's technological innovation diffusion.

### **1.5 Relevance & Significance of the Study**

The research findings are expected to provide a valuable and useful resource for researchers and practitioners concerned with understanding the adoption and implementation of information technology based projects in public agencies in the region and in particularly e-government initiatives, for three main reasons:

First, the field research study, through the proposition of an e-government initiatives' development model, intends to provide an in-depth description of the essential activities and identify the determinants that can facilitate or obstruct the adoption and deployment of successful e-government initiatives.

Second, the field research study extends the research to focus on the adoption and implementation of e-government initiatives in a traditional society where political, social, economic and cultural contexts differs markedly from developed countries, which have already implemented e-government initiatives with some success.

Third, the research examines the adoption of new technology in cities like the emirate of Dubai; therefore, contributing to the body of the innovation diffusion research and adding to the limited literature on e-government initiatives (cf. Margolis & Resnick, 2000; Ho, 2002; Moon, 2002; Heeks, 2003; West, 2004) as new knowledge will be generated from the perspective of e-government personnel in Dubai.

Without understanding the complex phenomenon of e-government diffusion, undesired consequences are most likely to follow. Such as : the i) loss of considerable

public organisation's expenditure; ii) failure in adopting and implementing e-government initiatives and realising it sought out benefits; and finally, iii) a delay in achieving e-government targets. Hence, such an understanding of e-government initiatives' deployment is necessary, in the light of scarcity of research of the phenomenon, as it provides an empirical basis for organisations and individuals interested in understanding e-services deployment process and identifying attributes that may affect e-government initiatives' transformation in their relevant environment. Table (1-2) below presents an overview of a miniature number of studies about e-government diffusion relevant to the topic region.

Table (1-2) below also helps to show that this study is (i) relevant, because some of its components concur with some of the listed research studies of e-government initiatives in the region in terms of the general topic of interest, incorporating some aspects of the diffusion theory and (ii) that it is unique, because it is interdisciplinary and combines the fields of innovation diffusion to better understand *process and activities* with the field of information technology to identify *attributes related to a technological enabled innovation*. It is also unique in being a multiple case study of Dubai's public organisations' experience of e-government adoption and implementation from an innovation diffusion perspective.

Table 1.2 Related public sector technological diffusion studies in the Arabic Gulf Countries Region (part 1/3)

Authors	Theoretical framework	Methodology	Level of analysis	Technology	Variables or key concepts	Main results or arguments
Kostopoulos, 2003	review of e-government initiatives in the Arabian Gulf	Conceptual Study	Article describing cases from Kuwait, Bahrain, Saudi Arabia, Qatar, the United Arab Emirates and Oman	E-government Initiatives	Change Management, Cadre Creation and Public's Cyber Literacy	No clear distinction between stages of e-services development. Recommended forming a government entity to oversee implementation
Al-Ruzaiqi, 2003	innovation diffusion perceived attributes theory identified by Evert Roger (1995)	Qualitative exploratory case study	DBA study utilising Face-to-face interviews, focus group meetings, analysis of other countries' e-government strategies	E-government Initiatives	Identifying technological and organisational determinates in Oman public agencies	Agencies with a well established IT department, qualified technical personnel and a well-developed IT infrastructure, Management Support. Organisations with successful adoption history displayed a greater willingness to adopt e-government initiatives.
Saidi and Yared, 2003	The Networked Readiness Index (NRI)	reviewed and assessed the evidence and information on the extent of e-Readiness	Assessing MENA countries e-Readiness for E-government Adoption based on predetermined factors	E-government websites	e-leadership, Connectivity, e-business climate, eHuman capital, Trust, Information security and privacy	region face a multitude of daunting challenges in achieving economic development and growth, requires a dedicated policy strategy and leadership
Holzer and Kim, 2003	an e-government model developed by Moon (2002)	Content analysis evaluated the official Web sites of 100 selected cities	United nations assessment of government websites using predetermined standards for website evaluation	E-government websites	information dissemination, two-way communication, services, integration, political Participation and security	Dubai ranked top among Arab countries. Overall Results of Evaluation ranked 18 <sup>th</sup> after Dublin and before Sydney

Table 1.2 Related public sector technological diffusion studies in the Arabic Gulf Countries Region (part 2/3)

Authors	Theoretical framework	Methodology	Level of analysis	Technology	Variables or key concepts	Main results or arguments
Arif, Talhami and Alshawi, 2006	Literature review to define value indicators important to evaluate the extent to which a government initiatives have to be implemented in order to harness maximum value from them.	Case study utilising interviews with Dubai Municipality officials evaluate the most value e-government initiatives to implement	Insider Researcher in a single organisation to lay down blue prints for choosing most valuable e-government initiatives and consideration of success factors	E-government initiatives	(1) development of performance indicators; (2) Identification of high value services; (3) selection of services that are highly visible; (4) all inclusive service development; and (5) post-implementation support.	Implementation Success factors are : (1) Support of senior management, (2) Good planning, (3) Focused applications, (4) Adopting various dissemination and communication channels, (5) Creating an internal support. (6) Implementation strategy.
AlShihh, 2006	Literature review to define the barriers to the uptake of e-government from the experiences of advanced nation with e-government	exploratory case study using semi-structured interviews and face-to-face administered questionnaires as primary data collection methods	PHD study with a purpose of identifying non-technical and country-specific factors for e-government	E-government initiatives	investigate the effects of cultural and other country-specific factors on the development and diffusion of e-government in Oman.	users' lack of IT knowledge and the absence of marketing campaigns, frequent structural changes within ministries, being prone to short-term planning have had negative effects on e-government adoption and diffusion
Aldosari R.& King M, 2007	Critical analysis of the proposed e-government development stages in current literature	Interpretive case study	26 Interviews, Observations and official documents	E-government websites	Visibility ,Volume, IT readiness, Complexity, Revenue, Cost affect choice of e-services	No clear distinction between stages of e-services development. Recommended forming a government entity to oversee implementation
AlAwadhi and Morris, 2009	Amended version of the Unified Theory of Acceptance and Use of Technology, UTAUT model	Focus group methodology was used to qualitatively explore factors that affect the adoption of e-government services in Kuwait from the user's perception	Users' perception of 249 students using thematic analysis	E-government Initiatives	usefulness, ease of use, reforming bureaucracy, cultural and social influences, technology issues and lack of awareness.	The likely adoption of e-government services by student subjects is well predicted by many factors, including technical issues, trust and awareness.

Table 1.2 Related public sector technological diffusion studies in the Arabic Gulf Countries Region (part 3/3)						
Authors	Theoretical framework	Methodology	Level of analysis	Technology	Variables or key concepts	Main results or arguments
Al-Busaidy and Weerakkody, 2009	Literature review based upon of the findings of other studies results of e-government benefits and challenges	quantitative survey-based empirical study in three key public service agencies in Muscat	Ten independent variables that were identified and structured around key themes using Likert scale style questions	E-government Initiatives	Identify the factors that are currently influencing the development and implementation of e-government in Oman	The most salient of these factors was the Omani IT workforce capability and the citizens' trust and confidence in using e-services
Al Bakr, 2009	Technology Acceptance Model (TAM), the Diffusion of Innovation Theory (DOI) and the Lens of Max Weber's Theory of Bureaucracy.	three questionnaires on a sample of 1500 equally distributed respondents of citizens/customers, business employees and government employees	Regression analysis of survey questionnaire	E-government Initiatives	Customers level of usage and acceptance and explore challenges related to user's adoption of e-services in Dubai	proposed rocket ship model Al Bakr eGovernment Model of implementation
Alhujran, 2009	Determinants of e-government services adoption in developing countries	multi-site questionnaire survey of 335 Jordanian citizens, and case study interviews with e-government officials	Structural equation modelling and regressions analysis	E-government Initiatives	extends the Technology Acceptance Model (TAM) (Davis et al., 1989) by adding a set of social, political, and cultural constructs	citizen attitude towards using e-government services is the most significant determinant of citizen intention to use e-government services
This Study	Framework based on Roger's (2003) Diffusion of Innovation (DOI) and Torozakzy and Flicher (1990) TOM model	4 Descriptive and Exploratory cases studies using semi-structured interviews as primary data collection method	PhD thesis, using thematic analysis of interview data to provide description for the activities and identify influential attributes	E-government Initiatives	5 stages of Adoption and Implementation and 3 contexts : Technological, Organisational and Environmental	Propose a modified model and Hypothesis that can help guide e-government deployment in Dubai public agencies and future studies

**TABLE (1-2):** Related public sector technological diffusion studies in the Arabic Gulf Countries Region.

## 1.6 Methodology Overview

Given the lack of empirical research on e-government initiatives' diffusion especially in the context of Dubai, the intention of this study became to *describe the activities and identify determinates* comprising the e-services development process in Dubai's public agencies. Notably, due to the scarceness of government documentations and erroneous published government statistics (Zaki, 2010); it was in the contention of the author that an exploratory qualitative study seemed like the most suitable approach to carry on the research investigation. However, a descriptive strategy was also seen as appropriate since detailed descriptions of activities were called for to provide in-depth accounts of: '*How e-government initiatives are being diffused in Dubai public organisations?*'. Moreover, a descriptive research strategy was also essential as there was a need to include some historical context due to the limited life span of the empirical study and the nature of e-government initiatives.

The research's aim was not to test predefined dependent or independent variables, only to gain a deeper understanding of the phenomenon through the meanings that people assign to it. In doing so, the researcher created research questions that were very open-ended, allowing the observations from the field to be recorded, classified, and analysed, to detail the stages of the diffusion process and find the attributes that will be used to build the e-services' development model and generate hypotheses.

Consequently, to support the objectives and answer the questions outlined in this research the author adopts a research methodology that advocates a subjectivist approach. The approach is adopted given that the extent of the development (i.e. electronic transformation) of electronically enabled services in government agencies

today necessitates a drilling down into the real human and cultural issues affecting the deployment of e-government initiatives in the public sector. This approach takes both socio-technical and socio-cultural aspects, the formal and informal parts of the development process into consideration. Accordingly, the research assumes the existence of multiple, apprehensible and sometimes conflicting realities that are products of human intellect and may change as the producers become more informed and sophisticated. So, being both subjectivist and relativist, the paradigm of my research is interpretative (Neuman, 2003; Klein and Myers 1999).

In an initial attempt to answer the research questions, to reconcile the literature gaps and provide analysis of the four cases, a hybrid framework is proposed. The theoretical framework becomes the main vehicle for generalising the results of the case study (Yin, 2003). '(Ph.D.) research, even when narrowly and tightly defined, should be guided by some explicit theoretical or conceptual framework' and without this, the thesis becomes a 'mindless ... theoretical wasteland' (Adams and White, 1994, pp. 566, 574). In the case of this study, the main objective of the framework is to provide analytical generalisation, in which a number of previously developed theories are used as a template with which to compare the empirical results of the studied cases (Yin, 2003).

The research data collection activities are guided by the theoretical framework which has been developed from the study's literature review. Participants' observations, various written texts, face-to-face interviews were selected as data collection methods. Data analysis follows the guidelines suggested by Crabtree and Miller (1999) and Miles and Huberman (1994), utilising different levels of coding schemes based on the

conceptual framework. Thematic analysis or template analysis was considered appropriate technique of breaking-down concepts and themes derived from description and exploration of e-government initiatives' development process in Dubai. The data analysis is guided by the preliminary codes to identify themes and trends common to the implementation across the four cases. To ensure trustworthiness and authenticity in the study, member checks, peer reviews and data triangulation was employed.

### **1.7 Research Scope & Limitation**

As with any field research, it is not possible to consider all aspects of interest (Merriam, 1989). In the case of this study, the problem area has been approached from a social constructionist perspective, whereby the research investigation has focused on cognitive structures regarding the phenomenon of the development process activities. Hence, the author's concern has been to utilise constructions in order to reach a deeper understanding of the innovation. The limitations for the study are as follows:

- a) The literature reviews in Chapter (2) of the thesis consist of theories that were generated in other countries. The fact that these theories are applied to Dubai's context could be considered a limitation of this study.
  
- b) This findings of this study may not be generalisable to other institutions. Being a case study, certain variables such as the organisational culture, individuals, conditions, resources and environment are unique to the cases in this research.

c) An additional limitation is due to the fact that this study does not explore one specific research question in depth, but rather covers a broad spectrum of research questions on a macro level in order to reach a holistic understanding of the various components of e-government initiatives development process.

d) Even though the study aims to integrate various theories as means of better understanding the e-government initiatives development process, its richness in terms of a multiple faceted focus on information technology and innovation diffusion could give an impression of fragmentation and lack of focus.

f) Furthermore, the scope of study is limited by the type of the e-government initiatives intended to be studied. Hence, the researcher wishes to outline the terrain of e-government initiatives investigated by this study will be based on any of the following technologies:

- \* Web Based Initiatives.

- \* Telephone and Mobile Cell phones Based Services.

- \* Kiosks (e.g., standalone terminals in shopping centres).

- \* Other Electronically based Initiatives deployed by local level public agencies and administrated by the government of Dubai.

Finally, this research is bounded by the number of interviews, case studies and empirical research time.

### 1.8 Definition of Key Terms

The terms e-services, development, activities, adoption, implementation and process are used throughout this document.

Component	Definitions/Generalisations
<i>E-government Initiatives/ E-services</i>	Public services delivered to society, commerce partners and suppliers, and those functioning in the government sector by electronic media including information, communication, interaction and contracting, and transaction (Ranerup, 2005).
<i>Innovation</i>	Is a process involving the generation and implementation of new ideas, practices or artefacts within an organisation (Van de Ven, Angle, & Poole, 1989).
<i>Adoption</i>	The decision of any individual or organisation to make use of an innovation (Rogers, 2003)
<i>Implementation</i>	The actual use of an innovation in practice (Fullan, 1996)
<i>Innovation Development Process</i>	Innovation Development Process involves a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. (OECD,2009)
<i>Process</i>	Van de Ven and Poole (1995) refer to process as the progression (i.e. the order and sequence) of events in an organizational entity's existence over time. Focus is on development.

**Table (1-3):** Definitions and description of major key terms of the for the e-government diffusion model.

## 1.9 Thesis Structure

This dissertation comprises six chapters. **Chapter (1)** provides a basic introduction to the study and briefly presents the motivation for the study, problem statement, its focus, conceptual shortcomings, research purpose and objectives, research questions, research justification, research approach, intended research contributions, defining important terms for the study and finally the organisation of the thesis as well as an illustration of the thesis structure in Figure (1-1) below.

In **chapter (2)** the author outlines the phenomenon (i.e. innovation) to be studied as electronic government initiatives or as it is widely recognised as e-services. The researcher provides a definition, review and criticism of related literature. The chapter brings to a close with recommendations to probe and scrutinise related literature for a model or theory to guide the diffusion of e-government initiatives.

This chapter also provides the theoretical basis for the study. It identifies an appropriate theoretical lens to provide a suitable departure for investigating the research's phenomenon. The purpose of this chapter is to present the research's hybrid framework.



**Figure (1-1): Schematic overview of dissertation**

**Chapter (3)** explains the philosophical assumption, research design, approach, methodology, and justification for the selection of respondents, sample, as well as the description of the data collection methods, the development of the interview protocol, trustworthiness, the researcher's biases and analysis techniques intended for this study.

**Chapter (4)** displays the research data collected from the four cases. Within-case analysis includes comparing data against the research conceptual framework. With every case the stages and related determinates are displayed. This procedure is concurrent with the data analysis strategy suggested by Miles and Hubberman (1994): Data display, data reduction and conclusion drawing and verification.

In **Chapter (5)**, findings are compared alongside the data in the other cases. A discussion of the results of the initial framework derived from literature is modified upon these findings. This chapter presents the results of the research as it provides a historical reconstruction of e-government diffusion process in the four cases under study. Documentary evidence such as minutes of meetings, reports, regional conferences proceedings, public agencies publications and correspondences have contributed in forming the basis for the reconstruction of the e-government development process and provide sufficient data to be able to describe the process in details.

Finally, **Chapter (6)** presents the insights, conclusions, contribution and hypotheses to be tested for future research arising from this study. It also includes: a restatement of the research questions and method, review of the findings by research question,

insights, contribution to literature, and a set of working hypotheses for future research.

### **1.10 Summary**

This chapter has provided an overview of the research under study. This study demonstrates the challenges as well as opportunities for conducting research on complex and "messy" social and technological phenomenon such as e-government initiatives and its adoption and implementation processes in Dubai's local organisations. The researcher had assumed that the e-government initiatives' development process was a complex, multifaceted social process, yet he had the belief that it was a process that could be successfully studied and analysed through the interpretation of the individuals involved in its deployment.

The chapter identified the problems that necessitate conducting this research. Moreover, the purpose, objectives, research questions, an outline of the research method and the significance of this research were also discussed. Finally, outlines of the remaining chapters within this dissertation have been presented. Next, chapter two provides an overview of the important concepts and conceptual framework for this study as well as an analysis of the literature related to the innovation diffusion theory and e-government.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction and Purpose**

Throughout the last five decades, public organisations worldwide have been reinventing their conventional public services' delivery processes through the utilisation of information and communication technologies (ICTs) (Kaul and Odedra, 1991; Asgarkhani, 2003; Ceruzzi, 2003). Recently, the evolution of the internet and networking have resulted in the birth of a genre of net-enabled public services commonly referred to as electronic government (i.e. e-Government) or public e-services (Almuwil et al, 2011).

As a result of the availability of such innovative, cost effective ICT solutions and web-based technologies, governments anticipate to transform the relationship between its organisations and the public by increasing their operating efficiencies (Ndou, 2004), building information-sharing partnerships (Sirkemaa, 2007) and improving the access and delivery of public services (Drigas and Koukianakis, 2009). Nonetheless, several scholars in the field of e- are sceptical about governments achieving the sought out benefits of their services' transformations because they have not enacted technology to redesign their institutionalised organisational processes government (e.g. Grönlund and Horan, 2004; Heeks and Bailur, 2006; Irani et al., 2007; Coursey and Norris, 2008).

Additionally, as noted in the introductory chapter (Chapter 1), despite increased research interest on e-government, the field currently lacks sound theoretical frameworks that can be useful in addressing two key issues concerning the implementation of e-government systems: (1) a better understanding of the activities and attributes encompassing the adoption and implementation of e-government initiatives in the context of Dubai public organisations, and (2) an absence of a common theory or model that can aid in the conceptualisation of the dynamic and complex nature of e-government initiatives' development process in developing countries.

This chapter will provide confirmation that the extant literature (e.g Ebrahim et al, 2004; Gichoya, 2005; Angelopoulos et al, 2009; Detlor et al, 2010; Montazemi et al, 2010) suggests that there is a scarcity of empirical research into the factors that inhibit governments' services processes transformation through technology. Furthermore, this chapter will provide evidence that e-government scholars (e.g. Heeks and Bailur, 2006; Coursey and Norris, 2008, Toonders, 2010) indicated very little use of models in e-government research and implored future researchers incorporate more modelling in their studies. As most of the proposed models in e-government literature lack an empirical basis or theoretic foundation and their adequateness in describing e-government is therefore uncertain (Toonders, 2010). To amend this gap, this chapter will propose its conceptual framework for the adoption and implementation of e-government initiatives since it is a fundamental step in developing a working model for the government services' development process in public organisations.

In the light of the aforementioned issues, the objective of this chapter became to provide a foundation towards the development of a theoretical framework for investigating the adoption and implementation of e-government initiatives via synthesis of existing empirical findings and theoretical perspectives related to e-government initiatives development and related technological innovation and diffusion literature. This chapter also provides a basis for developing a tentative definition for e-government initiatives, as there is no consensus among the fields' scholars and practitioners on what constitutes the term (UNESCO, 2005; Helbig et al., 2005; Gronlund and Horan, 2004; Selkainaho, 2006; Chadwick 2006; Yildiz, 2007). Finally, this chapter establishes how a complex phenomenon is most adequately studied using the research approach and methods discussed in Chapter (3).

The guidance that informs this literature review comes from Glaser (1978, p. 3) who informs the researcher to conduct his study with "as few predetermined ideas as possible--especially logically deducted, a priori hypotheses" so that the researcher is able to grasp information without having them filtered through biases. Furthermore, based on the recommendations offered by a number of scholars (e.g. Hart, 1998; Sethi and King, 1998; Webster and Watson, 2002), this study adheres to refined sequential steps in the literature review process. The researcher collects, recognises, comprehends, applies, analyses, synthesises, and evaluates quality literature in order to provide a firm foundation to the topic of adopting and implementing public e-services help determine a suitable research method.

### **2.1.1 Background and Evolution of E-government**

In order to understand the proliferation of e-government initiatives or electronically enabled services, it is first necessary to review the surfacing leading to the evolution of the phenomenon.

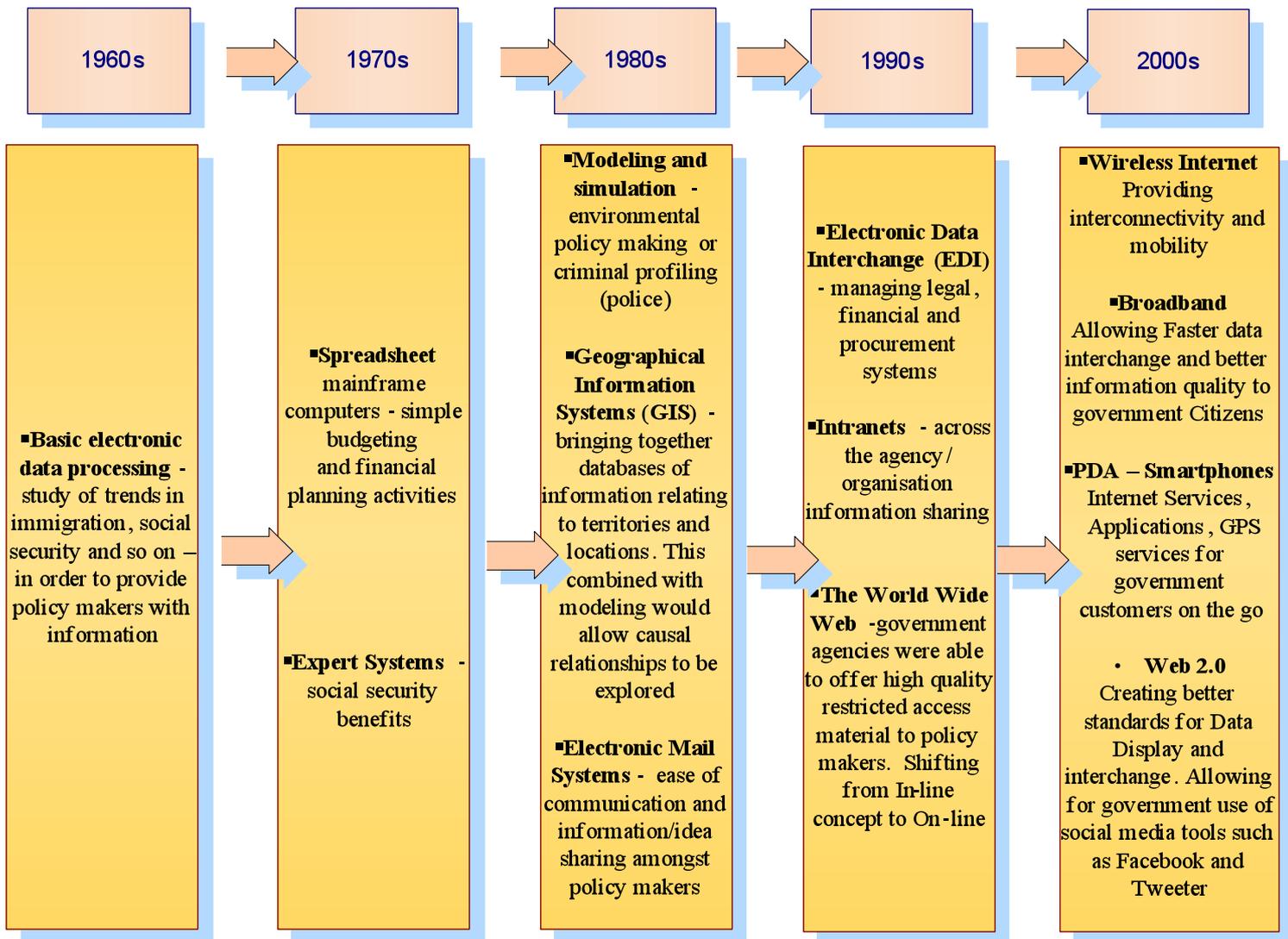
The early stages of the public sector's use of information and communication technologies (ICTs) were characterised initially by the use of defence technologies and later as a support to its civic operations since they first became commercially available in the 1950s (Perry and Kraemer, 1979; Norris and Moon, 2005). As the utilisations of (ICTs) in coincidence with governmental bureaucratic structure started to become more acknowledged, soon after computers followed in the public sector dating it first uses back to the 1960s, (Ceruzzi, 2003). The 1960s and 1970s saw some breakthroughs in the field of technology through the introduction of huge mainframe computers which carried out large-scale repetitive tasks (Perry and Kraemer, 1979). In late 1970s and 1980s the use of large databases and networks of personal computers (PCs) became the dominant paradigm (Caudle, 1990).

Meanwhile, the technological evolution was accompanied by organisational renovations as well. The changes included more public contribution and consultation in decision-making (Steele and Seargeant, 1999), a stronger sense of political and public accountability (Sinclair, 1995), more transparent disclosures and timely financial reporting (Ravlic, 1999), contracting has been established as a standard form of policy creating competitive markets for public services (Walsh and O'Flynn, 2000), the introduction of public service reform programs in the nineties such as TQM

programs (O'Donnell et al., 2001), the use of strategic management practices (McInerney and David, 2009), and alignment and routinisation of information and communication technology with organisational goals (Malhotra, 2000).

The first notion of government utilisation of information and telecommunication technologies in providing services to society was reported in 1979 by Simon Nora and Alain Minc in their report on building the civil and political society using "telematique" or telematic (Nora and Minc, 1980). They defined telematic as a blend of computer and telecommunication network technologies, and described how all aspects of society - such as education, health and daily activities - would benefit from utilising these two technologies.

The term 'e-Government' was introduced by the Clinton's Administration in 1993 (Curtin, 2007). However, the notion of e-government existed in the late 1980s when a few European countries introduced a concept known as 'Electronic Villages' to link remote villages with the central government (Alasem, 2009). Furthermore some scholars argue that 'e-government' has been in existence in 'some form or another' since the introduction of the first mainframe computers in government agencies in the 1950s (e.g. Kraemer and King, 2003; Ilshammar et al., 2005; Curtin, 2007) and by the year 2000, 'e-Government' was being implemented in as many as 198 countries around the world (UNDESA, 2003; Alasem, 2009). Figure (2-1) below offers an illustration of the proliferation of ICTs use in government over the last four decades.



**Figure (2-1):** The application of ICT in government, adapted from Asgarkhani (2003), (Updated and modified by Author)

## 2.2 Overview of E-government Concept

In general terms, ‘Electronic Government’, ‘e-Government’ or ‘Digital Government’ with its many synonyms, generally refers to the structure that is responsible for the electronic transformation of the public services and their delivery (Löfstedt, 2008). Typically, the transformation and delivery of public services (i.e. development process), takes place through the use of information and communication technologies: 1) to enhance its services’ delivery (Calista et al, 2007; Esteves et al, 2008), and 2) to enhance government functionality (Ladner et al, 2008).

Notably, E-government as a research discipline is characterised as a multi-faceted and interdisciplinary field (Löfstedt, 2007a; Curtin, 2007). An investigation of the E-government topic could embrace any of the following concepts: New Services Development (e.g. Riedl et al, 2010), New Public Administration (e.g. Brown, 2005; Henman, 2010), Business Process Management (e.g. Weerakkody, 2006), Innovation Management (e.g. Niehaves, 2007a), E-Governance (e.g. Chadwick, 2009), E-Citizen Relation Management (Reddick, 2010), Information Technology Management and others.

This research is mainly concerned with the development process of 'Electronic Service Delivery' of public services, more commonly known as 'public e-services' or 'e-government initiatives'. According to Agneta Ranerup, the Applied I.T. professor at Göteborg University, Public e-services is the delivery of public services to society, commerce partners and suppliers, and those functioning in the government sector by electronic media including information, communication, interaction, contracting and transaction (Ranerup, 2005). However, many scholars and international bodies also refer to 'public e-service's as 'e-government' (e.g. Layne and Lee, 2001; Turban et al, 2002; Traunmüller, R. and Wimmer, M., 2003; Fountain, 2003; OECD, 2003; Moon and Norris, 2005; Andersen and Henriksen, 2006; The World Bank Group, 2010).

A reasonable justification for such misappropriation of the term is due primarily to the fact that global organisations such as the United Nations are using the term ‘e-government’ in substitution for term ‘public e-services’. This can be evident from their definition of ‘e-government’ as the utilisation of the Information Technologies to deliver government information and services efficiently and effectively to citizens. (UNPAN, 2005).

Another justification for the misuse of the term was given due to the fact that e-public services, at the moment is still in its exploratory stage and is consequently difficult to define accurately (Jaeger, 2003; Leith and Morrison, 2004, Lindgren, 2010). According to Taran (2003), researchers participating in the e-government workshop at the London School of Economics discussed the topic; the discussions did not lead to a clear-cut definition. They instead resulted in broadly interpretable notions such as “we do not know what it is yet” and “there is nothing as such as e-government, it is the diffusion of contemporary IT in the public sector we study”.

Notably, Public e-services are complex administrative innovations (Heeks and Santos, 2009). Such services are mediated through a diverse range of technologies and not just the internet (Almarabeh and AbuAli, 2010). Technologies such as the telephone, fax, short message service (SMS), multimedia messaging service (MMS), wireless networks (e.g. 3G, 4G , GPRS and Wi-Fi), Bluetooth, E-mail, Voice mail, Personal digital assistant (PDA), digital television and radio-based are used in the context of e-government to deliver services to the public (Anttiroiko and Malkia, 2006; Naqvi and Al-Shihi, 2009).

Bijker (1995) and Orlikowski (1992) describe similar complex technologies as having *interpretive flexibility* where actors who belong to different communities construct different meanings of the innovation. Therefore, these technologies are socially constructed, and simultaneously, community shaping (Hughes, 1987). Hence, for the purposes of this study, the author will attempt to synthesise and provide a detailed definition of e-public services based on: 1) common characteristics of comprehensive definitions found in the e-government literature and 2) the delineation of the foci of this research and finally 3) the perspectives' of the participants of this study (*see Appendix G*).

### **2.2.1 Definition of Public Electronic Service**

According to Swedish e-government scholar, Löfstedt “e-services form an emerging field which is rapidly gaining attention and importance” (2005, p48). Hence, it became in the contention of the author that a proper definition of public electronic services needs to be established at this phase of the research in order to identify and understand the concept to be studied. Particularly, when the researcher believes he/she is entering a new and rather unknown research field (Creswell, 2003).

A compilation from the definitions of several e-government scholars and international bodies indicate that ‘*public electronic services*’ can be defined as the systematic use of information and communication technologies (such as wide area networks, the Internet and mobile computing) by government agencies to transform relations with citizens, businesses and government, in order to make government applications and information accessible to the population twenty-four hours, improve the delivery of its

services and maximise the effectiveness and efficiency of the services (Hart and Teeter, 2000; Silcock 2001; Howard, 2001; Turban et al. 2002; UNDESA, 2003; Bhatnagar, 2004; Gunter, 2006; Trimi and Sheng, 2008; World Bank Group, 2010).

The Dubai E-government office, (DEG), offers another definition of e-services based on its segmentation of its electronic services' recipients. The definition states that public e-service is the "use of Information and Communication Technology (ICT) to provide government services to citizens, residents and visitors (G2C), to businesses (G2B), to other government entities (G2G) and to government employees (G2E); using multiple channels, in line with its vision of easing the lives of people and businesses interacting with the Government. (DEG website, 2011).

It can be deduced from the aforementioned definitions and the definitions presented in table (2-1) below, that there is no clear consensus about the concept or definition of public e-services. However, there are some common elements between the definitions ranging from descriptive to value-laden based on their perspective. (Caldow, 1999; Holden, Norris, and Fletcher, 2003; Gil-Garcia and Padro, 2006 ).

Prepective	Definition of Public E-services	Author(s)
Receipts of E-services	<i>The use Information and Communications Technology (ICT) to exchange information and services with citizens, businesses, and other government bodies .</i>	(Riley, 2007; Heeks, 2008; DEG website, 2011)
Value and Benefits	<i>The use of IT to improve the efficiency, effectiveness, transparency and responsibility of public governments</i>	(Kraemer & King, 2003; Gronlund and Horan 2005; Gil- Garcia and Pardo 2005; Kamarck, 2007 ; Cordella and Willcocks 2010; World Bank, 2010)
Technology	<i>The delivery of government-related information and services online through the Internet or other digital means such as telephone touch pad, fax, PDA, smart cards, self-service kiosks, e-mail / Internet, and EDI</i>	(West, 2004; Anttiroiko and Malkia, 2006; Naqvi and Al-Shihi, 2009 Almarabeh & AbuAli, 2010)
Public Sector Reform	<i>Using IT as a strategic tool to modernise the structures, processes and overall culture of public administrations</i>	(Wimmer, 2002; OECD, 2003; Kolsaker and Lee-Kelley, 2006 Cordella 2007; Shin, 2008 )
Innovation (newness)	<i>The production and delivery of government services through ICTs (information and communication technology) leading to new and better services provision</i>	(Heeks, 2000; Bygstad B., Lanestedt G. and Choudrie, J. 2007; and Sagsan, 2009)

**Table (2-1):** *Overview of Perspectives and Definitions of Public E-services in E-government Literature*

Furthermore, it can be noticed that these aforementioned definitions have always provided three main components: service provider, service receiver and the channels of service deliver. Hence, it can be deduced from the discussion above that public e-services meaning in this study is “services *that are provided by government bodies* (i.e. service providers) *to citizens or business* (i.e. service receivers) *and are mediated through the use of information technology*” (Ranerup, 2005; Lindgren, 2010).

### **2.2.1.1 Similarities and Differences between Public and Private E-services**

The evolutionary success and worldwide adoption of e-commerce by the private sector has both challenged and enabled public sector organisations to redefine the level of provision and quality of their services (Golden et al, 2003). Notably, e-Commerce refers to the commercial use of Internet technology to sell and purchase goods or services (Carter and Belanger, 2004). Additionally, both e-Commerce and e-Government are based on Internet technology which in turn is used to facilitate the provision of their services between their institutions and other parties (Carter and Belanger, 2005).

Furthermore, both e-Commerce and e-Government projects development practices are embedded in institutional and social settings leading to a number of social, technical, and organisational influences that affect the adoption and implementation of these projects within their particular firms and organisations (Kanaan, 2009).

In many respects, the notion of ‘e-Government adoption and implementation’ appears as a suitable concept to be investigated through the e-Commerce paradigm (Stahl, 2005). Several e-government scholars (e.g. Moon, 2002; Warkentin et al., 2002; Carter and Belanger, 2004) have implied some similarities between the two concepts (i.e. E-government and E-commerce); such as the pressures these two concepts have propelled towards: 1) organisational change, 2) transformation of services’ provision through ICT channels and finally, 3) transformation towards a more citizen-customer centric way of conducting the organisation’s business.

On the other hand, however, several e-government scholars (e.g. Buckley 2003; Ilshammar et al. 2005; Goldkuhl, 2008; Al-Shehry, 2008; Scholl et al 2009 ), make a deliberate split between governmentally and privately delivered e-services, implying that there are fundamental differences between these two types of organisations. These differences, in turn, influence the characteristics of e-services and entails that e-service in the e-government context requires a separate investigation (*Ibid*).

In their longitudinal exploratory study which span over a three years period, Scholl and three other scholars have studied the similarities and differences between e-Commerce and e-Government (Scholl et al, 2009). Their study concluded that there are significant differences in procedures, standards, and drivers between e-Commerce and e-Government. For instance, e-commerce transactions' processing was found to be much more complex and of recurrent than the services in public organisations (Scholl et al, 2009). While, information processing and management was found much more developed in the public sector than with private firms (*Ibid*). Moreover, they have also concluded that the drivers of innovation were different in e-Commerce and in e-Government (*Ibid*).

Other Scholars have also suggested more differences between the two concepts (i.e. E-commerce and E-government). Several e-government scholars (e.g. Carter and Belanger, 2004, Sundgren, 2005; Stahl, 2005; Scholl et al, 2009) argue that customers of public organisations vary from citizens to other governments, and it is rare that public organisations would get to choose their customers.

Additionally, profitably is not the main concern of public organisations as public services are also to be offered; even in situations when they are not cost effective, e.g. public organisations have to offer services which may be even unprofitable due to obligation enacted by municipal laws (Warkentin et al., 2002; Ilshammar et al., 2005).

Concepts	Public E-services	E-commerce	References
<b>(Organisational Goals)</b>	E-government Focuses on Delivering their services to Citizens without expecting profits	Its referred to the commercial use of technology in purchasing and selling products	Goldkuhl, 2008; Scholl et al., 2009
<b>(Legislations and Bureaucracy)</b>	E-government deals with the public sector which has many features including roles limited by legislation and complex accountability. Also actions must be justified and objectives and outputs are difficult to state or measure	E-commerce deals with the private sector with more freedom for doing their business	Carter and Belanger, 2004; Scholl et al., 2009
<b>(Organisation Structure and Centralisation)</b>	Decision making is less centralised which impedes development and implementation decisions of new services	Decision making can be centralised which facilitates services development	Moon, 2002; Scholl et al., 2009
<b>(Choice of Recipients and Services' type)</b>	E-government agencies are responsible and required to provide services to all the citizens including the ones with low income and disabilities	E-commerce providers are allowed to choose their customers	Carter and Belanger, 2004; Sundgren, 2005; Stahl, 2005; Scholl et al., 2009
<b>(Political Pressure and Profit making Incentive)</b>	Citizen's demand and political pressure are the main drivers for organisation adoption of e-services	The commercial view is the main driver for the service's adoption	Warkentin et al., 2002; Ilshammar et al., 2005
<b>(Services Quality and Expected Benefits to organisation)</b>	Provide services that are in the interest of the government	The goal is to obtain profit and reduce cost	Buckley, 2003; Kanaan, 2009

**Table (2-2):** Main differences between E-commerce and E-government (Adapted from Al-Shehry, 2008; Scholl et al, 2009 and modified by Author)

Table (2-2) above, highlights the main differences pointed out by the aforementioned e-government scholars in their attempt at delineating the similarities between the two concepts. The findings of the aforementioned studies insinuate that the business models and expected outcomes of e-Commerce and e-Government differ in significant ways which makes for another valid reason to study e-services implementation in public sector with a uniquely developed perspective. Hence, the author is not content to the notion that utilising the same or similar research models to explain two distinctive phenomena which follow different trajectories is a right research strategy.

From this point on, the author commences the investigation of public e-services from perspective of public organisations use of ICT innovations and web services; adhering to the fact the private sector organisations, in general, and e-commerce, in particular, have different characteristics that may not lead to the sought after results of this study. However, the author also kept track during his literature review of any similarities regarding determinates and processes between the two concepts; E-government and E-Commerce.

### **2.2.2 E-government Literature Overview**

Having established a working definition and set the focus of study en route for the investigation of the development process of public e-services, it becomes essential now to conduct a literature review and analysis of the current research on the topic. At present e-government is on the agenda both in research and practice as this new field of public sector innovation attracts great attention of governments, technology providers and researchers (Curtin et. al, 2004).

There are as many as four dedicated journals on the subject; E-Government Quarterly, Journal of E-Government, Electronic Journal of E-Government and International Journal of E-Government. In addition to a broader spectrum of journals such as: Government Information Quarterly, Information Systems Research, Journal of MIS, MIS Quarterly, Organisation Studies, Organisation Science, Public Administration Review, and Social Science Computer Review. These online accessible journals provided the basis for this research literature review. According to Heeks and Bailur (2007, p. 252) e-government research is “sitting at the cross-roads between a number of other research domains, particularly computer science, information systems, public administration, and political science”.

Studies commissioned by the United Nations, the European Union, individual countries cabinet offices, private consulting companies, and individual researchers have mushroomed in last decade (e.g. Radford and Holmes, 1999; Ronaghan, 2001; Hunter and Jupp, 2002; Cap Gemini Ernst and Young, 2003; West, 2003; Center for Administrative Innovation, 2004; Horst et. al, 2006; Yildiz 2007; Anthopoulos et. al, 2007; Belanger and Carter, 2008; Sang et al, 2009; Trkman and Turk 2009). Moreover, conferences are being held on both local and international levels where policy-makers, government officials and researchers seek to learn lessons from each other's e-government policies.

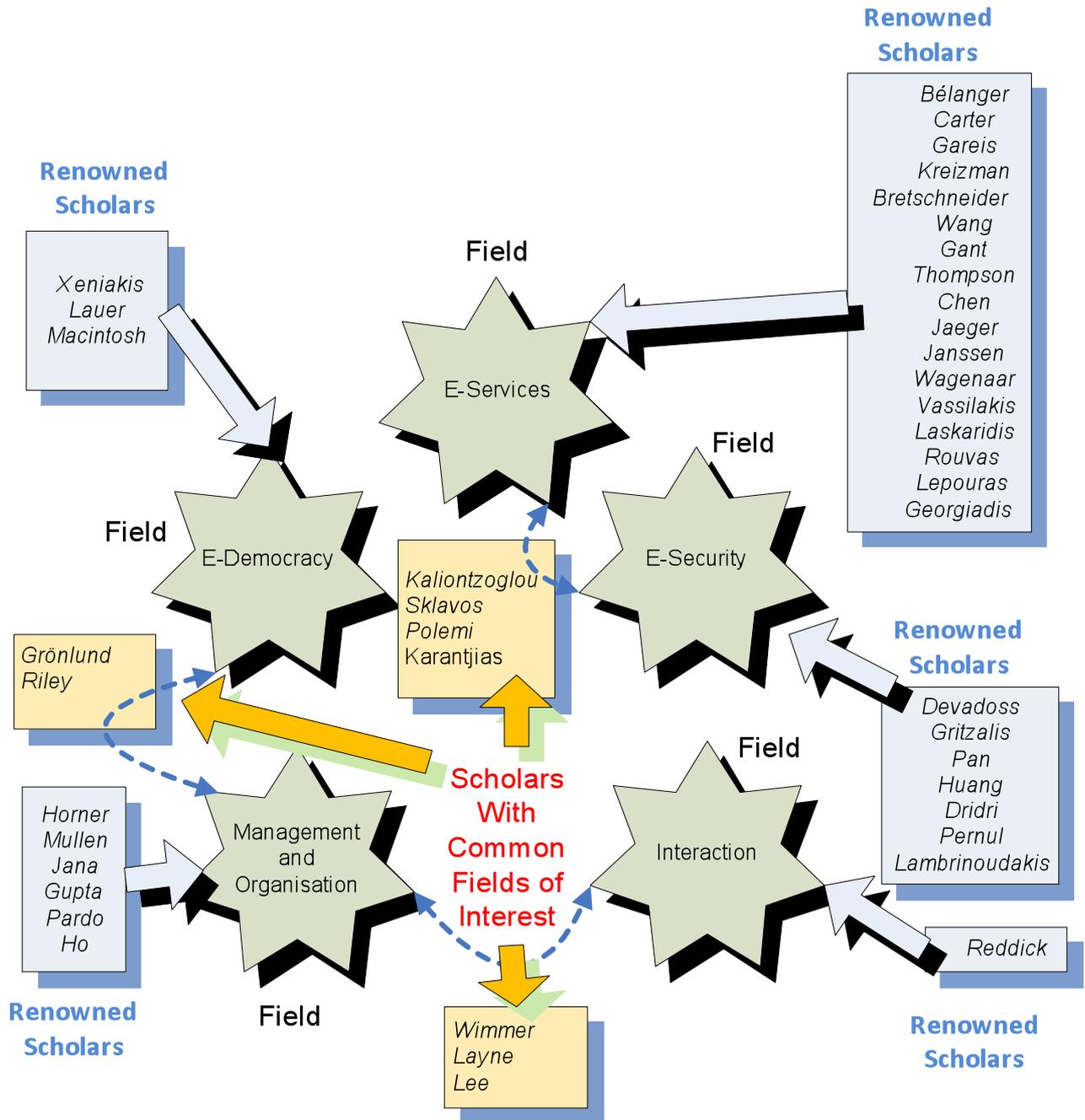
Europe holds numerous annual conferences; the European conference on e-government (**ECEG**), the *DEXA* conference, The European Conference on IT, The EURO mGOV. The UK in particular held two conferences in 2006 the local e-gov London *EXPO* and *EGov* Summit. Dubai, as well, held two e-government related

conferences in 2006 the International Research Conference on Innovations in Information Technology and the 4th *ACS/IEEE* International Conference on Computer Systems and Applications. Moreover, Dubai government have established the Dubai school of government in association with J. F. Kennedy School of Harvard University to educate public sector members into attaining the best outcomes from deploying their electronic initiatives and established an administrative authority known as Dubai E-government office to oversee the public organisations transformation of services electronically.

Yet, in spite of the aforementioned sources and the potential underlying the significant impacts of e-government systems on public administrations, organisations, individuals and society and in spite of the common agreement among researchers and practitioners (e.g. Heeks, 2003; Grönlund, 2005; Alshehri and Drew, 2010) that e-government adoption and implementation processes present important challenges in need of research; so far only a few systematic and thorough studies have been undertaken on the subject (Jaeger, 2003; Kraemer and King, 2003; Grönlund and Horan, 2004; Titah and Barki, 2005; Shareef et al, 2011). Moreover, the research themes, as well as the research approaches and perspectives employed in the study of e-government implementations exhibit significant diversity, making it difficult to reach conceptual clarity on the subject. Accordingly, in the next section, the author will attempt to delineate the main categories of the domain under investigation in order to focus on the research topic and not to be lead astray.

### **2.2.2.1 Current Concepts in E-government Literature**

In an attempt to help outline the domain underlying the study's interest in e-government, the author found Löfstedt (2005) synthesis of the literature rather enlightening. Löfstedt provided a brief overview of current research in the field; she has conducted a investigating of current research including journals as well as conferences. First, she used keyword search on library databases and search engines on the World Wide Web. Then she identified and analysed papers from some conferences. Finally, she investigated the reference lists of the papers surveyed in order to relate the researchers to each other and to find more relevant research in the area. In total, 43 journals and proceedings were analysed. Figure (2-2) below roughly describes current research in the field of e-Government and how different aspects and some researchers are connected to each other. The overarching areas identified are overlapped and connected to each other. The map does not claim to be complete, but can provide a rough picture of the research field of e-Government.



**Figure 2-2:** Map of current research in the field of e-Government (adapted from Löfstedt, 2005)

The illustration in figure (2-2) above provides a summary of Löfstedt (2005) description of the current research in the field of e-Government and how different aspects and some e-government scholars are connected to each other.

Löfstedt (2005) study of e-government projects found five primary categories: e-democracy, e-service, management and organisation, e-security and interaction. Examining Löfstedt (2005) overview of e-government research, the author deduced that the management and organisation aspect of e-government best describes his interest of the research in the e-government field. However, Grönlund and Horan (2004) maintain that there is a lack of developed theories, models and methods in the area of e-government in organisation and management studies. Most research in this field is concerned with technical development, customers' services and citizen's participation. However, there are not many research projects about the organisations' management aspect of the phenomenon (Löfstedt, 2005).

In summary, the research themes, as well as the research approaches and perspectives employed in the study of e-government implementations exhibit significant diversity, making it difficult to reach conceptual clarity on the subject. Hence, it is important for the researcher to outline the domain under investigation in order to focus on the research topic and not to be lead astray. While researchers may in the future develop a unified theory that dominates the theoretical landscape of e-government, the author contends that at present it is appropriate that there exist a multitude of studies examining a variety of levels and units of analysis, geographic regions, definitions of e-government, web site characteristics, and so forth in numerous combinations and permutations. It is then this body of research that may provide a sound basis for useful synthesis in the future.

### 2.2.2.2 The e-government research imperative

The articles that have been selected for the study's literature review have been identified as a result of an iterative search process based on online database search of *ScienceDirect*, *IEL: IEEE Electronic Library* and *Emerald Intelligent* as well as an index search of *The Electronic Journal of e- Government*, *International Journal of Electronic Government Research*, *Journal of Theoretical and Applied Information Technology*, *Journal of Communication Policy Research*, *International Journal of Academic Research*, *Journal of World Academy of Science*, *Engineering and Technology*, in addition to proceedings of International Conference papers and doctoral dissertations.

The search was conducted to identify articles published since 2001 that presented either: 1) reviews and studies of e-government in the adoption and implementation of ICT enabled innovation domain or 2) reviews and studies of e-government in the public administration field, or 3) reviews and studies related to organisational behaviour towards technology enabled services adoption in the public sector. This search led to the identification of 32 articles related to e-services adoption and implementation processes and the facilitators and barriers. The articles foci could be categorised along four principal topics: 1) The facilitators and barriers affecting adoption in the context of the government organisations; 2) the influence of organisational and individual characteristics on e-government adoption; 3) local government adoption and implementation of innovations; and 4) defining and measuring e-government success and impacts.

In table (2-3) below, the literature on e-government is presented following the recommendations of Webster and Watson (2002) in including the following elements:

- 1) theoretical framework, 2) methodology, 3) level of analysis, 4) technology, 5) variables or key concepts, and 6) main results or arguments.

Table (2-3) Review of Public E-Services Research 2004-2011, Source: Author - part 1/8						
Authors	Theoretical framework	Methodology	Data Analysis	Technology	Variables or key concepts	Main results or arguments
Al-Busaidy and Weerakkody (2009)	e-Government Benefits and Challenges	quantitative, survey based study of 94 public employees responses	Ten independent variables consisting of ten closed-ended question and Likert scale type (5-point scale)	e-Government Services	Privacy and security website accessibility technical and software infrastructure requirements, accountability of limited financial resources and national culture	Omani IT workforce capability and the citizens' trust and confidence in using e-services are the most salient of these factors influencing the progress of the national e-government project
Almahamid et al, (2010)	Relationship Between Perceived Usefulness, Perceived Ease Of Use, Perceived Information sharing Quality, And Intention To Use e-Government	A questionnaire survey with 175 respondents	descriptive statistics	e-Government Services	perceived usefulness, perceived ease of use and perceived information quality	There is a significant positive relationship between perceived usefulness, perceived ease of use and perceived information quality and intention to use e-government for gathering information and conducting transactions
Obi et al, (2010)	Modified Model based on Delone & McLean (2003) and Sauer (1993)'s Information System Success	An Exploratory qualitative case study using interviews to understand IS projects failure	Interviews conducted personally and collected from newspapers with 80 people	e-Government Initiatives	Investigated the critical failure factors for e-Government initiatives and extend the existing theory in this area.	Main failure factors are the management of project organisation, unformed public administration and human resource.
Pudjianto and Hangjung, (2010)	Conceptual framework developed based on Technological-Organizational-Environmental (TOE) Framework and Innovation Diffusion Theory	Testing the conceptual model and the associated hypotheses using survey questions	Test of structural model was performed using PLS-graph.	e-Government Initiatives	How assimilation process affected by ICT expertise, ICT infrastructure, TOP management support, organisational compatibility, extend coordination, regulatory environment, and competition.	Environmental context plays an important role in assimilation of e-Government, followed by organisation and technological factors.

Table (2-3) Review of Public E-Services Research 2001-2011, Source: Author - part 2/8

Authors	Theoretical framework	Methodology	Data Analysis	Technology	Variables or key concepts	Main results or arguments
Al-Ghath, W., Sanzogni, L., & Sandhu, K. (2010)	Rogers' (2003) diffusion of innovations theory DOI	Employing survey questionnaires to enhance the understanding of factors that influence adoption and usage of online services in Saudi Arabia	Quantitative analysis of 651 participants	E-Government Online services	Demographic Variables, Trust, Security, Privacy Issues, E-Service Quality, Loyalty & Innovation Characteristics	Perceived Complexity was found to be the most significantly related factor affecting e-service adoption in Saudi Arabia, followed in turn by Privacy and Compatibility.
Alomari, M.K., Sandhu, K. & Woods, P. (2009)	The Diffusion of Innovation (DOI) Theory (Rogers, 2003) and the Technology Acceptance Model (TAM) (Davis, 1989)	Survey for 400 citizens to test Ten proposed hypotheses and examine social factors influencing e-government adoption in Jordan	using multiple regression analysis	E-Government Online services	Trust in Website, Trust in Government, Attitudes and Beliefs, Education, Accessibility, Relative Advantage, Compatibility, Complexity, Perceived Usefulness, Perceived ease of use	Website design, beliefs, complexity, and perceived usefulness are significant factors that may influence the intention of Jordanian citizens to use e-government.
Kanaan, Raed (2009)	Investigate the dynamic nature of the factors that influence e-government implementation in Jordan	42 semi-structured interviews with public and private employees and citizens	Strauss and Corbin's variant of the grounded method	E-Government Services	Cultural, Political, Institutional, External, Human, Financial, Citizen's Concern and National Factors	Four new environmental factors emerged: Parliament Priorities, War in Iraq, Government Priorities and Wasta (i.e. favouritism)
Kanat (2009)	Technology acceptance model (TAM) and theory of planned behavior (TPB) models were extended to fit the requirements of e-government context	Online Survey instrument provided to 392 people on-line over a period of two months	Testing and modifying (TPB) model	E-government Services (Student loans web services)	Attitudes, Perceived Behavioral Control (PBC), Trust in internet and trust in government, Perceived Usefulness, Perceived Ease of Use	Theory of planned behavior predict the e-government adoption behavior well, attitudes were a major contributor in explaining the adoption intentions

Table (2-3) Review of Public E-Services Research 2001-2011,Source: Author - part 3/8)

Authors	Theoretical framework	Methodology	Data Analysis	Technology	Variables or key concepts	Main results or arguments
AL-Kaabi, Reem (2010)	Investigate the majority of critical success factors (CSFs) associated with the implementation of e-government projects	Questionnaire instrument was developed using the data gathered from the literature to test the relevance of the CSFs in the case of Bahrain	Likert scale type (5-point scale)	E-government Projects	Internal politics, governance, vision and strategy, effective staffing, competence, leadership, change in management, information sharing, self-interest and adequate IT	CSFs were Vision and strategy, leadership, adequate IT, information sharing, change management, awareness, business process reengineering, identity requirements, and capacity building.
Alshehri, M. and Drew, S. (2010)	Conceptual Model of Issues Affecting Citizen's E-Government Adoption in Saudi Arabia	Qualitative research methods that include interviews and questionnaires were used	Survey Questionnaires point scale analysis and Interview Thematic analysis	E-government Services	Issues can be categorised as: organisational, technical, social and financial barriers that are facing e-government services adoption and diffusion in Saudi Arabia	Infrastructural weakness, lack of knowledge about e-government, lack of security and privacy of information, and lack of qualified personnel.
Toonders, René (2010)	Conceptual Model of based on adoption and stage models from literature	Testing developed hypotheses through questionnaire to government employees	Multiple regression analyses to find support for the individual factors and Two Moken analyses to verify the linearity of stage models	E-government Services	Municipality characteristics, network factors, technological complexity are factors that explain e-government adoption in Dutch Municipalities	E-government stage models are not as linear as literature proposes. Address density, population and expenses on administrative cooperation play an essential role.
Ali and Sunitha (2007)	Identifying Opportunities and Implementation Barriers in Pakistan and India	Qualitative exploratory study employing self administered questionnaire	Multi- case cross case thematic analysis	E-government Services	Infrastructure Development, Proper Planning, Transparency, Protection and Confidentiality, Re-engineering administrative processes, Citizen involvement and Skilled Employees	Barriers identified are : lack of wills of citizens and govt, lack of skilled personnel, Privacy/security issues of citizens and government and lack of resources

Table (2-3) Review of Public E-Services Research 2001-2011, Source: Author - part 4/8)

Authors	Theoretical framework	Methodology	Data Analysis	Technology	Variables or key concepts	Main results or arguments
Al-Azri et al. (2010)	investigating critical factors that facilitate the successful implementation of E-government projects	Semi-structured interviews with government employees, Single <i>qualitative</i> case study	Thematic Analysis	E-government initiatives and transformations	Organisational Factors, System Factors and End - User Factors	Three paradigms: organisational paradigm, technology paradigm and end-users paradigm. Each include a set of factors that impacts the success of E-government success
Arif (2008)	Jaworski and Kohli (1993) model with three components: 1) Intelligence generation; 2) Intelligence dissemination; and 3) Organisation-wide responsiveness.	6 semi-structured interviews with government employees in A Dubai public organisation- qualitative single case study	Thematic Analysis: results are divided into the three categories of intelligence generation, intelligence dissemination and responsiveness.	E-Government Initiatives	Measuring customer orientation as part of organisational strategy	Current process of communication at the municipality is very sequential and better communication through practicing principles of concurrent engineering will be beneficial
Alshihhi (2006)	Build a model upon Identifying Critical Success Factors from Literature and experiences of Western Countries	Test proposed CSF model using Semi-structured interviews and face-to-face administered questionnaires	Grouped frequency distribution and correlation techniques are used to identify possible relationships between variables	E-Government Initiatives	Study Proposed an E-government framework for adoption using <i>Causal-Loop Diagram (CLD)</i>	Lack of IT knowledge and the absence of marketing campaigns, short-term planning and frequent structural changes have effected E-government Adoption in Oman Negatively
AlAwadhi and Morris (2009)	Extended UTAUT model to investigates the factors that influence the take-up of such services	Built on previous quantitative questionnaire survey research, series of focus groups were used to qualitatively explore factors that affect the adoption of e-government services in Kuwait	Thematic Analysis	E-Government Initiatives	Usefulness, ease of use, reforming bureaucracy, cultural and social influences, technology issues and lack of awareness.	E-government Services must overcome Technical issues as well as provide a significant level of trust and awareness and usefulness. They must be efficient and should meet their specific needs.

**Table (2-3) Review of Public E-Services Research 2001-2011, Source: Author - part 5/8)**

Authors	Theoretical framework	Methodology	Data Analysis	Technology	Variables or Key concepts	Main results or arguments
<p><b>EL-Haddadeh, Weerakkody, AL-Shafi and Ali (2010)</b></p>	<p>Conceptual model of key forces influencing implementation from an organisational, technological, social and political context</p>	<p>A case study (using interview-based research) Complemented by closed end questions surveys</p>	<p>Interviews were transcribed then thematically analysed. Survey data was analysed using selected statistical inference techniques</p>	<p>E-government Initiatives</p>	<p>User Satisfaction with E-government Website Content, Level of Citizens Trust and Level of E-Government Awareness</p>	<p>Lack of awareness, bureaucratic business practices, socio-cultural issues and citizens' satisfaction levels of current national e-government</p>
<p><b>Ebrahim and Irani (2005)</b></p>	<p>A conceptual framework that proposes the standards, infrastructure components, applications, and technologies for e-government</p>	<p>Literature Review</p>	<p>Critical examination and analyses of earlier studies</p>	<p>E-government projects</p>	<p>Architecture framework is composed of four layers: access layer, e-government layer, e-business layer, and infrastructure layer</p>	<p>Provided an architecture framework for public sector organisations IT practitioners manage their e-government projects effectively</p>
<p><b>Layne and Lee (2001)</b></p>	<p>Conceptual Model based on analysis of e-government websites</p>	<p>Conceptual</p>	<p>Examination of E-government website</p>	<p>E-government websites</p>	<p>Four Stages of growth are: Cataloguing, Transaction, Vertical integration and Horizontal integration</p>	<p>The study provides a four stages growth model for a fully functional e-Government associated with technological and organisational challenges</p>
<p><b>Angelopoulos, Kitsios and Papadopoulos (2009)</b></p>	<p>A model that incorporates critical factors contributing to the success in new service development (NSD) projects in electronic government</p>	<p>Develop and test critical success variables through interviews and examine the relations between dependent and independent variable</p>	<p>Three multivariate data analysis techniques: factor Analysis, two-group discriminant analysis and logistic regression</p>	<p>E-government websites</p>	<p>Critical Success Factors, New Services Development, Technology Acceptance Model</p>	<p>Suggesting a model that takes under consideration important CSF for implementing NSD</p>

Table (2-3) Review of Public E-Services Research 2001-2011, Source: Author - part 6/8)

Authors	Theoretical framework	Methodology	Data Analysis	Technology	Variables or key concepts	Main results or arguments
Patel, H. and Jacobson, D. (2008)	Examination of the Factors Influencing Citizens' Adoption Of E-government	Review and Critical Assessment of Current literature on Factors influencing Adoption	Critical review of Literature	E-government initiatives	Individual and Organisational factors	Sound and rigorously tested Framework is required to study e-government. Remarkable differences in observations of various studies and lack of e-government studies in developing countries
Rasouli, Zabardast and Badashian (2011)	Literature Constructs to Observe the direct effects of several factors on e-government adoption	Survey using seven-point Likert scale	Structural Equation Modeling (SEM) is used to examine the relations between constructs	E-government initiatives	Demographic factors, IT knowledge, Internet access, Trust, Perceived usefulness, Perceived ease of use and System and Web characteristics (i.e. Reliability, Self-Service and linkage)	IT knowledge, Internet access, Perceived usefulness and Self-Service have significant direct effect on e-government adoption
Weerakkody, Dwivedi, Dhillon and Williams (2008)	Conceptual Model build on the challenges public organisations may face when moving to transactional stage	Qualitative research approach utilising semi structured interviews, observations and document reviews in a case study setting	Thematic analysis process	E-government initiatives	Transformation stage of e-government, Business Processes Change, Evolution of E-Government	Radical re-engineering of business processes, IT sufficient e-services, synergy between public organisations and also with other partners is needed to be able to completely move to the transactional stage
Sahraroui (2005)	Using Heeks' (2003) Design-reality gap To identify major challenges facing Arabian Gulf Countries	Theoretical Review	Evaluation of major e-government projects from the Gulf region	E-government projects	Over-investment in technology and under-investment in skills Users are not included in the design of e-government services No proper evaluation and benchmarking, e-government projects	Absence of research and evaluation of current e-government initiatives is one of the biggest challenges identified. Low level of usage and Slow transformation rate in Dubai

Table (2-3) Review of Public E-Services Research 2001-2011, Source: Author - part 7/8)

Authors	Theoretical framework	Methodology	Data Analysis	Technology	Variables or Key concepts	Main results or arguments
Carter and Bélanger (2005)	A conceptual model based on Technology acceptance model, Innovation diffusion theory and Trust literature	Testing of Hypothesis using Field survey to 105 respondents	Cronbach's alpha was used for reliability of Data and Factor analysis using principle components with Promax rotation was used to evaluate construct validity	E-government Services	Compatibility, Relative advantage, Image, Complexity Perceived ease of use, Perceived Usefulness of the Internet, Trust in Government and Intention to use	Compatibility, PEOU, and Perceived trustworthiness were found to significantly influence citizens' intention to use. Image and Relative advantage did not have a significant influence on intention to use.
Dettor, Hupfer and Ruhi (2010)	Internal factors affecting the adoption and use of government websites	14 Open-ended questionnaire responses from internal government and community workers	Qualitative approach to analyse open-ended responses + descriptive statistics were generated from the 7-point Likert-scale questions	E-government Portals	E-government; internal factors, website strategy; website implementation	Key internal factors: cooperative partnerships, sound governance structures, strong leadership, effective systems development, sustainable funding and sound marketing.
Melin and Axelsson (2009)	Conceptual Framework from e-government systems development life cycle perspective and a challenge and success factor perspective	Interviewed six persons who were involved in the development projects: IT strategist, a development project manager, a system manager, an internal investigator, a case officer and an IT development manager	comparative analysis of two e-government projects	E-government Projects	Life cycle model and Critical Success Factors	Crucial success factors of an interorganizational e-government project include: Project manager skills, position in the agency organisation and when and how systems maintenance issues are introduced in the project
Mahadeo (2009)	A conceptual model for Understanding of the Factors Influencing the Acceptance and Diffusion of e-Government Services	Survey instrument Using constructs from Technology Acceptance Model Diffusion of Innovation	Regression analysis, Multi-items used to measure the independent variables through a Seven-point Likert Scale	E-government Services	Perceived Ease of Use, Social influence, Voluntariness, Compatibility, Trust, Civic mindedness, Facilitating Conditions, Culture, Attitude, Behavioural Intention (BI) and usage behaviour	Users' 'attitude' is the most powerful predictor for user intention, Next was Social Influence, Next was Compatibility

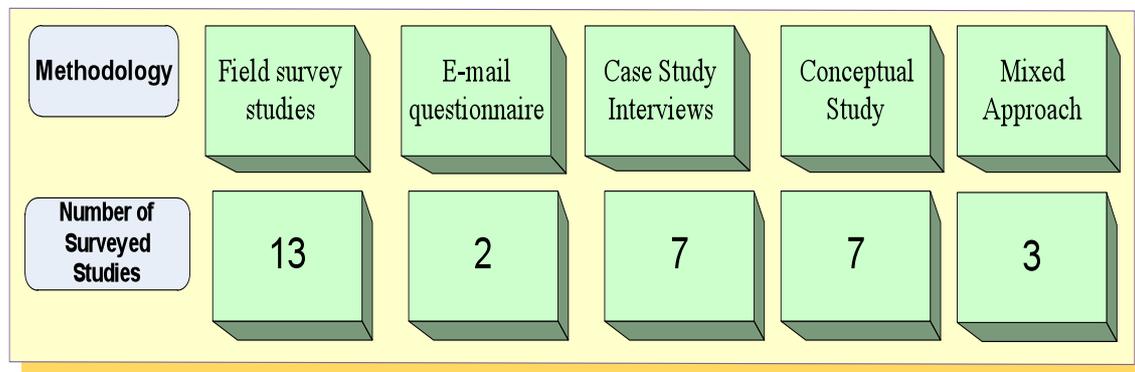
Table (2-3) Review of Public E-Services Research 2001-2011, Source: Author - part 8/8)

Authors	Theoretical framework	Methodology	Data Analysis	Technology	Variables or key concepts	Main results or arguments
Paylichev (2004)	Framework Developed from three theoretical streams: Innovation Diffusion theory, Information and communication technology, and E-government	Test Hypotheses to identify relevant internal Municipal government agency characteristics and external environmental factors of municipalities	Correlation/regression analyses- Bivariate and Multivariate analyses	E-government Initiatives	Professional technical staff and management, motivation to innovate, lack of collaboration among departments, staff resistance to change, having privacy- and security-related problems, and lack of support	Ability of council-manager to operate successfully within the budget limits, demand for e-government services and privacy have significant effect on e-government portal score
Kumar, Mukerji, Burt and Persaud (2007)	Conceptual Framework of Factors for Successful e-Government Adoption Based on Internet Adoption Literature	Proposed Model to Be tested for E-government Adoption	Not Available	E-government Initiatives	User Characteristics, Perceived Risk, Perceived Control, Internet Website Design, Perceived Usefulness, Perceived Ease of Service Quality	Proposed a conceptual model of e-Government adoption
Ebrahim, Irani and Al Shawi (2004)	Integrated proposed stage of growth model with Tornatzky and Fleischer (1990) framework to study e-government implementation	Proposed Multiple Case Study using interviews, document analysis, observation, archival records and organisation website resources	Not Available	E-government Initiatives	Technical, Organisational, and Environmental Factors affect the implementation process	Proposed Strategic framework for e-government adoption
Lippert and Govindarajulu (2006)	Conceptual Model Based on Technological, Organisational, and Environmental Antecedents to Web Services Adoption	Eleven formulated propositions based on (TOE) framework (Tornatzky and Fleischer, 1990)	Not Available	E-government Initiatives	Security concerns, reliability, firm size, firm scope, technological knowledge, perceived benefits, competitive pressure, regulatory influence, dependent partner readiness, trust in the web service provider	Proposed a framework to be tested

Table (2-3): Author's presentation and overview of Public E-services Literature

Table (2-3) above illustrates that survey studies and data obtained by Likert scale type questionnaires were the most common methodology utilised in the appraised e-government literature (15 studies out of a total 32, or 47%). While only 7 articles, (22%), adopted a qualitative approach. Additionally, only 3 studies have provided evidence of utilising “Mixed approaches” in their investigation of the e-services’ implementation process and have identified influential factors using both qualitative and quantitative techniques.

Of the 32 e-government studies which were examined, 22, (69%), formulated hypotheses or research questions; 15, (47%), studies tested the theory using empirical evidence while 7, (22%), did not (figure 2-3, below). The formulation of hypotheses and research questions in a research article is a sign of research sophistication and methodological rigor in many academic disciplines, (Rowley, 2002; Yin, 2003).



**Figure (2-3)** Number of studies by type of data

While only 7 (22%) employed qualitative analysis. Of these 7 articles, 5 (16%) used exploratory case studies and the other two employed a comparative study and the other one used a descriptive approach. Almost 70% of the research papers surveyed used quantitative techniques, concurring that implied positivism underlies most of the e-government research; (see Heeks and Bailur, 2006; Löfstedt, 2007a; Ridley 2008) the 22 (69%) papers undertook work that was amenable to statistical analysis. In nine

(40 %) of these papers there was evidence that the researchers have not left their own offices and ventured out to do their research (i.e. email and telephone surveys) which could explain the absence from some research of the human, social, political elements that more easily become apparent during direct contact with data subjects and settings: on average those who had clearly left their office took a balanced sociotechnical perspective on e-government; those who had not generally saw technology as the main change driver.

Taking a normative perspective, the author can see positive features within current e-government research. In general the findings of the surveyed studies have resulted in number of factors affecting employees', citizen's' and organisational adoption and implementation of public e-services within individual, technological, organisational and external contexts (e.g. Al-Busaidy and Weerakkody ,2009 and Pudjianto and Hangjung, 2009). Barriers were also classified into technical, political and organisational, legal and financial contexts (e.g. Ali and Sunitha 2007; Obi et al, 2010). These findings are also concurrent with main stream of Information Technology and Organisational Innovation literature asserting that contextual, environmental, institutional, and organisational factors affect the selection, design, and use of information technologies (e.g. Kanaan, 2009; Pudjianto and Hangjung, 2009; Al-Azri et al., 2010).

The surveyed studies did also confirm the applicability of utilising technological innovation adoption models such as the Davis' (1989) technology acceptance model (TAM), the Diffusion of Innovation (DOI) model (Roger, 1995), Venkatesh et al. (2003) unified theory of acceptance and use of technology (UTAUT) and the theory

of planned behaviour (Ajzen, 1985) in studying e-government initiatives in Developing countries and Gulf Cooperation Council (GCC) countries (e.g AlAwadhi and Morris 2009; Al-Ghaith et. al 2010 in Saudi Arabia; EL-Haddadehet. al, 2010 in Qatar and Al-Azri et al., 2010 in Oman and Almahamid et. al 2010 in Jordan).

On the other hand, current research reviewed in this study indicates several shortages and shortcomings. Firstly, it can be deduced from examining the e-government literature that much of e-government documentation and literature is quite new and since the adoption and implementation of e-government experience varies dramatically between countries (Maitland and Bauer, 2001), with numerous individual examples of success (Jorgensen and Cable, 2002) and of failure (Hoegler and Schuster, 2002; Heeks, 2003) there has been no unifying theoretical framework for understanding the phenomenon (Gronlund, 2005; Andersen, 2004). Nor is there specific research that deals with the adoption of e-government initiatives in Dubai's government agencies. As none of the surveyed studies in this literature review nor there were any implications while reading the related literature, internet search, libraries visits, conferences attendances (i.e. GITEX 2004 and AICCSA, 2006) and international proceedings (ECEG, 2003-2007 and EMCIS, 2010) throughout the period of this study's life span that a Dubai e-government study existed that examined the factors that would influence Dubai employees' perceptive of adopting and implementing public e-services.

Additionally some of the surveyed e-government studies have limited their research to examining only web portals and government published records (e.g. Layne and Lee, 2001; ; Ebrahim et al. 2004; Sahraoui; 2005; Kumar et al. 2007) which proved sufficient in providing a useful snapshot of online municipal initiatives, but such research methodologies do not contribute to understanding the perspectives of the employees of the organisations under study to include the social, technological and external characteristics the may affect e-government agencies in realising mature and transactional stages in their implementation process (Fountain, 2001; Yildiz ,2007; Patel and Jacobson 2008).

In most cases, the surveyed research and articles on e-government adopted viewpoints that reflected ideas taken from a technological perspective which tends to pigeonhole research regarding the possible effects and scope of e-government (Heinze and Hu; 2005) because these viewpoints treat technology and its use as objective and measurable, when in reality they are ultimately tied to contextual factors and individual groups or users and their interpretations of the technology (Grundén, 2009; Melin and Axelsson; 2009). Neither the deterministic nor the strategic choice view adequately addresses this aspect of technology's recursive relationship with organisations and users (Movahedi et al. 2010). Hence, it is in the contention of the author that while researching e-government, it is important to adopt a perspective that allows for exploration and inclusion of the social aspects of the multifaceted concept.

Furthermore, literature informs us that putting services online is not the whole story. Literature suggests (c.f. Caldw, 1999; West, 2000; Heeks, 2003; Stowers, 2004) that governments who have contended to the simple web presence because of political

pressure or leaders decisions have actually brought disastrous financial loss to their organisation, society and government (some loses reported to exceed \$1 billion in the case of Canada cf. Heeks 1999: pp. 50-58). Hence, this study will augment its scope to include post implementation activities (i.e. e-services' launching, marketing and support).

In summary, most of the aforementioned studies use statistical analyses tools and preceding models to test their applicability in their cases or to measure the success and spread of public e-services' deployment across a sample. The examined journals included theoretical and practical implication of the subject. However, these studies have done little to understand the phenomenon of public e-services and were still loosely describing the topic understudy as 'e-government'. Furthermore, there were very little effort demonstrated in understanding the process of adopting and implementing such initiatives. Hence, it is in the contention of the author that the concept of adoption and implementation of e-public e-services have become a recent addition to numerous challenges facing researchers in this area. The author have argued in his study that e-government consists of a unique combination of characteristics that not only individually play a major role, but in combination rely on each other. The most important issue when looking for success in a public e-services' project is to consider all the factors that affect it. To identify these factors which may enable or inhibit public organisations from achieving their intended operational transformation through technology, this chapter will present an integrated framework for public e-services adoption and identifies the factors that influence the implementation process in public sector organisations.

### **2.3 Overview of Predominate Technological Innovation Diffusion Frameworks**

Having established the lack of a principal theory or model which could provide a suitable framework for investigating public e-services' development processes within civic organisations, an essential objective at this point in the research process thus became to choose an appropriate theoretical lens to guide the study in achieving its pursued outcomes. Hence, in this section, the author will attempt to explain how the theory and practice of public e-services' development process fit into the larger context of the *innovation diffusion literature*.

A review of the literature on the topic of technological innovations (i.e. public e-services) adoption and implementation in public organisations reveals that an abundant number of the research stream borrows in some way or another from the innovation diffusion literature (e.g. Pavlichev, 2004; Mahadeo, 2009; Alomari et al., 2009; Pudjianto and Hangjung, 2010; Al-Ghaith et al., 2010, *See also* table 2.4 and table 2.5 below). These studies include, among others, core models such as: Diffusion of Innovations (Rogers, 1983, 1995, 2003), Technology, Organisation and Environment Model (Tornatsky and Fleischer, 1990), Technology Acceptance Model (Davis, 1989), IT Innovation Adoption Research Model (Agarwal and Prasad, 1998), Innovation Adoption and Implementation (Gallivan, 2001), Two Staged Innovation Adoption Model (Zaltman et al., 1973), IT Adoption Model (Dixon, 1999) and Cooper and Zmud's (1990) Model of the ICT Implementation Process.

Davis' (1989) Technology Acceptance Model (TAM) has been one of the predominant approaches in e-Government adoption literature (Carter, 2008). TAM has been extensively used as theoretical framework in the recent studies to explain the users' acceptance of a variety of technological innovations from an individual perspective including e-services and similar web-based innovations. Examples of such research include Featherman and Fuller (2003), Yaghoubi et al. (2010) and Al-Ghaith et al. (2010). The Technology Acceptance Model (TAM) Davis's (1989) theory is grounded in established social psychology theories: 1) Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA) model; and 2) the theory of planned behaviour (TPB) (Ajzen, 1985). Davis (TAM) theory is widely and successfully used to predict the individual's acceptance behaviour towards a new technology; impartial to the user's population and the type of technology being introduced (Korpelainen, 2011, see table 2.4 below).

Another frequently cited theory is the Diffusion of Innovation theory (DOI) devised by Everett. M. Rogers in the year 1962 (Rogers, 2003). In the mid-2000s, The Diffusion of Innovations became the second-most-cited book in the social sciences (Singhal and Backer, 2005; Singhal and Dearing 2006). The theory explains, among many things, the process of the innovation decision process, the determinants of rate of adoption, and various categories of adopters, and it helps predict the likelihood and the rate of an innovation being adopted (Rogers, 2003). Rogers, (2003) stated that an innovation's relative advantage, compatibility, complexity, trialability and observability were found to explain 49 to 87 per cent of the variance in the rate of its adoption (Rogers, 2003). Examples of DOI utilisation in technological studies can be found in table (2.4), below.

Another predominate theory utilised to investigate organisational adoption of technological innovations is the TOE theory devised by Tornatzky and Fleischer (1990) (Zhu et al. 2002). Tornatzky and Fleischer (1990) developed the technology-organisation-environment (TOE) framework to describe the organisational components that affect the organisation's adoption decisions. According to Tornatzky and Fleischer (1990), the process by which an organization adopts and implements technological innovations is influenced by the technological context, the organisational context, and the environmental context. These three elements present "both constraints and opportunities for technological innovation" (Tornatzky and Fleischer 1990, p. 154). Lippert and Govindarajulu (2006) used TOE model to study web based initiatives and Nabil (2007) to investigate the utilization of electronic commerce (EC) to streamline business processes and information flow to businesses in Jordan (See table 2.4, below).

Gallivan's (2001) devised a framework to study organisational adoption and assimilation of complex technological innovations. The hybrid framework combines aspects of adoption and organisational assimilation and is separated in three sections; primary adoption, secondary adoption/assimilation and consequences. This process framework has often been labelled as a two-step adoption model by innovation scholars such as Leonard-Barton and Deschamps (1988) or contingent adoption decision by Zaltman et al. (1973). Such dubbing was used due to the theory's proposition that employees within an organisation presumed to not able to adopt the innovation until primary adoption has occurred at a higher level of authority. Thus, the user's adoption of an innovation is reliant on a prior event. Other terms used to label such contingent innovation adoption decisions are "top-down" or "forced

adoption". Examples of Gallivan's two stages model adoption use in investigation technologically enabled innovation are illustrated in table (2.4) below.

Theories (Author)	Factors / Processes	Innovation Studied	Selected Articles Using the Theory
Diffusion of Innovations (Rogers, 1995)	Relative Advantage Compatibility Complexity Triability Observability	Acceptance of any new innovation Such as e-initiative, computer, internet	Schaupp and Carter, (2005); Carter and Belanger, (2005); Fu et al., (2006); Korteland and Bekkers, (2007)
Technology Acceptance Model (Davis, 1989)	Perceived Usefulness (PU) Perceived Easy Of Use (PEOU)	Acceptance of innovation of technology such as mobile, e-initiative, PDA, e-commerce, internet banking	Gilbert et al., (2004); Carter and Belanger, (2005); Dimitrova and Chen, (2006); Wang et al., (2006); Horst et al., (2007); Walczuch et al., (2007); Carter, (2008); Colesca, (2008); Lau et al., (2008) Trkman and Turk, (2009)
Technology-Organisation-Environment (Tornatsky and Fleischer, 1990)	Technology Organisation Environment	Adoption of a technology or innovation such as e-government, mobile, PDA, e-commerce, internet banking	Lippert and Govindarajulu (2006); Al-Qirim (2007); Mohamad and Ismail, (2009); Ramdani et al., (2009); Wang and Ahmed, (2009)
Gallivan's (2001) model for organisational adoption and assimilation.	Two-stage adoption model also known as a contingent adoption decision	Implementation of Web-based Information Systems & Electronic Document Management System (EDMS) & CRM system	Bodker et al. (2004); O'Connor, (2004); Ivkovic and Nehlin (2007)
Cooper and Zmud's (1990) Model of the ICT Implementation Process	Initiation, Adoption, Adaption, Acceptance, Routinisation and Infusion	Computer Aided Software Engineering (CASE) & Information system implementation success & implementation of Component-based development (CBD), enterprise-wide software & e-business & Management Information Systems (MIS)	Sorensen (1993); Nickerson et al. (2003); Huang et al. (2003); Zhu et al. (2006a); Abubakre et al. (2011)

**Table (2.4):** *Predominant Innovation Diffusion Theories utilised in technologically enabled innovation studies (Adapted from Al-Zoubi et al., 2011, modified by author)*

Cooper and Zmud (1990) proposed an IT implementation model based on: 1) organisational change and 2) innovation and technological diffusion literatures. Cooper and Zmud's model has been frequently used in information systems research, to investigate diffusion of (I.T.), (I.S.) and (ICTs) based innovations (Abubakre et al., 2011). For example, the IT implementation model was used successfully in exploring assimilation of Internet-based e-business innovations by firms in an international setting (Zhu et al 2006a) and the implementation of enterprise-wide software, I n the field of I.S. based innovations (Huang et al 2003). Consequently, Cooper and Zmud's (1990) model have been empirically tested and provide a good basis in studying various technologically based innovations (see Table 2.4, above).

Having presented some of the predominate theories utilised in the innovation diffusion field in studying technological innovations' adoption and implementation. It is vital to understand at this point that e-services are not uni-dimensional phenomena and that e-government scholars have stressed that need to use a framework that can enable the researcher to encompass the multifaceted and recursive relationships between factors related to technology, management, and policy and the processes of adopting and implementing the initiatives (e.g. Fountain, 2001; Dawes & Pardo, 2002; Gil-Garcia and Pardo, 2006). One way of comprehending the structure of the processes and exploring the leveraging factors that constitutes e-services development is to understand the process of development in terms of different phases; like any innovation assimilation projects (Cooper and Zmud, 1990; Gallivan, 2001; Rogers, 2003; Sherif & Menon, 2004 ). Hence, in the next section, the author will provide an overview of the theories applied in the Innovation Diffusion literature to study technologically enabled innovations from a process-oriented perspective.

### **2.3.1 The Innovation Assimilation Process At the Organisational Level**

At this instant, the author finds it useful to draw attention to the distinction between the diffusion and the assimilation of an innovation. According to Fichman (2000), 'Diffusion is the process by which a technology spreads across a population of organisations, while assimilation refers to the process within organisations stretching from initial awareness of the innovation, to potentially, formal adoption and full-scale deployment (Fichman, 2000).

Assimilation is also more generally defined as the extent to which the use of a technology diffuses across organisational work processes and becomes routinised in the activities associated with those processes (Tornatzky and Klein, 1982). In the same perspective, this study examines the development process (i.e. assimilation) of e-services within Dubai's public organisations by attempting to depict the innovation process from its onset as an new idea and gets adopted by the organisation until it is implemented and becomes routinised in the activities and processes of the organisation in attempt to provide a pragmatic model of e-services development processes for Dubai's public organisations.

However the task of framing e-services within the innovation diffusion literature is not a simple fit and match task. Drawing upon the innovation diffusion literature (Fichman, 2000; Gallivan, 2001, see table 2-5, below) reveals an existence of broader conceptualisations of technological innovations' assimilation processes.

The inspected literature in field of Organisation Assimilation Process (*See* table 2.6, below) divulges that not only there is no agreement on the number of stages that constitutes an assimilation process of a technological innovation in an organisation but also the dynamics of such process vary from simplistic and linear in nature (e.g. Rogers, 2003 and Cooper and Zmud's, 1990) to dynamic and complex waterfall and life cycle models with many feedback loops (e.g. Heeks , 2006 and Eldai et al., 2008).

For instance, Rogers' (2003) widely employed Organisation Adoption Process model includes up to five progressive linear stages to explain the stages that are undertaken by organisations in adopting and implementing innovations (Rogers, 2003). Kwon and Zmud (1987) and Cooper and Zmud (1990) have suggested a similar sequential six-stage implementation model based on their study of information technology innovations which also incorporates social and organisational attitudes toward the introduced innovations. The stages described in their linear model are: *initiation, adoption, adaptation, acceptance, routinisation, and infusion* (Cooper and Zmud, 1990).

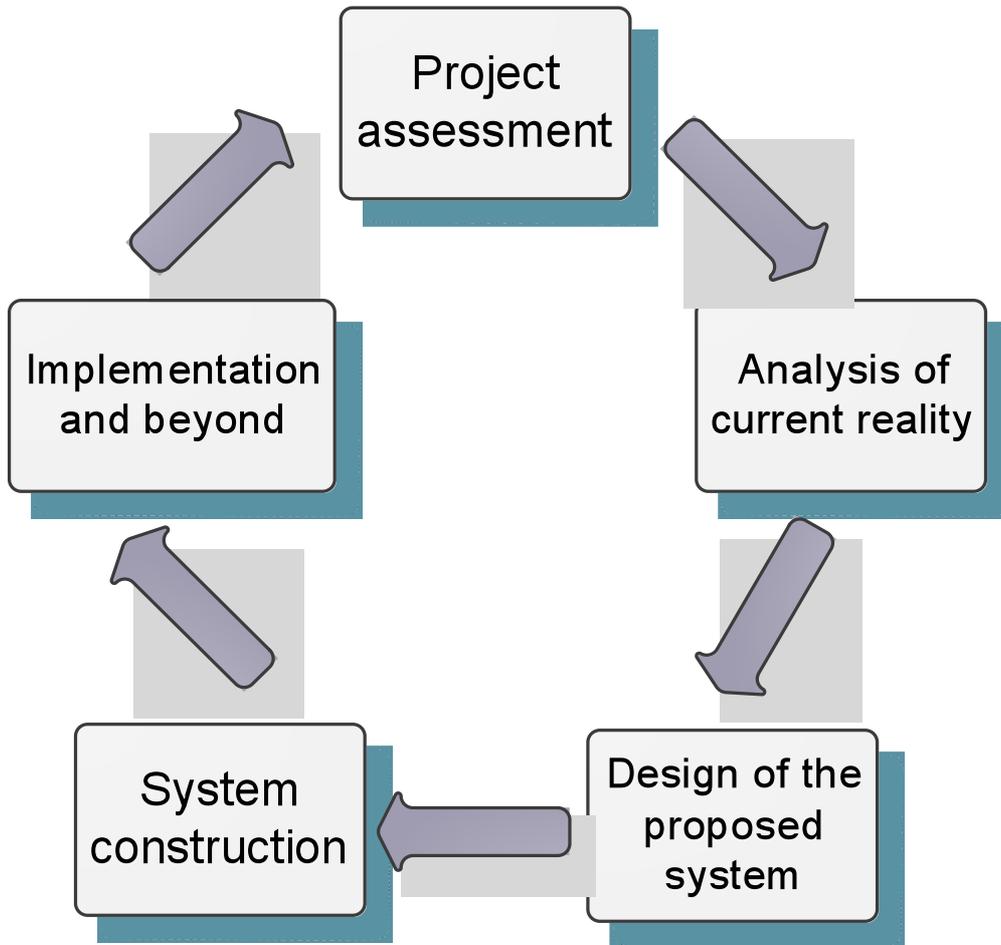
Similarly, Frambach and Schillewaert's (2002) introduced an individual innovation acceptance model proposing that technology assimilation of an innovation depends on factors such as: *personal attitudes; management strategies, policies and actions; training, social persuasion and organisational support* (Talukder et al, 2008). They suggested that assimilation of innovations in an organisation starts with an individual becoming aware of the innovation, before he/she acquires an intention to use it to

finally accepting the new innovation which is also described in analogous with the linear manner depicted in the aforementioned models.

While reviewing the E-government literature in an attempt to disclose some indication to an existing model or framework which could provide some conceptualisations of e-services assimilation processes, the author unearths some scholarly journals in addition to reports related to international e-government benchmarking and consulting groups which have also described e-government progression and maturity in four to six stage models of (i.e. Layne and Lee ,2001; Silcock, 2001; Netchaeva, 2002; Kaaya, 2004; UNDESA,2003; UNDP, 2002). The depicted models labelled as '*e-government maturity models*' in e-government literature (c.f. West, 2000; Chandler and Emanuel 2002; Karokola and Yngström, 2009) illustrate the stance of different government organisations endeavours on the road to transformation. Ranging from four to five stages (e.g. Layne and Lee, 2001; West, 2000; Kaaya, 2004), e-government maturity stages is generally described to begin with: (1) the billboard or cataloguing stage (i.e. website presence); (2) the partial service delivery stage (i.e. two way interactions); (3) the portal stage, with fully executable and integrated service delivery (i.e. payment transactions and documents downloading); (4) the seamless stage, with full integration of e-services across administrative boundaries and (5) finally, the interactive democracy stage.

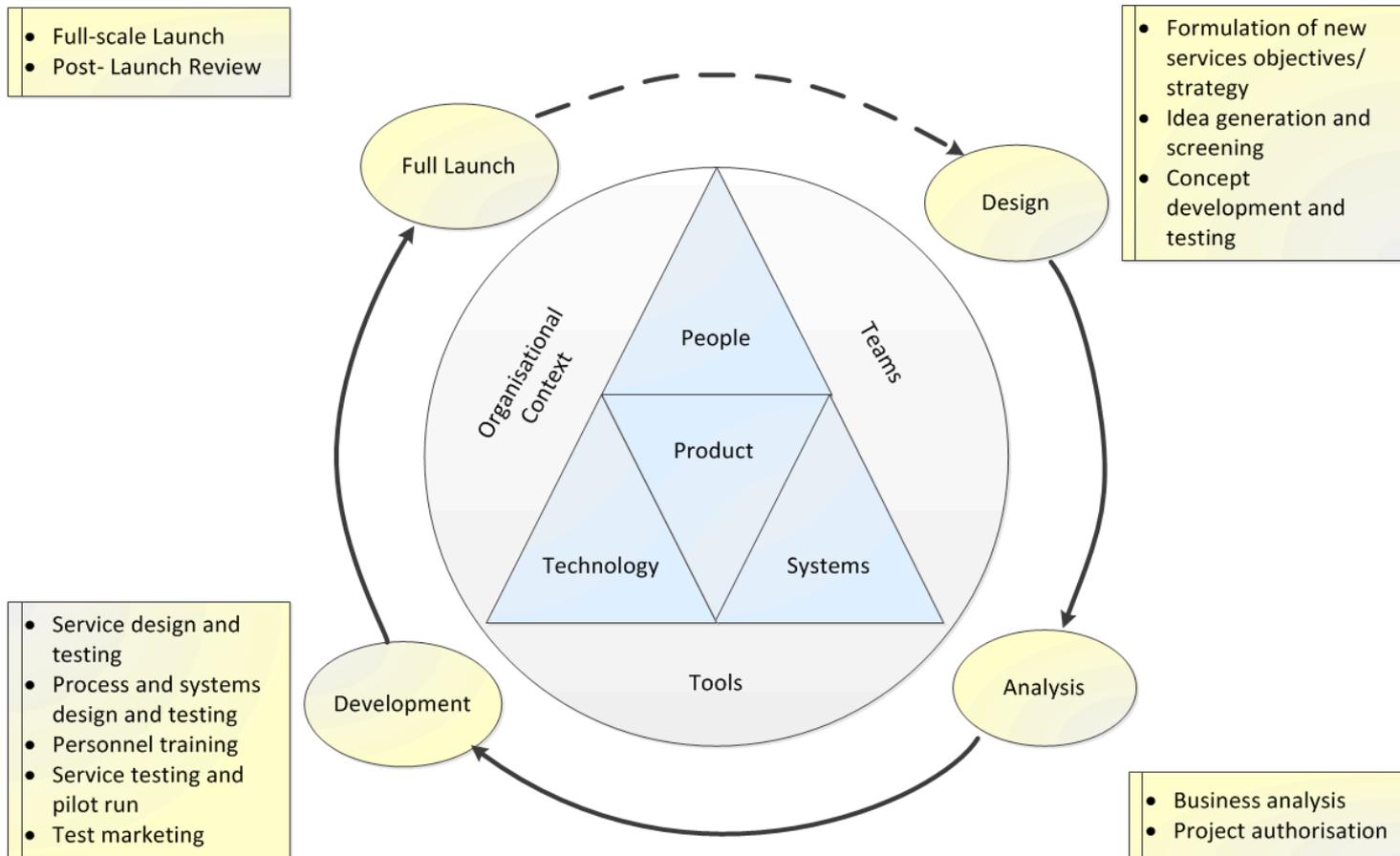
Notably, the above-mentioned stages don't illuminate the processes that organisations and individuals undertake to achieve the successful assimilation of their e-government initiatives. The models described above adopt a normative approach focusing on e-government maturity stages, emphasising on when do local e-government organisations should expect to have their projects reach full development, without actually offering insights on how to achieve such task. Furthermore several scholars have identified several discrepancies between the 'e-government maturity models' and the reality (e.g. Persson and Goldkuhl, 2005; Andersen and Henriksen, 2006; Kaurahalme et. al, 2011). Nevertheless they provide useful indicators as to when the organisation has accomplished the initiation and implementation of their e-government initiatives (Kim & Grant, 2010).

Pacing away from 'E-government Maturity models', a more complex and spiral model that have been utilised in studying e-services assimilation in Swedish organisations (i.e. Melin and Axelsson, 2008) have been proposed by Professor Richer Heeks of the University of Manchester. Heeks have spent over a decade studying the topic of e-government with numerous publications and contributions in the field (cf. Heeks, 1999; 2000; 2002; 2003; 2006; 2008). He suggests that one way of encompassing e-services assimilation issue is to understand the process of its development in terms of different phases; like any system development project (Heeks, 2006). He advocates an e-government development life cycle model consisting of five stages: (1) project assessment, (2) analysis of current reality; (3) design of the new system; (4) system construction; and (5) implementation and beyond. The life cycle development model of e-government systems provided by Heeks (2006, p. 159) is illustrated in Figure (2.4) below.



**Figure (2-4):** An e-government system development life cycle (Source : Heeks, 2006, p. 159)

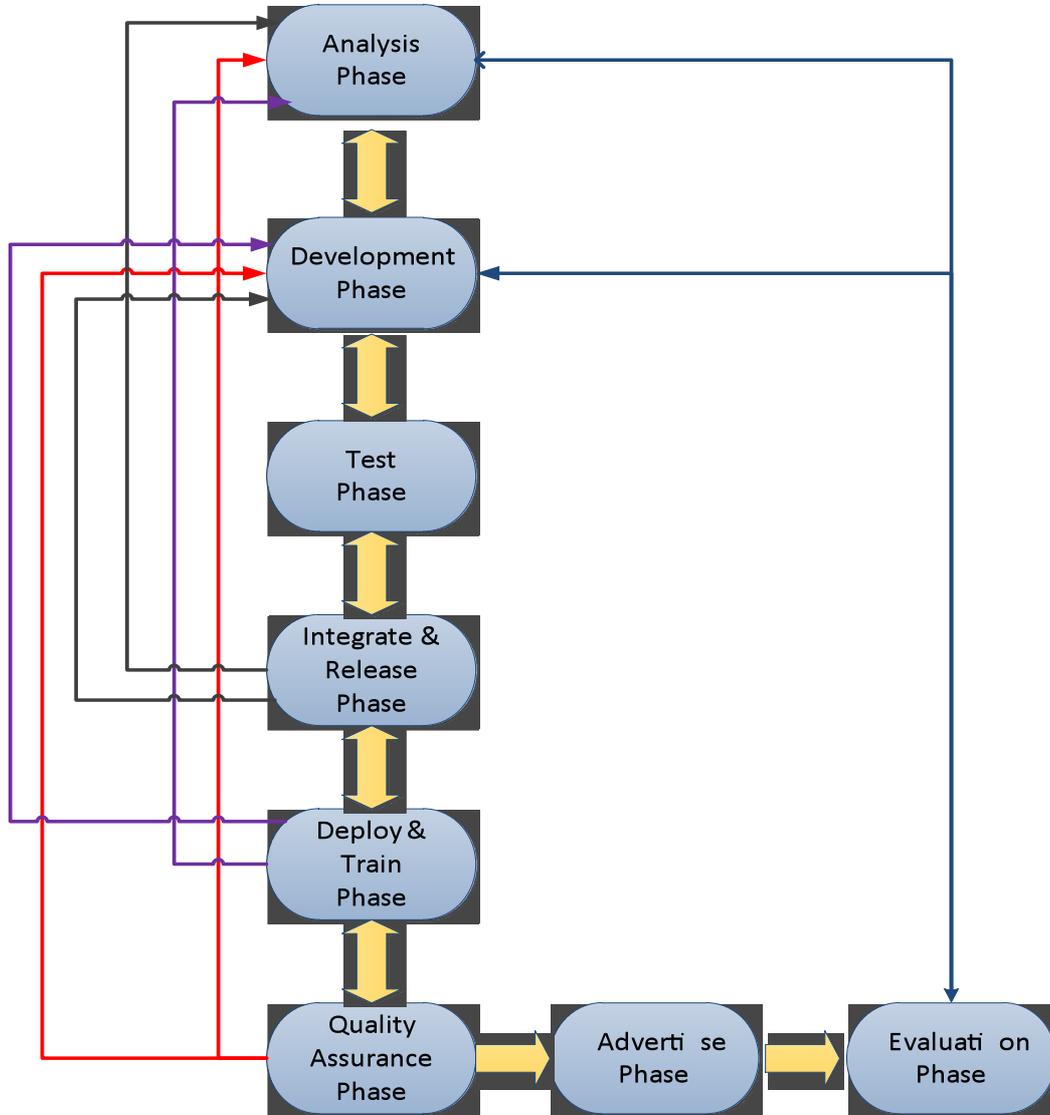
Similarly, Johnson et al. devised a New Services Development (NDS) model composed of four general stages and 13 sub stages to develop a new service (Johnson et al., 2000). The model emphasises the nonlinearity of the NSD process through a continuous cycle as well as the importance of enabling factors: teams, tools, and organisational characteristics (*see* figure 2.5, below). Johnson et al (2000) contend that the (NDS) process needs to concentrate particularly on the factors that distinguish services from physical products, intangibility, co-production/consumption, heterogeneity and perishability (Dalton et. al, 2010).



**Figure (2-5):** NSD process cycle (source: adapted from Johnson et al., 2000)

Eldai et al. (2008) have proposed a complex eight phase model. The waterfall ‘Web-based Systems Development model’ was designed to aid practitioners in successfully building and maintaining large, complex Web-based systems. Eldai et al. (2008) model was based on theoretical studies in the field of web-based development and on practical implementations of web-based systems in Khartoum University (Eldai et al., 2008). The model (figure 2.6, below) illustrates the stages of the proposed top down waterfall model using several feedback loops to allow for a continuous system’s

evaluation and development through iteration techniques between the different proposed phases (Eldai et al., 2008).



**Figure (2-6):** Eldai et al. (2008) model of web based systems (Source: Eldai et al., 2008)

Notably, the aforementioned ‘technological innovation assimilation process models’ discussed in this section exhibit that there is no consistency in literature as to the number of stages that constitutes the assimilation process of innovations similar to e-services nor there is an agreement among the field scholars on the dynamics that shape the interactions of the innovation’s assimilation process.

Similarly, several e-government scholars support such an implication that no single assimilation or development model best explains all cases (e.g. Moon and Norris, 2005; Coursey and Norris, 2008; Ridley, 2008). However, the overviewed models have significant overlap (cf. table 2.5, below) and tend to follow a general pattern of innovation's development in organisations. These stages can be broadly described through a process which begins with: 1) the organisations' awareness of the innovation; 2) matching and fitting the organisation's needs to the innovation; 3) evaluation and appraisal of the innovation leading to the decision to adopt; 4) initial implementation; 5) routinisation, and 6) usage to the fullest potential.

Furthermore, it can be distilled from the models presented in this section of the literature review that the overall process is reflected in two distinct stages: initiation (i.e. adoption) and implementation which is concurrent with the mainstream literature of I.T and I.S innovation diffusion literature (c.f. Cooper and Zmud, 1990; Rogers, 1995; Fichman, 2000) and innovation process management literature in particular (c.f. Van der Ven 1990; Tidd et. al, 2005). Additionally, each of the two primary stages (i.e. adoption and implementation) is influenced by different factors (Zaltman et al., 1973; Damanpour, 1991; Rogers, 2003).

Table (2-6) below offers an illustration about how different models have varying ways of depicting technological innovation's assimilation process depending on: 1) whether the focus of the framework is on early or later stages of the process; and 2) on the background and research interest of the scholar that devised the model.

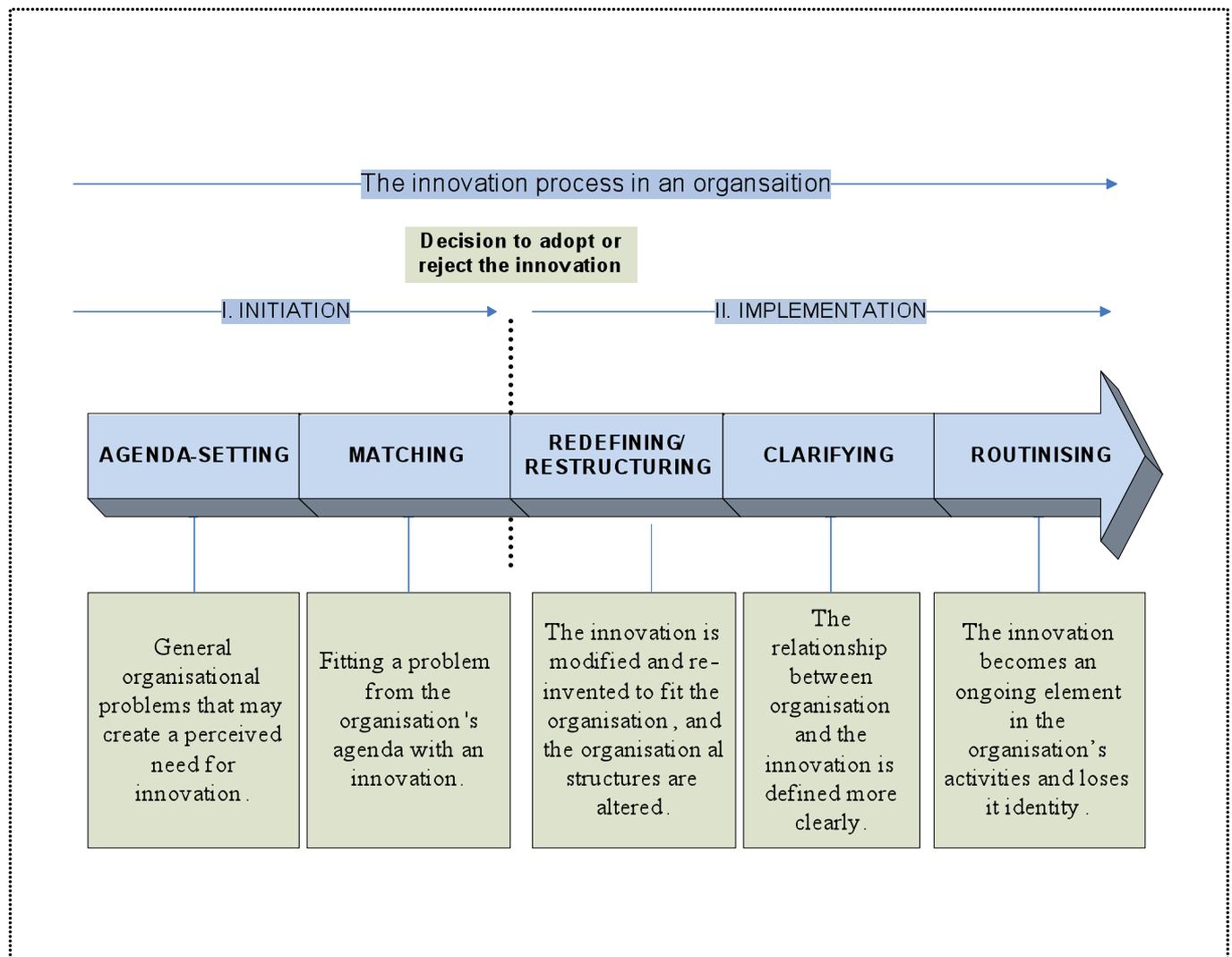
<b>Technologically based Innovations' Assimilation Process Models</b>			
<b>Author(s)</b>	<b>Adoption Stages</b>	<b>Implementation Stages</b>	<b>Emphasis</b>
Technology Acceptance Model (Davis, 1989)	Attitude and Behavioural Intentions Towards Technology (Perceived Usefulness & Ease of Use)	Actual System Acceptance and Use	Two Main Stages of System's Acceptance of new technology
Cooper and Zmud (1990)	Initiation; Adoption; Negotiation and Planning;	Introduction and System design	Adoption of IT and Technological Innovations
Johnson et al. (2000)	Design; Analysis	Development; Full Launch	Four Stages of New Services Development
Frambach & Schillewaert (2002)	Awareness; Consideration and Intention	Continued use	Organisation and Individual Adoptions
Rogers (2003)	Agenda Setting; Matching	Redefining and Restructuring; Clarifying and Routinising	Five Stages of Organisational Adoption Process
Kaaya (2004)	Website establishment	Information Availability; Online Transactions and Development of Sophisticated and Comprehensive websites	E-government Evolution Stages
Heeks (2006)	Project Assessment; Analysis of Current Reality	Design of the proposed System; System's Construction; Implementation and beyond	E-government System Development Life Cycle
Eldai et al. (2008)	Analysis phase	Development phase; Test phase; Integration and Release phase; Deployment and training phase; Quality phase; Advertisement Phase; Evaluation phase	8 phases of Web-based systems Development

**Table (2-5):** Summary of Assimilation Process in Organisations models by different scholars (source: Author)

The author concurs with the views of some scholars implying that e-service projects are still at an early stages in its development (e.g. Persson and Goldkuhl, 2005; Ridley, 2008). Although the field of e-services assimilation and development itself may seem to be unique, studies into the development of new innovations in I.T. and I.S literature indicate that e-services adoption and implementation as a field will not be unique. Once it is recognised that e-services will be subject to some similar challenges and developmental pressures that are experienced in other related disciplines and fields, it will become easier to make sense of its current process fragmentation and influential determinates. Hence, in reviewing the existing Innovation Diffusion Literature, the author finds that Roger's Diffusion of Innovation theory (1995; 2003) and in particular his Organisation Adoption Model (2003) can be a suitable framework for investigating public e-services assimilation process by Dubai public organisations. Accordingly, in the next sections: (2.3.2) and (2.3.3), the author attempts to introduce Roger's (2003) Organisation Adoption Model and provide justification for his choice for the research theoretical framework. It is however important to mention at this point in the research that in no way is this research trying to suppress the importance of the other aforementioned models that have had been utilised and are still being applied in the investigation in e-government and public e-services research.

### 2.3.2 Organisational Innovation Process

Rogers' (2003) Organisational Innovation Process model depicted in figure (2-7) below focuses on both the *initiation* and *implementation* stages of organisation's innovation development process. These two phases are further divided into five stages: 1) agenda-setting, 2) matching, 3) redefining/restructuring, 4) clarifying, and 5) routinising. The initiation phase contains the agenda-setting and matching stages and the implementation phase comprises of the three remaining stages.



**Figure 2-7:** The organisation's innovation diffusion process adapted from (Rogers, 1995; 2003)

Rogers (2003) suggests that in the *Initiation* phase, problems and opportunities come to the attention of the organisation's management (agenda setting) against which potential innovations are matched. This phase includes information gathering and planning, resulting in a decision whether or not to adopt the innovation. If the innovation is adopted then a second *Implementation* phase follows. The implementation phase begins with the organisation redefining or restructuring the innovation to achieve a closer fit with its needs and expectations allowing a small window of opportunity for the innovation to be re-invented (Rogers, 2003). Subsequently, the innovation becomes part of the routine of the organisation, eventually losing its novelty and innovative character (Rogers, 2003).

In the context of the present study, 'public e-services' is considered as innovations and individual government agencies as units of adoption of the e-government initiatives, while government officials represent decision-makers of those units. Implementation strategies of the proposed e-services constitute all of the activities involved in executing and developing the e-government initiatives such as hardware/software acquisition and installation, personnel and user training, creating government websites, e-government service delivery, and so on.

### **2.3.3 Applicability Organisational Innovation Process Model in Studying Public E-services**

Rogers (2003) Organisational Innovation Process model; part of Diffusion of Innovations meta-theory (DOI), emerges to be an appropriate, yet underutilised, approach to examine the adoption and implementation processes of public e-service at the organisational level (c.f. Oliveira and Martins, 2011). Before the era of e-government instigated, Roger's (2003) Organisational Innovation Process model has been applied to study adoption of technological innovation in local government in general and, particularly, adoption of computer technology (Perry and Kraemer, 1979; Kraemer and Dedrick, 1997; Norris and Moon, 2005).

Roger's (2003) Organisational Innovation Process model has also helped to explain the adoption and implementation of a significant variety of public sector innovations; these included administrative innovations such as 'Total Quality Management' in large government departments (Ravichandran, 2000), as well as the adoption process of high tech products such as 'telemedicine technology' in public hospitals in the United States (Cho et. al, 2008).

In the area of Information Technology and Information Systems, Rogers (2003) Organisational Innovation Process model was to understand the adoption processes of 'Educational Innovations' in multiple Finish government organisations (Vahtera, 2008), the adoption of 'Mobile Technology' by doctors in South Africa (Banderker and Van Belle, 2009), the adoption of 'Software Applications' in Australian public organisations (Gurusamy and Campbell, 2011) and Information and Communication

Technologies (ICT) adoption and implementation in Jordanian Universities (Al-Mobaideen, 2009).

Rogers' (2003) Organisational Innovation Process model was also utilised in investigating factors affecting the 'Electronic Research' adoption in Kenya (Muinde, 2009). Roger's (2003) framework was also used to explain the adoption phases and determinates of Communal Computing Facilities (CCFs) such as Telecenters in South Africa's urban communities (Chigona and Licker, 2008), Furthermore, Roger's (2003) framework was utilised in studying: E-Collaboration Technologies (Twinomurinzi, 2007); Data base management systems DBMS (Kontio, 2006); Geographical Information Systems (GIS) (Camara et al., 2005); Electronic Mail (Niamsorn et al., 2011); Electronic Data Systems (EDS) (Carmel et al., 2009); Electronic Invoicing (Pulli, 2005); Internet Adoption (Al-Shohaib et al., 2009); Intranet Adoption (Akbulut et al., 2003); Electronic Procurement (Mettler and Rohner, 2009); Health Care Delivery Systems (Alemneh, 2009), among many others (c.f. table 2.7, below).

Notably, Rogers' (2003) framework has also been utilised successfully in studying E-government and E-commerce Initiatives (e.g. Pavlichev, 2004; Carter and Bélanger, 2005; Mahadeo, 2009; Alomari et al., 2009; Pudjianto and Hangjung, 2010; Al-Ghaith et al., 2010). Additionally, it has also been utilised in studying innovation adoption and implementation in many Arabic Countries with a similar culture to Dubai; for instance: the Kingdom of Saudi Arabia and the Sultanate of Oman (cf. table 2.3).

Table (2.7) below helps in depicting the expediency of applying Rogers' (2003) Organisational Innovation Process model in studying different technologically enabled innovations in public organisations. Moreover, table (2.7) below also help to illustrate Rogers' (2003) Organisational Innovation Process model have provided significant findings and contributions to the aforementioned studies in their investigation of different types of technologically enabled innovations.

In this research, the author utilises Rogers' (2003) diffusion of innovations theory to achieve a better understanding of transforming traditional over the counter services using web based technologies in public organisations (i.e. the development process of public e-services), but focus on the unexplored aspect of the participant's perspective of their experience with the process. The concern in the case of this research is twofold: a) the processes individuals and organisations go through in adopting and implementing public e-services and b) the related contexts leveraging their adoption and implementation decisions.

According to Fichman (1992), Organisational Innovation Process model devised by Rogers (1995; 2003) could be utilised successfully in the study of technology evaluation, adoption, and implementation considering that it provides a rich cumulative tradition of well-developed concepts and a large body of empirical results applicable to such studies (c.f. table 2.6, below; Light and Papazafeiropoulou, 2004; Keengwe et al. 2009; Oliveira and Martins, 2011).

Author(s)	Innovation	Epistemology	Findings
Ravichandran, 2000	Total Quality Management as an Administrative innovation	Cross sectional mail survey to identify factors representing characteristics of adopters	Attributes of adopters significantly influence decision(s) to adopt (or not) administrative innovations
Cho et. al, 2008	High tech products 'diffusion of telemedicine technology'	Qualitative analytical procedure were employed to develop themes for adoption decision making and diffusion processes	Both innovation attributes and organisational characteristics are important to organisations' adoption decisions
Warford, 2005	Educational Innovations	Survey methods using a Questionnaire	DOI provides a useful framework for conceptual clarity in designing and measuring the impact of educational innovations
Banderker and Van Belle, 2009	Mobile Technology	Modified DIO and TAM model using exploratory qualitative research design strategy	Job relevance, usefulness, perceived user resources and device characteristics were identified as Key adoption factors
Gurusamy and Campbell, 2011	Software Applications	Using DIO and TAM model To construct Interviews to explore various factors that may inhibit Open Source Software adoption	The findings suggested Rogers' compatibility and complexity constructs are important factor in Open Source Software adoption
Al-Mobaideen, 2009	Information and Communication Technologies (ICT)	Qualitative approach using interviews to explore ICT diffusion, utilising DOI and TAM models	DOI was useful in identifying factors that impede or facilitate the implementation of ICT in Jordan's Educational Systems
Muinde, 2009	Electronic Research	Exploratory and interpretive study to identify factors affecting ICT mediated scientific research communication	Perceived attributes of relative advantages, compatibility, complexity, observability and reliability encouraged ICT Adoption
Chigona and Licker, 2008	Communal computing facilities (CCFs)	Information was gathered using interviews and observations	All the five attributes of innovation model influence the adoption of Computers in Three Tele-centers
Twinomurinzi, 2007	E-Collaboration Technologies	Using DOI model as a lens and interpretive paradigm with the researcher as participant observers	E-Collaboration projects are perceived by individuals in the study to have a greater relative advantage, compatibility, trialability and observability and a less degree of complexity

Author(s)	Innovation	Epistemology	Findings
Kontopoulos 2006	Database management systems DBMS	Six interpretive case studies using Interviews	Roger's theory of innovation process in organisations can be used to interpret the diffusion of database innovations
Camara et al., 2005	Geographical Information Systems (GIS)	Qualitative interviews with Six Case Studies	Rogers' innovation theory was used successfully to examine the Brazilian experience of GIS adoption in public and private organisations
Niamsorn et al., 2011	Electronic Mail	Two Focus Groups Discussions and Interviews	This investigation of user acceptance adoption and assimilation was a good way to understand how people used CSCW, particularly email in the organisation
Carmel et al., 2009	Electronic Data Systems (EDS)	Case study approach based on interviews, internal documents and secondary sources	DOI filled a gap in studying managerial innovation made some estimates of the speed of diffusion and applied the hypothesised stages of innovation diffusion to the context of off shore software services
Pulli, 2005	Electronic Invoicing	Testing 6 hypothesis to explore the factors that affect the adoption of Electronic Invoicing	Modified DOI model including external factors have helped identify two important factors that affect Electronic Invoicing Adoption 1) External Pressure and 2) Increased Awareness of the innovation
Al-Shohaib et al., 2009	Internet Adoption	Survey of 354 Saudi public relations professionals	DOI model have helped to identify that Organisational structures play more defining roles in Arab Organisations' Adoption of innovations
Akbulut, 2003	Intranet Adoption	Mixed research techniques to identify the factors that influence local government information sharing with state agencies.	Electronic information sharing characteristics agency characteristics and environmental characteristics as well as other factors tend to influence local agency participation in electronic
Mettler and Rohner 2009	Electronic Procurement	Case Studies to investigate why hospital pharmacies only have a modest adoption rate of e-procurement	DOI were used to determine the rate of adoption and provided indications that organisational change is needed in order to efficiently use e-procurement
Alemneh, 2009	Open Archival Information System	Web-based survey of 123 participants to identify the factors which explain and predict the level of adoption of digital information resources	DOI framework was identified as a suitable framework in explaining the process of adoption and aided in identifying six important adoption factors

**Table (2-6):** *The application of Roger's (2003) OIP model in Studying Different Technologically Enabled Innovations in the Public Sector (Source: Author)*

Another reason for selecting Roger's Organisational Innovation Process model as a framework for this study is due to the model's ability to address macro and micro level elements that contribute to the spread of an innovation (Fichman, 2000; Rogers et. al, 2005). At the macro level, Rogers' (2003) OIP model provides insight into the roles of time, communication channels, social systems, and diffusion networks in the adoption and implementation process. At the micro level, diffusion of innovations' model offers insight into the roles played by innovation attributes, potential adopter characteristics, opinion leaders, and change agents in the diffusion process (Rogers, 2003). Furthermore, Rogers' (2003) framework is becoming an increasingly widely held reference theory for empirical studies of online service delivery such as e-commerce and e-government initiatives (Carter and Belanger, 2005; Niehaves, 2007b).

Another justification for the utilisation of Roger's (2003) OIP model in investigating e-services development process in the context of this study is the fact that the nature of public e-services essentially embodies a number of innovations, such as: 1) e-mails; 2) databases; 3) chat rooms; 4) informative online resources; 5) electronic payment services among others.

Additionally, public e-services exhibit many elements that constitute a culture or community--language, symbols, rituals, interactions and other elements of communication (Grundén, 2009). Lyytinen and Damsgaard (2001) explain that such complex, networked technologies contain muddled, multifaceted problem-solving elements and such technologies are socially constructed as they shape and are shaped by society. Roger's (2003) OIP model allows for the encapsulation of such

psychological and behavioural elements (Rogers, 2003). In this context, Roger's (2003) OIP model will be suitable in understanding the e-services adoption and implementation process in Dubai's public organisations, which is governed by unique dogmas and determinates related to the distinct culture of Dubai's organisations and individuals.

Hence, Roger's (2003) Organisational Innovation Process theory can be employed in this research to aid in depicting the path of innovation (i.e. the e-service) adoption and implementation (i.e. development) through a given social system (i.e. public organisations) over time (Rogers, 2003). Based on the above discussion, the author believes that Roger's (2003) framework could be used as essential framework in answering this study's main question "(RQ1): *How are e-government initiatives developed within Dubai's public organisations?*"

While the intention of the author is to use Roger's (2003) OIP model as a framework to study the development process of e-services in Dubai's public organisations, the author adheres to some of the criticisms discussed in the relevant literature regarding the utilisation of Roger's framework in studying complex innovations such as e-services at an organisational level (c.f. Gallivan 2001; Lyytinen and Damsgaard, 2001; Fichman 2000; 2004). Hence, in the next section, the author addresses the major reproaches of Roger's (2003) OIP model in his attempt to provide a more robust framework encapsulating the multifaceted constituents regarding the e-services' development process.

### 2.3.4 Criticisms of Roger's (2003) OIP model

While the previous section has been dedicated to justify the applicability of Rogers' (2003) Organisational Innovation Process model in studying e-service's development process, several scholars have called for modifications and extensions to Roger's framework due to its apparent limitations in studying complex innovations adoption and implementation at an organisational level (e.g. Gallivan, 2001; Fichman, 2000; Van de Ven and Andrew, 1991).

One of the main criticisms according to Fichman (2000) is that the innovation research based on Rogers' classical model give emphasis to simple innovations being adopted independently by individuals and thus Roger's model is less applicable to technologies adopted by organisations (Fichman, 2000). Similarly, Lundblad (2003) proposed that Rogers' (1995; 2003) DOI theory was build and still focuses individuals' adoption of innovation rather than the adoption process within organisations.

Another criticism posed by innovation scholars such as Gallivan, (2001) and Lyytinen and Damsgaard (2001) arguing that the organisational decision process, particularly in the absence of a dominant individual decision maker, frequently involves complex interactions between vested stakeholders, Roger's (2003) explains though his framework that the social system "constitutes a boundary within which an innovation diffuses" (p. 24, Rogers, 1995). Several scholars dispute that such an assumption of fixed boundaries does not allow for the contemplation of the interactions surrounding the entire actors involved in adopting and implementing networked technologies (e.g. Wolfe, 1994; Fichman, 2000).

Lastly, since the organisational adoption and implementation of an innovation is not typically a binary event, but rather, a couple of stages comprised of several sub stages in a process that unfolds over time; Roger's (2003) (OIP) model and similar linear innovation diffusion models, which dominated for a long time, are now widely accepted as being too simplistic to explain all situations as they does not capture the complexity of the process (Van de Ven and Andrew, 1993; Anderson and King, 1993; Rogers, 2001).

For example, Roger's (2003) (OIP) model does not reflect the many feedback loops that take place among the various stages of the process (e.g. Eldai et al., 2008). Additionally, the innovation process rarely follows the linear pattern of the model from setting an agenda through to routinisation. In reality the various phases may be underway at any part of the process (Van de Ven and Andrew, 1993; King and Anderson, 1995; Heeks, 2006; Eldai et al., 2008).

Scholars questioning the applicability of Rogers' (2003) framework for studying organisational adoption of complex innovations such as Henriksen (2002) conclude that Roger's diffusion of innovation's theory addresses the internal issues of the innovation from the point of view of voluntary adoption based on perceived needs and preferences (Henriksen, 2002). Additionally, Henriksen (2002) posits that the adoption of high impact innovation such as e-services is influenced by external (legal) issues and the organisational willingness to invest in a relationship with governmental organisations. This is one of the reasons researchers use richer adoption models while studying the adoption of complex inter-organisational information systems (Arendsen et al., 2008).

Gallivan (2001) argues that to explain more complex technologies and adoption scenarios we need to expand our process-oriented understanding of innovations and he suggests a hybrid framework that incorporates both processes and factors related to organisational adoption of innovations. Lyytinen and Damsgaard (2001) argue that process-oriented approaches provide greater accuracy and deeper insights into the phenomenon, as opposed to simplicity and generalisability, which are the goals of traditional innovation diffusion research.

Therefore, it became in the contention of the author that Roger's (2003) (OIP) model adopted as a framework for this study needs to be modified to include a more holistic understanding of the e-services' adoption and implementation processes. Several Innovation scholars (e.g. Sherry et al, 2000; Gallivan, 2001; Surry and Ely, 2002; Lingard, 2007; Pudjianto and Hangjung, 2009; Chong et al., 2009) posit that a modified innovation adoption model based on Roger's (DOI) framework provides a richer perspective for studying the adoption processes of various complex innovations; in addition to the modified framework's applicability to be used in studying adoption and implementation at the organisational level.

### **2.3.5 Extending Roger's (2003) OIP model**

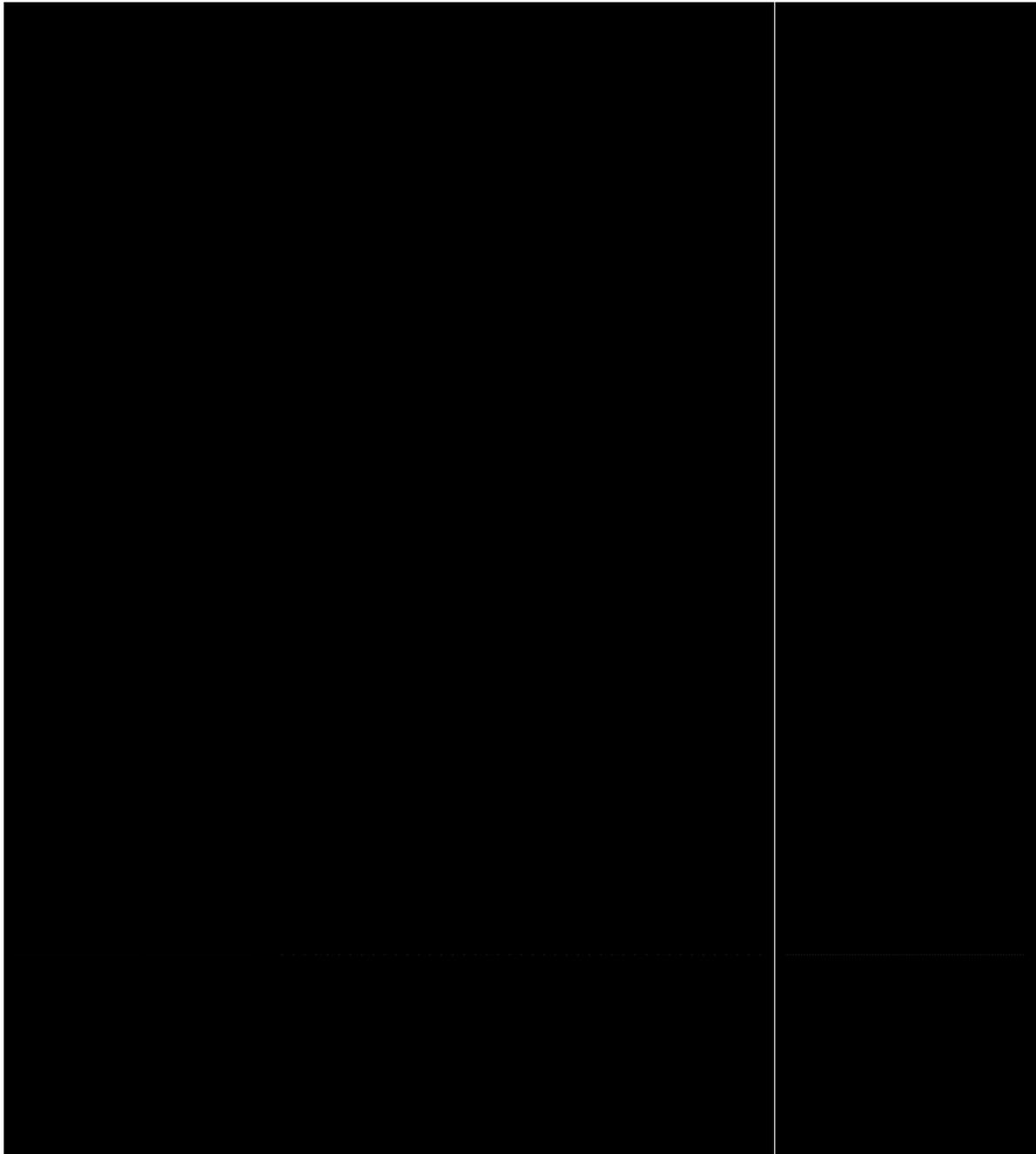
A major criticism reported in the previous section was regarding Roger's (2003) innovation diffusion framework focus on the adoption decisions made by individuals (Fichman, 2000; Lundblad, 2003). Notably, in the case of organisations' adoption of technological organisations, Tornatzky and Fleischer (1990) argue that many

technologies are “*too big and complex to be grasped by a single person’s cognitive power—or usually, to be acquired or deployed within the discretionary authority of any single organisational participant*” (p.133). Accordingly, it became in the contention of the author that a more robust framework was needed to study adoption and implementation of technologically enabled innovations at the organisational level.

Many of the studies that employed Roger’s Innovation Diffusion Theory (c.f. table 2.7, above) advocate that adoption and implementation of an innovation at the firm-level is principally based on the: (1) characteristics of the individual adopting the technology; (2) Internal organisation structure; and 3) characteristics of the organisation (Rogers, 2003)

Investigating further onto the attributes and determinates that influence the adoption and implementation processes at the organisational level, several acknowledged scholars in the field of I.T suggest that it is necessary to take account of different contexts when studying organisational level adoption (e.g. Tornatzky and Fleischer 1990; Van de Ven and Andrew, 1991; Thong, 1999; Fichman, 2000; Gallivan; 2001). Thus, based upon the recommendations of the above mentioned scholars and the earlier discussion concerning the criticisms surrounding Roger’s (2003) framework, It became in the author’s contention that in order to be able to gain a holistic understanding of the e-services development process and account for the individual actions and structural influences on the e-government initiatives’ development process and in light of the abundant innovation theories, it was necessary to examine the different contexts surrounding technologically enabled innovation.

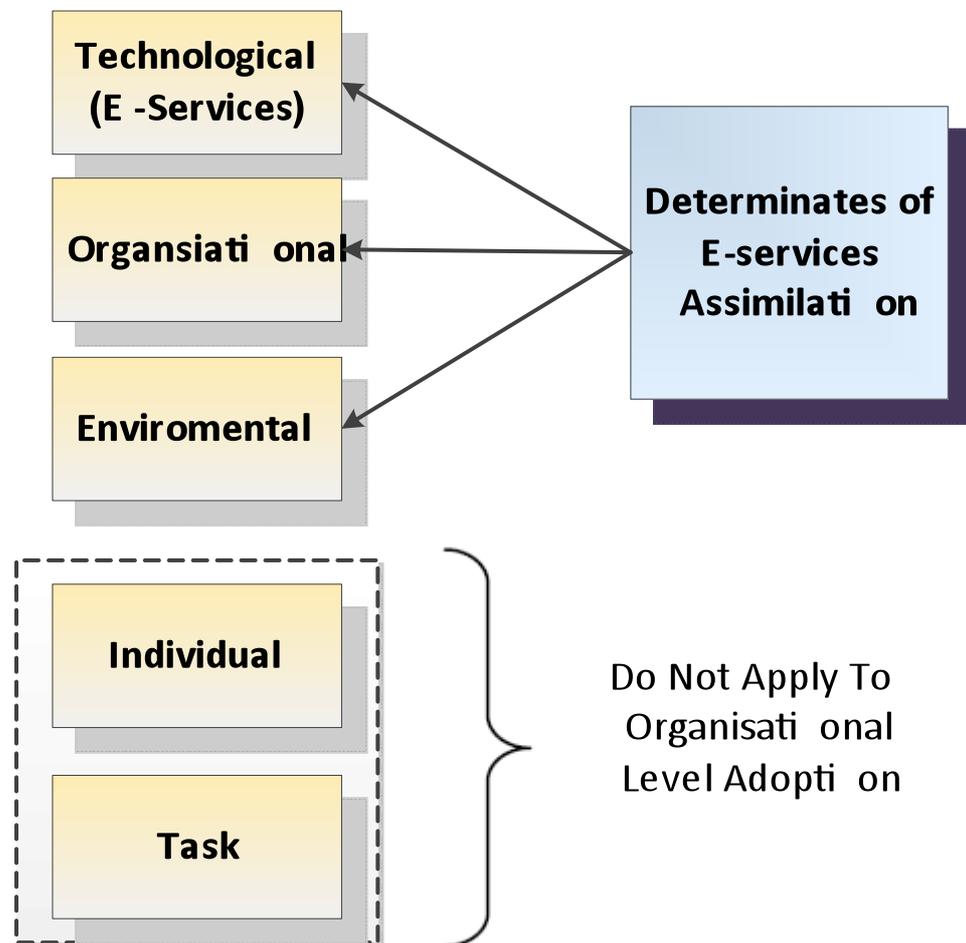
While the contexts, prescribed by different scholars according to their research focus and interest do not represent an integrated conceptual framework or a well-developed theory (c.f. table 2.8, below); they still provide useful analytical tools for distinguishing between inherent qualities of an innovation itself (Kwon and Zmud, 1987; Tornatzky and Fleischer, 1990; Damanpour,1991; Rogers, 2003), personal attitudes and motivations towards the innovation in question (Kwon and Zmud, 1987; Rogers, 2003), capabilities and skills of individuals and organisations (Kwon and Zmud, 1987; Rogers, 2003), and broader environmental and external elements influencing organisations' adoption and implementation processes (Perry and Kramer, 1979; Tornatzky and Fleischer 1990).



**Table (2-7):** *Different Contexts influencing the innovation diffusion process as identified by innovation scholars (Source, Author)*

Ciganet et al (2005) argue that the adoption of Web services is primarily determined at the organisational level and, therefore, individual level factors as well as task specific factors are not highly relevant in this context (c.f. table 2.7, above). Furthermore, several innovation scholars argue that the organisational decision to adopt technologically enabled services may also be influenced by the environment of

the organisation customers, suppliers, other private sector partners, competitors, and government regulations that provide barriers and incentives to technology adoption (c.f. Kwon and Zmud, 1987; Tornatzky and Fleischer, 1990; Damanpour, 1991; Iacovou et al., 1995; Chau and Tam, 1997; Scupola, 2003). As such, it is appropriate to ground this study in a framework that considers the influence of the technology, the organisation, and the environment to account for broader environmental factors likely to influence the scope and degree of web services use.



**Figure (2-8):** *Determinates of E-services' Assimilation at the Organisational Level*  
(Source: Ciganek et. al, 2005)

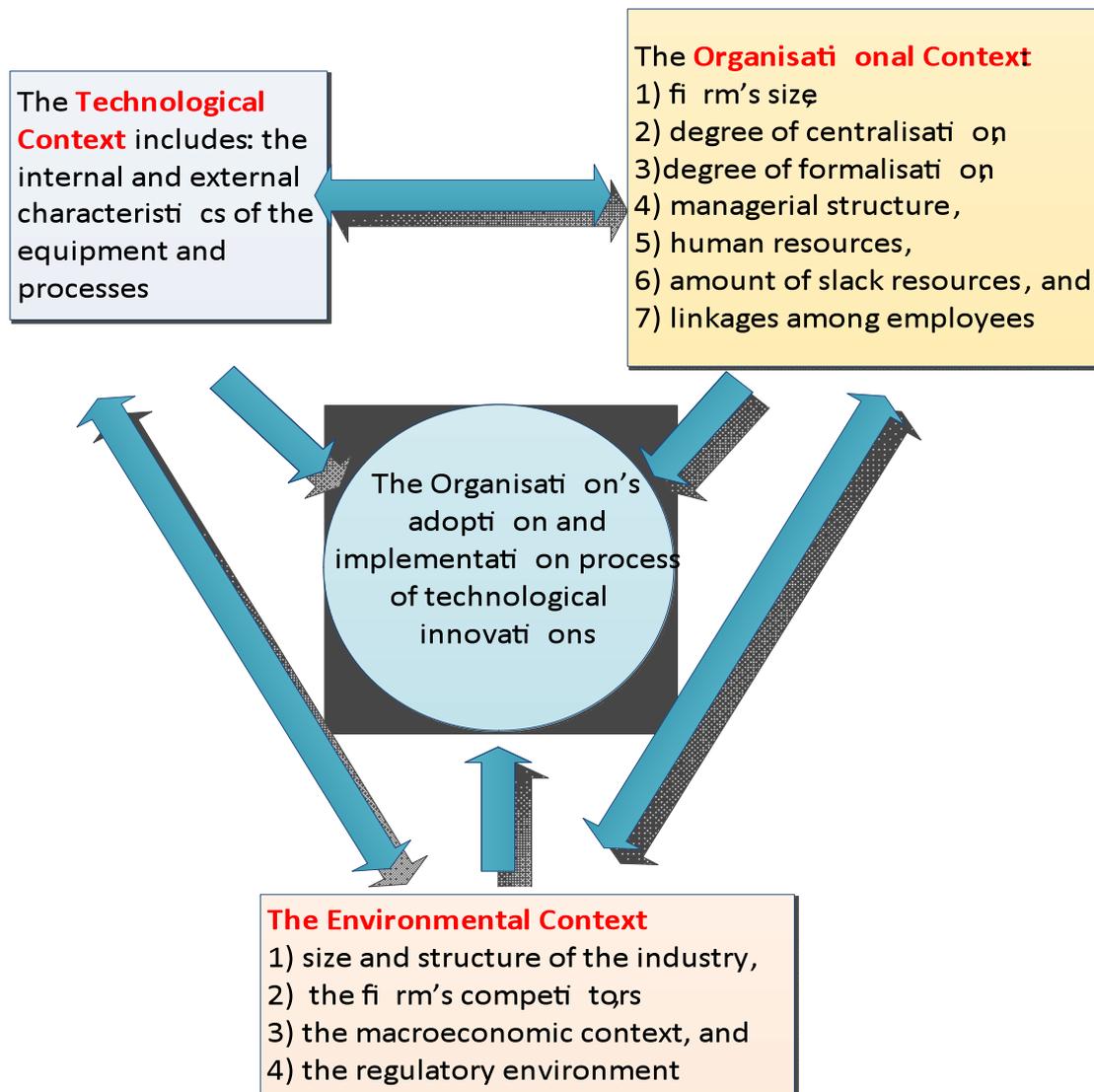
The author's contention of using the technological, organisational and environmental contexts to study e-services adoption and implementation at the organisational level is consistent with the approach taken in prior research of empirical studies that have used the (TOE) framework as a theoretical foundation for investigating organisational acceptance of new technologies. For example, (TOE) framework was employed to develop a theoretical model to explain e-government assimilation in Indonesia (Pudjianto et. al, 2011), (TOE) framework was also utilised to determine the relationships between technological, organisational, and external factors and adoption of e-government services of 113 firms in Jordan (Al-Zoubi et. al, 2011), Zhu and Kraemer (2005) tested the theoretical model by using structural equation modelling on a dataset of 624 firms across 10 countries in the retail industry (Zhu and Kraemer, 2005). Marianos and other scholars used (TOE) framework to examine the socio-technical environment in which port e-services are developed and provided in Greece (Marianos et. al, 2011).

The TOE framework was also used to understand the key determinants of web services adoption at the firm level (Lippert and Govindarajulu, 2006); and the benchmark of successful Public ICT hubs in Malaysia (Basaruddin et. al, 2011). Hence, in the next section, the author will introduce Tornatzky and Fleischer's (1990) technology-organisation-environment (TOE) model as an extension to Roger's (2003) (OIP) framework. It is within the contention of the author that extending Roger's framework will serve this study's second goal, which is to '(G2) develop a holistic understanding of e-government initiatives' development by identifying relevant activities, entities, processes, and attributes that embrace e-government initiatives' development in Dubai public agencies.'

### 2.3.6 Technology-Organisation-Environment (TOE) Model

TOE framework serves as an important theoretical perspective for studying contextual factors (Tornatzky and Fleischer, 1990). Tornatzky and Fleischer (1990) identified three contexts that influence the organisation's assimilation process of a technological innovation: (a) Technological context is used as taxonomy for categorising determinates related to the technology characteristics' influence adoption. (b) Organisational context includes a set of determinates related to the internal organisation's characteristics that constrain or facilitate adoption and implementation, such as top-management behaviour, organisational size, quality and availability of human resources, availability of financial resources, and managerial structures. (c) Environmental context is the arena in which an organisation provides its services—its industry, competitors, and dealings with other government agencies (Tornatzky and Fleischer 1990, p.152-154).

This framework (c.f. figure 2.9, below) is consistent with the innovation diffusion theory of Rogers (1995, p.376-383) in which he accentuated technological characteristics, and both the internal and external characteristics of the organisation, as drivers for technology diffusion. The author develops a model for this study's theoretical framework based on a synthesis of two theoretical perspectives – the Organisation Innovation Process (OIP) theory (Rogers, 2003) that emphasises on the stages of organisational adoption and implementation processes, and the technology–organisation–environment (TOE) framework (Tornatzky & Fleischer, 1990) that emphasises the context of technological innovation.



**Figure (2-9):** Schematics of TOE model, Reproduction of "Figure 7-1. The Context of Technological Innovation" from Tornatzky and Fleischer (1990, p. 153).

While the TOE model has been extensively utilised in present IS and IT research (Krishnan and Teo, 2011), it is often criticised for its incapability to provide the theoretical grounds to establish causal relationships (Mishra et al., 2007). Meanwhile, the TOE model provides a straightforward yet crafty taxonomy for capturing the extensiveness of the pursued variables (Mishra et al., 2007). Furthermore, recent IS/IT literature has attempted to combine the best attributes of the (TOE) model with other theories (c.f. table 2.8, below).

Tornatzky and Fleischer (1990) with Roger's DOI (1995) studies Adapted from Oliveira and Martins, 2011 and extended by Author (1/3)

Theoretical Model	Innovation	Analysed Variables	Analysis	Data and Context	Authors
TOE and DOI Framework	<b>Collaborative Commerce</b> <b>C-commerce</b>	Innovation attributes: relative advantage; compatibility; complexity. Environmental: expectations of market trends; competitive pressure. Information sharing culture; trust; information distribution; information interpretation. Organisational readiness: top management support; feasibility; project champion characteristics	Correlation and multiple regression analysis	Self-administered questionnaire of 109 respondents	Chong et al. (2009)
TOE and DOI Framework	<b>e-Government Assimilation</b>	ICT expertise, ICT infrastructure, TOP management support, organisational compatibility, extend coordination, regulatory environment, and competition.	Confirmatory factor analysis was Conducted then the structural relationships were examined	Testing to developed hypothesis through survey questioner to know the validity of Framework for studying E-government Assimilation	Pudjianto, and Hangjung, (2009)
TOE and DOI Framework	<b>E-Commerce</b>	PERCEIVED TECHNOLOGY FACTORS 1. Relative Advantage 2. Compatibility 3. Complexities ORGANISATIONAL FACTORS 1. Top Management Support 2. Organisational Competence 3. IT Compatibility PERCEIVED EXTERNAL FACTORS 1. Government eReadiness 2. Market forces eReadiness 3. Supporting industries eReadiness	Discriminant function analysis and Independent samples T-Test	Quantitative exploratory/confirmatory research using survey questionnaires to Nigerian banking sector	Aghaunor and Xavieria (2006)

Tornatzky and Fleischer (1990) with Roger's DOI (1995) studies Adapted from Oliveira and Martins, 2011 and extended by Author (2/3)

Theoretical Model	Innovation	Analyzed Variables	Analysis	Data and Context	Authors
TOE and DOI Framework	<b>E-Commerce</b>	Firm size, competition, partner readiness, technology integration, Resources and IT investment, Countries legal and regulatory structure, global scope of the organisation's business, have technology infrastructure and human resources	Overview of 9 previous studies' findings of factors affecting the process of e-commerce diffusion	GEC survey and secondary data from the ECaIT and eBusiness Watch studies	Zhu, Xu and Kraemer (2006b)
TOE, DOI and Chwelos' model	<b>Governmental E-services</b>	External pressure, perceived benefits and organisational readiness affect decision of businesses to adopt government services	Statistical and Correlation analysis	Dutch statistics department's file of 25,000 companies through an Interactive Registration of International Trade Statistics Software	Arendsen, van Engers, and Schurink (2008)
TOE and DOI Framework	<b>e-Customs (electronic Customs services)</b>	Seven characteristics: (1) relative advantage, (2) compatibility, (3) complexity, (4) standards, (5) technological edge, (6) trialability, and (7) observability	Thematic analysis resulting to Facilitators and Barriers to E-customs' Adoption	Semi-structured interviews through Multiple case studies to test proposed research models	Raus (2010)

Tornatzky and Fleischer (1990) with Roger's DIO (1995) studies Adapted from Oliveira and Martins, 2011 and extended by Author (3/3)						
Theoretical Model	Innovation	Analysed Variables	Analysis	Data and Context	Authors	
TOE and DOI Framework	<b>ERP systems (Enterprise Resource Planning)</b>	ERP attributes, IT expertise, Top management championship, Absorptive capacity, Strategic alignment, User involvement, Reward system, Vendor support, Consultant effectiveness, Institutional pressures	Thematic Analysis	Qualitative multiple cases exploratory study using Interviews and observations	Kouki Pellerin and Poulin (2007)	
TOE and DOI Framework	<b>Open Source Platforms</b>	Willingness to take risks, need for organizational slack, cost, trialability and availability of external sources of support and expertise	Thematic analysis	Qualitative semi structured Interviews	Dedrick and West (2003)	
TAM (technology acceptance model, TPB (theory of planned behavior), TOE and DOI Framework	<b>E-banking</b>	Organisational Support (OS) Managerial Productivity (MP) Decision Aid (DA) Organisational readiness (OR) Compatibility (CC) External Pressure (EP) Ease of Use (EU) Perceived Usefulness (PU)	Factor analysis And Canonical analysis	Hypothesis Testing	Aghdassi, , Persson and Ghasemi (2009)	

**Table (2-8): Modified DOI and TOE framework used in studying Technological innovations. (Source, Author)**

Table (2.9) above, depicts several authors using an integrated framework comprised of Roger's (IOP) framework with the (TOE) model to understand the adoption processes of an assortment of technologically enabled innovations. For instance, Chong et al. (2009) used the aforementioned integrated framework to examine the determinants of collaborative commerce (C-commerce) adoption among electronic organisations in Malaysia, their research came to the conclusion that the information sharing culture factor had the strongest influence on the adoption of c-commerce, followed by organisation readiness and external environment (Chong et al., 2009).

Meanwhile, Pudjianto and Hangjung, (2009) coined diffusion theory with TOE framework to explain how the assimilation process of e-government initiatives is affected by determinates such as: ICT expertise, ICT infrastructure, top management support, organisational compatibility, extend coordination, regulatory environment, and competition. (Pudjianto and Hangjung, 2009).

Similarly, other scholars have used the integrated (IOP) and (TOE) framework to study: E-commerce (Aghaunor and Xavieria, 2006; Zhu, et. al, 2006b); Public E-services (Arendsen et. al, 2008); and Electronic Customs Services (Raus, 2010) and others (c.f. Zhu and Kraemer, 2005). Table (2.9) above, presents a summary of the variables analysed, methods used, data, and context of empirical studies that employed the aforementioned integrated model.

Several scholars posit that using Rogers's theory of (DOI) with combination with (TOE) model would provide a useful theoretical framework to explain the organisation adoption of e-government initiatives (e.g Lippert and Govindarajulu, 2006; Mohamad and Ismail, 2009; Ramdani et al., 2009). Al-Qirim (2007) maintains that such an approach could provide strong empirical support to e-government adoption research and account for the technological, organisational, and external influencing e-government adoption among public organisations (Al-Qirim, 2007).

At this stage of the research, this study responds to the theoretical needs expressed in the outset of this chapter by congregating a theoretical framework that enables the researcher to understand the distinguished stages of e-services' development process in Dubai public organisations. The combined theoretical frameworks (IOP) and (TOE) allows the researcher to explore and understand the nature of e-services' assimilation process as well as to permits him to identify and categorise the attributes that would influence the decision making at early stages of the adoption process and at the later stages of implementation process. Hence, Roger's (2003) Organisation Innovation Process (OIP) theory is complemented by the: organisational environmental and technological contexts posited by Tornatzky and Fleischer (1990).

The purpose of incorporating Tornatzky and Fleischer (1990) model into this study's conceptual framework is to provide a key apparatus for capturing and understanding the development process of e-services as a multifaceted process from different perspectives, using different contexts. Each context is populated with attributes which are considered to influence the adoption and implementation process of the innovation understudy.

The Tornatzky and Fleischer (1990) model is regarded as complementary rather than an alternative to Rogers' (2003) framework. Furthermore, the adoption and implementation process of e-services is regarded as a complex development process and, hence, it is viewed in this study as a 'process evolving through feedback loops and not in a linear manner' (Rogers et al., 2005, p. 10). In the next section, the author attempts to present a summary of the attributes from the literature review affiliated with the adoption and implementation of technologically enabled innovations such as e-services and similar internet enabled innovations.

#### **2.4 Determinants of E-services Adoption and Implementation**

Wolfe (1994) argues that innovation adoption is complex and context-sensitive. Environmental and organisational context factors as well as technology or innovation related ones play a significant role (Wolfe, 1994, Elliot, 2002, Al-Qirim, 2003). In relevance to the previous section, the author deduced that Technology-Organisation-Environment contexts proposed by Tornatzky and Fleischer (1990) is a suitable model that could aid the researcher in his endeavor to capture key influential attributes and understand the development process of e-government initiatives in Dubai's public agencies. Contextual factors are considered vital in shaping the adoption and implementation processes of innovations and regarded as a critical aspect that cuts across all facets of the diffusion theory (Rogers, 2003). However, the constituents of these contexts (Technology-Organisation-Environment) should be explained and manipulated in the light of the current e-government initiatives' assimilation literature and the adoption an implementation of similar technological enabled innovations; new services development (NDS), web services and e-business; considering there the lack of a predominant model or framework on the topic of e-services development.

Notably, even after deciding to group the factors into the three major (TOE) contexts, the list of potential sub factors was still too large to examine in one study. Hence, to reduce the list to a more manageable size the author adhered to the following three criteria: (i) prima facie relevance to e-government initiatives as an innovation; (ii) significant support in either the diffusion of innovations or public organisations literature; and (iii) significantly cited factor in the literature of similar technologically enabled innovations.

#### **2.4.1 Organisational adoption decision: early stages of the adoption process**

According to Rogers (2003), the innovation adoption journey begins when the organisation searches the external and internal environment for innovations of potential value to the organisation (Rogers, 2003). At this stage, several innovation diffusion and e-services' scholars posit that it is useful to consider the technological innovation characterises to be an influential facet of organisations' decision makers resolutions to adopt an innovation (e.g. Roger, 2003; Damanpour and Schneider, 2008; Pudjianto and Hangjung, 2009; Al-Ghaith et al., 2010). Hence, in the next subsection, this study will elaborate on the constituents of the contexts related to the organisational level adoption beginning with the technological context.

##### **2.4.1.1 Technological characteristics (Characteristics of the innovation)**

The characteristics of the innovation (i.e. technology) itself are of critical importance in determining whether innovation will be adopted by an organisation (Tornatzky and Klein, 1982; Frambach and Schillewaert, 1999; Rogers, 2003). Researchers in the field of I.T and I.S enabled innovations have identified a rather long list of

innovations' characteristics that can increase or decrease the likelihood of adoption by organisations (c.f. Zaltman, et al., 1973, Moore and Benbasat, 1991; Rogers, 2003).

Rogers' posits that the five attributes of innovations: relative advantage; compatibility; complexity; trialability; and observability explain (49 to 87) per cent of the variance in the rate of the adoption of an innovation (Rogers, 2003). Notably, the three primary characteristics which are repeatedly linked to adoption of technological adoptions of innovations such as e-commerce, e-procurement, computer and web initiatives are: relative advantage, complexity and compatibility (Thong, 1999; Li, 2008; Chong et al. 2009; Wang et al., 2010). Similarly, in a review of (75) articles concerned with the innovation perceived characteristics and their relationship to the adoption and implementation behaviour, Tornatzky and Klein (1982) found compatibility and relative advantage were usually, but not always consistently, related to the rate of adoption in a positive direction, and complexity was negatively related to the rate of adoption (Tornatzky and Klein, 1982).

Several renowned innovation scholars have suggested other determinates that can eventually be linked to Roger's (2003) five innovations' characteristics. For example, Moore and Benbasat (1991) proposed the perceived characteristics of innovating (PCI) model as an instrument to measure individuals' perceptions concerning the attributes of (ICT) enabled innovations. In their model, Moore and Benbasat (1991) renamed Rogers' complexity construct as ease of use, consistent with Davis (1989) technology acceptance model; echoing the dominant measurement paradigm in ICT research (Korpelainen, 2011) .

Notably, studies that have employed either Davis' (1989) (TAM) or Moore and Benbasat's (1991) (PCI) models have examined e-services usage and adoption from the users' end perception (i.e. the citizen) and not from the government agencies perspective. For example, Carter and Belanger (2005) examined the influence of perceived characteristics of innovating (PCI) variables on the e-Government services' adoption from the perspective of 140 undergraduate students in United States of America. Choudrie and Dwivedi (2005) used the same model to conduct a survey on citizens' awareness and adoption of e-Government initiatives in the United Kingdom. Mofleh and Wanous (2008) used the aforementioned models to understand the factors influencing citizens' adoption of e-Government services among Jordanian e-Society. Rokhman, (2011) used the proposed variables from (PCI) and (TAM) models to investigate the Indonesian citizens' willingness to accept and adopt e-government services. From the literature, it is clear that a number of frameworks founded on the Theory of Reasoned Action and Technology Acceptance Model have been utilised to explain the consumer adoption of the internet (Bwalya, 2009).

Since this study is concerned with identifying the determinates that are affecting the assimilation (i.e. adoption and implementation) of e-services at the organisational level, the author adheres to the assumption posited by the several renowned innovation scholars that that technological attributes associated with Rogers' (DIO) framework are more relevant to the current study's objectives (c.f. Gallivan, 2001; Frambach and Schillewaert, 2002). Such approach was also recommended in Oliveira and Martins' (2011) literature review on information technology adoption models at the firm level (Oliveira and Martins, 2011). Similarly, Reunis and Santema (2004) offered the same recommendation in their investigation addressing the complexity of

the organisational adoption of electronic procurement services (Reunis, and Santema, 2004).

Moreover, several scholars in the field of e-services' adoption proposed that attributes such as: *relative profitability; expected benefits; return of investment; innovation's image; quality of e-services; visibility* and *innovation's value* to be important determinates in the organisation's decision making process of selecting potential e-services (e.g. Asgarkhani, 2005; Kaisara and Pather, 2009; Al-Ghaith et al., 2010).

Similiary, Li and Suomi, (2009) suggest (SERVQUAL) as an instrument for measuring e-services' quality made from 8-dimension scale according to e-services: Website design, reliability, fulfillment, security, responsiveness, personalisation, information and empathy (Li and Suomi, 2009). These factors are also considered within the relative advantage attribute suggested by Rogers (2003) since 'relative advantage' is "the degree to which an innovation is perceived as better than the idea it supersedes" (Rogers, 2003, p. 15).

Such contextualisation of the aforementioned terms under Roger's 'relative advantage' attribute was adhered to by Robert et al., (2009) in their study of the organisational factors influencing technology adoption and assimilation in five NHS organisations. Kuehne et al., (2011) used similar approach to group some of the above-mentioned terms under Roger's (2003) 'relative advantage' in their study in adoption of agricultural innovations in Australia. Similarly, the author does not see the need to list the above mentioned terms separately and considers to coin the above mentioned terms under 'relative advantage' attribute in this study.

Similarly, the *perceived risk* of adopting and using an innovation, in addition to the initial and enduring *costs* of sustaining an innovation; *technical difficulties* in conjunction with the innovation's implementation *complexity* have been found to be adversely affect adoption decisions of e-government initiatives at the organisational level (Ebrahim and Irani, 2005; Troshani, 2005; Schwester, 2009). In this current study, they are coined under Roger's (2003) 'complexity' attribute.

In summary, the e-services technological characteristics that were utilised in this present study are in parallel with Roger's five innovation attributes, which are: *relative advantage*; *compatibility*; *complexity*; *trialability* and *observability*.

#### **2.4.2 Later stages: implementation and internal diffusion**

E-government initiatives are only truly adopted when it has been actually put in use in the adopting organisation. Without implementation, the intended objectives of innovating and improving services cannot be achieved (Damanpour and Schneider, 2008). Hence, as the decision to invest in a certain technology has been made, the adoption process moves on to implementation stages. In the implementation stage, the innovation is modified to fit the particular organisation structure and needs (Rogers, 2003). Conversely, the organisation structure is altered to accommodate the innovation. In this stage, the organisational characteristics play a vital role in stimulating the development process of the potential services. These characteristics are furthermore elaborated in the next sub section.

### 2.4.2.1 Organisational characteristics

The organisational context proposed in this study's conceptual framework (c.f. Section 2.5, below) represents factors that are internal to an organisation and influence the two major stages of innovation's assimilation: organisation's adoption and implementation (Tornatzky and Klein, 1982; Iacovou et al., 1995; Rogers, 2003).

Several innovation scholars attribute the adoption decision of implementing potential e-services to *organisational champions* (e.g. Roger, 2003; Kamal and Themistocleous, 2006; Wang et al., 2010). According to Beath (1991), the champions of technologically enabled initiatives are "managers who actively and vigorously promote their personal vision for using information technology, pushing the project over or around approval and implementation hurdles." (Beath 1991, p. 355). Agbor (2008) suggests that "creative and effective organisations do not emerge by accident. They require leaders to drive and control deliberate changes in structure, culture, and process in order to transform them into creative, effective, and productive ones" (Agbor 2008, p.39).

Additionally, several e-commerce, I.T. and public sector scholars suggest that organisations' champions or e-champions should possess qualities that will influence their attitude and behaviour towards adopting potential innovations (e.g. Lawson and Samson, 2001; Ross et al., 2004; Scheepers, 2008, Kirkely, 2010). Accordingly, organisational managers that are more likely to adopt e-services in their workplace are described as: *entrepreneurial; risk-takers; innovative* and

perpetually *creative* individuals (Macharia and Nyakwende, 2010; Marianos et al., 2011). Top management's vision, value, control, skills and strategy have also been reported as an essential concepts to organisational adoption of e-services (c.f. Vaidya, 2005; Chowdhury et al., 2006; Scupola, 200; Pudjianto and Hangjung, 2009; Sang and Lee, 2009). Part of the organisations strategy is its internal communication, internal communication which reflects the extent and type of communication among organisation's units or groups are held positively interconnected to organisational innovativeness (Damanpour 1991; Prescott and Conger 1995; Rogers 2003) and e-services adoption (Ndou, 2004; Kumar et al., 2007).

Hence, e-champions' managerial styles and their attitudes towards adopting innovations play a key role in identifying obstacles of existing systems and processes, develop and evaluate alternatives solutions to improve the current organisation services, train staff and manage available resources will ultimately lead to organisational innovativeness (Rogers, 2003; Kamal and Themistocleous, 2006; Damanpour and Schneider, 2008; Sang and Lee, 2009). According to Rogers (2003), the influences of managerial championship and opinion leaders acting as agents of change are recognised as an accelerating force affecting the potential adopters (Roger, 2003).

Swanson (1994) and Sohn & Wang (1998) supported the notion and the need for top management support and existence of champion and suggested another two internal organisational factors that generate an internal pull force to the adoption of I.T. enabled innovation, namely: 1) the organisation's attitude and inclination

toward new technology; and 2) absorptive capacity and cost incentive. Absorptive capacity and cost incentive are considered within Roger's organisational slack attribute which refers to all the resources an organisation has in its possession in addition to the capacity it has to maintain its critical operations (Rogers, 2003). A shortage of absorptive capacity, or I.T. competency and necessary skills and expertise will create knowledge barriers that hinder the adoption of new technologies, even where there is a willingness to adopt (Chircu and Kauffman, 2000). Similarly, a shortage of available resources such as funding for electronic transformation of potential e-services will hinder the adoption and implementation endeavours (Iacovou et al. 1995, Rogers 2003, Rotchanakitumnuai and Speece, 2003, Simpson and Docherty, 2004; Al-Zoubi et al., 2011).

Notably, the possession of generic knowledge and skills among the organisation employees enabling them to perform their tasks skilfully is also known as competency in I.T. adoption literature (Zaltman et al., 1973; Frambach and Schillewaert, 2002; Bee et al., 2008).

Similarly, E-government scholars posit that the right technical skills are essential to the development and usage of e-services (e.g. Ndou, 2004; Esteves and Joseph, 2008; Al-Dahuod et al., 2011). Many scholars and international government bodies have coined the organisational financial and technical capabilities for adoption and implementation of e-government projects under the term 'organisation's readiness' (World Bank, 2003; UN, 2005; Zaied et al, 2007; Arendsen et al., 2008; Alghamdi et al., 2011). e-Government readiness is defined as the aptitude of a government to use ICTs to move its services and activities into

the new environment (UN, 2003; Kovačić, 2005). Similarly, the author uses the term *organisations readiness* as an apparatus for all the characteristics related to organisation's financial capability and level of I.T. competency to account for the organisational ability to transform its current services into e-services.

Rogers' (2003) refers to all the excess resources available to an organisation after it has maintained its crucial operations as organisational slack. Proponents of slack argue that slack resources are expected to facilitate risk taking by permitting the employees to experiment with new strategies and innovative projects that might not be approved in a more resource controlled environment which could attribute positively to organisational innovativeness (Greeve, 2003; Rogers 2003; Damanpour et al., 2008). Akbulut (2002) suggests that organisations that are in possession of slack resources are able to acquire costly innovations, can tolerate failure, and can allow the experimentation of new ideas.

Rogers (2003) also considers centralisation, which is the degree to which power and control in a system are concentrated in the hands of a relatively few individuals. Rogers (2003) posits that centralisation is negatively associated with organisational innovativeness (Damanpour, 1991; Rogers, 2003). Accordingly, several scholars and practitioners of the new public management (NPM) field have expressed the need to give middle managers in government departments added authority and responsibility (i.e. decentralisation) (e.g. Ferlie et al., 1996; Pollitt et al., 1999).

Several e-government scholars suggested the need to decentralise public organisation current architecture and adopt an e-business model (e.g. Gupta et al.

2004; Kumar and Misra, 2007). Similarly, Alghamdi et al. (2011) suggested that public organisations require business process re-engineering management approaches and the utilisation of knowledge management practices, a change in the communication style to enable interoperability and integration of services among all government organisations and finally an e-government strategy to provide a roadmap for effective e-government implementation (Alghamdi et al. 2011). Bhatnagar (2004) posits the centralised management approach for public organisations trying to adopt and implement e-services to be challenging because it leaves a marginal prospect for innovation, self-starters and creativity (Bhatnagar, 2004). Welch and Pandey (2005), concluded that public organisations are more likely to adopt intranet technologies when their decision making structures are decentralised (Welch and Pandey, 2005).

Another organisational attribute discussed in relevant literature is *formalisation*. Roger's (2003) suggests that formalisation refers to the level of emphasises an organisation exerts on its members' to follow rules and procedures as an inhibitor to openness and organisational innovativeness (Zaltman, et al. 1973; Rogers, 2003). Kroese (2004) concluded that high formalisation has a negative influence on teleworking adoption and success (Kroese, 2004). Other researcher have associated formalisation with organisational bureaucracy and red tape and posit that it has negative influence on the organisation's ability to initiate, adopt and implement e-services (e.g. Ndou, 2004; Nograšek, 2011). Welch and Pandey (2005) concluded that red tape is neither a stimulant nor a significant inhibitor of e-government adoption.

In contrast, several renowned scholars in the field of I.T. innovation refer to formalisation as the existence of clear procedures, norms and formal processes for carrying out organisational tasks (e.g. Zmud, 1982 ; Bretschneider and Wittmer, 1993; Iacovou et al., 1995). They argue that highly formalised processes can create an organised setting which would be convenient for project planning and information processing (*Ibid*). In addition, written procedures and more formal environment will eliminate any ambiguities, and would facilitate e-services adoption (Axelsson et al., 2009). Accordingly, e-government scholars have also called for laws, regulations and standards for designing and deploying e-services (e.g. Nurdin et al., 2010; Jabr and Al-Omari, 2010).

E-government scholars have called public organisations to adhere to formalised international standards and procedures in their e-services development activities such as: Web Usability Standards (Agarwal and Venkatesh, 2002; Bevan, 2005), International Organisation for Standardisation criteria for web design and usability (Asiimwe and Lim, 2010), improve the quality of organisation processes by adopting Six Sigma principles (Pulakanam and Voges, 2010), add value to organisation's e-services by structuring their services according to Service-Oriented Modelling architecture guidelines (Gasmelseid, 2007), using E-ServEval system for quality evaluation of the on-line public services (Balog et al., 2008), adopting SERVQUAL scale dimensions to measure their e-service quality (Li and Suomi, 2009) and the adopt Total Quality Management (TQM) practices to improve the design and implementation of their e-services (Kumar et al, 2007; Moura e Sá, 2011).

Several e-government scholars attribute e-services adoption within public organisations to the organisational culture which is suggested to play a vital role in mandating the organisation's policies and imposing its processes, values, competencies and systems to facilitate organisational adoption and implementation of e-government initiatives (e.g. Heeks, 2005; Shin et al., 2008 ; Al-Rashidi, 2010; Nurdin et al., 2010; Nograšek, 2011). Hence, the organisation's culture forms the persona of the organisation and plays a vital role in shaping and supporting the organisation's mission, goals and strategies that will influence the adoption and implementation processes within an organisation which may be mandated or voluntary (Moore and Benbasat, 1991; Rogers, 2003). Nurdin et al., (2010) posits that cultural attributes to organisational e-government initiatives are attributed to four major stimuli: 1) the level of organisational involvement in the adoption process; 2) adaptability or organisation's flexibility; 3) organisation's mission; and 4) bureaucracy (Nurdin et al., 2010).

Rogers (2003) also considers organisational size to be another important attribute to organisational adoption and implementation of an innovation. According to him organisational size is the organisation's resources, transaction volumes or workforce size. In the meta-research of the effects of organisation size on innovation adoption, Damanpour (1992) found a positive relationship between organization size and innovation adoption. Titah and Barki (2006) suggest that organisational size and bureaucracy in an organisation, strongly affects e-government use and acceptance. Moon (2002) survey study show that municipality size and type of government are significant institutional factors in implementing and developing e-government websites. Norris and Moon (2005),

posit that organisational adoption is related to local government demographic characteristics, including type and form of government, metropolitan status, and region (Norris and Moon, 2005).

Accordingly, Tornatzky and Fleischer (1990) suggest that the influential organisational context attributes include: top management support, availability of resources, and organisation culture. Tornatzky and Fleischer's (1990) suggest organisational factors have also been found to be influential in the organisational adoption of other technological innovations such as: e-services, internet enabled mobile applications, portable data accessories, e-commerce, and internet banking (c.f. Al-Qirim et al., 2007; Mohamad and Ismail, 2009; Ramdani et al., 2009; Wang and Ahmed, 2009). In contrast, organisational barriers are reported in relevant literature to have instigated from structural issues such as fragmentation, poor relations and communication between the internal departments, staff resistance and the failure to grasp the strategic benefits or costs of adopting new initiatives by the top level management (e.g. Ndou, 2004; Schwester, 2009; Marianos et al, 2010).

#### **2.4.2.2 Environmental factors**

In addition to technological and organisational context, the external environmental context which embodies the contextual factors that explain the external environmental conditions is suggested to influence public organisation's adoption and implementation activities of e-services. A body of research about external environmental factors has attributed the success of the I.T. and web based innovation's assimilation process within organisations to external factors such as

the local ICT infrastructure, competition and relations with other government agencies and businesses, the external support available for adopting new technologies and government regulations (Depietro et al., 1990; Tornatzky and Fleischer, 1990; Scupola, 2003; Lippert and Govindarajulu, 2006; Pudjianto and Hangjung, 2009; Marianos et al., 2011).

External pressure influencing public organisations decisions and abilities to undertake e-government projects is specified in related literature in accordance with three external stimuli: 1) government pressure; 2) industry pressure; and 3) competition pressure or the 'bandwagon effect' (Tsiriktsis et al., 2004; Arendsen et al., 2008, Pudjianto and Hangjung, 2008).

Government pressure relates to the efforts of the governmental agencies and motivation from champions to encourage e-Government services adoption (Marianos et al., 2011). Government pressure can also be in a form of regulatory authoritarian bodies which can exert a coercive pressure on public agencies' e-services assimilation process (Arendsen et al., 2008). Past researches have shown coercive pressure to be a significant factor in adoption of e-government projects in developing countries (Pudjianto and Hangjung, 2008) and I.T. enabled innovation at the organisational level (Oliveira and Martins, 2011). E-services scholars suggested that governments are required to formulate a new policy and provide regulatory support for public agencies' adoption and implementation of potential e-government initiatives (Ndou, 2004; Pudjianto and Hangjung, 2008; Marianos et al., 2011).

In this study, regulatory support expressed either from political leaders, external e-champions or an administrative authority refers to governments' role either by coercive pressure or by encouraging public organisations transformation of their potential e-services by establishing e-government laws and providing incentives. Prior studies show that regulatory support is a critical environmental factor that tends to affect e-services' development and usage (Pudjianto and Hangjung, 2008; Al-Ghaith et al., 2010; Alawneh, 2011). Additionally, government support in the form of the provision of regulatory electronic commerce laws, high security standards and requirements; and reliable infrastructure is vital in mitigating privacy and security related risks of individual users and businesses while conducting e-services payment transitions (Srivastava and Teo, 2010). Moreover, governmental regulatory bodies can enforce or motivate public agencies to adopt quality standard requirements and web analytics techniques on their e-services implementation endeavours through the adherence to international standards such as the International Organisation for Standardisation (ISO) requirements for web design and human interactions and User-Centred Design standards (Abrás et al., 2004; Bertot and Jaeger, 2006).

Political leaders can also push the electronic transformation of government services by providing deadlines for e-services transformation and execution. Additionally an external government institution can regulate the local public agencies transformation process by overseeing its progress (Kim and Bretschneider, 2004). In the case of Dubai, government bodies were set a deadline by Dubai's ruler to transform all their over the counter services to e-services by the end of year 2009 and the progression was regulated through an independent

government authoritarian body (i.e. Dubai E-government Office) (AlShaer , 2003; Kamli, 2004).

Industry pressure relates to the efforts applied by the industry on public organisations to encourage their e-services' adoption (Tung and Rieck, 2005). Srivastava and Teo (2010) in their study indicate, "governments gain in terms of synergies from the businesses who are better able to interact with the government online...realising the benefits, businesses also switch to the e-interaction mode which eventually translates to their extensive e-business use." (p. 271). The level of e-commerce eminence and utilisation of technology in the business sector as well as the community demographics provides immense challenges to the public sector to provide a certain level of e-services in parallel with their private counterpart and within their customers' expectations (Looi, 2003; Pudjianto and Hangjung, 2008; . Increased competition often pushes organisations to search for new ways to increase their efficiency and seek a viable advantage (Themistocleous, 2002).

Finally, a third external pressure may arise when public organisations presume that other government agencies may gain comparative advantages as a result of implementing e-Government services (Iacovou et al., 1995, Zhu et al., 2003; Grant and Chau, 2005). Similar to the competitive pressure excreted by the private sector discussed above, public sector organisations compete with each other in adopting online services (Chan & Lu, 2004; Tung and Rieck, 2005). In the case of Dubai, Dubai E-government Office (DEG) holds an annual ceremony where the ruler of Dubai presents thriving public organisations' e-services initiatives with different

awards' categories (Sethi and Sethi, 2009; DEGe4all, 2011). Moreover, Dubai public organisations are constantly competing in the Gulf Countries Council (GCC) e-government awards and on the middle eastern and international levels (Badri and Alshare, 2008; Al Bakr, 2009; Datamatix, 2012).

Communication level (i.e. frequency and type) is another influential external attribute to e-services' development endeavours (Goldkuhl, 2007). According to Tranmüller and Wimmer (2000), e-government initiatives involve many different user groups that need to be considered when developing e-services (Tranmüller and Wimmer, 2000). The ability of government agencies to communicate effectively with its customers and business partners through electronically customer-oriented functions entails the consideration of e-services components such as: website navigability and aesthetics (Stiakakis and Georgiadis, 2009); as well as the provision of sufficient accessibility and usability of the e-service (Costagliola, 2004).

Moreover, communication between public agencies and its different user groups should be stimulated through the utilisation of electronic customer's feedback channels and online suggestions tools (Asgarkhani, 2005). Additionally, different marketing channels and techniques should be utilised to help raise their level of awareness and usage of electronic government services within the community (Owei et al., 2006). Modern concepts such as e-CRM and e-transactions could also be employed to manage the electronic customer relations and facilitate online transactions methods (Tsikriktsis et al., 2004). The provision of the aforementioned techniques and communication tools will eventually drive the

usage level and satisfaction of the applied e-services (Schwester, 2009). Hence, effective level of communication between government agencies and its customers becomes a vital component to the provision of successful e-services that is fit for customers' usage (Al-Ghaith et al., 2010). Boyer et al., (2002) have described the successful implementation of online services as "the initial landing on the home page until the requested service has been completed or the final product has been delivered and is fit for use".

Finally, the local ICT infrastructure plays a vital role in influencing public organisations ability to adopt, design, implement and diffuse e-services within the local communities and to the desired customers (Ndou, 2004). The availability of a sufficient ICT infrastructure lays down the foundation for reliable connectivity (i.e. interoperability) between government organisations (Klischewski, 2011). In addition, the provision of reliable communication bandwidths (i.e. broadband) and latest communication technologies such as digital Clouds computing technology provides e-services with an advanced level of technological sophistication extending the reach of these services as well as their quality and security (Yeh et al., 2010; Chuob et al., 2011).

Investing heavily in developing the countries' ICT sector, enhances the performance of its public and private sector organisations in terms of service provision, efficiency, accuracy, time and satisfaction (Obeidat and Abu-Shanab, 2010). Moreover, the existence of I.T. experts in the region as well as the level of knowledge and expertise of the government business partners will influence the design quality of the web applications (Schwester, 2009). ICT infrastructure is

also vital for the delivery of the potential services across different electronics channels such as: kiosks, automated teller machines, mobile and telephony applications, internet enabled applications, personal computers and others (Srivastava et al., 2010). Dada (2006) posits that the lack of a sufficient ICT infrastructure contributes to one of the main reasons for the failure of e-government initiatives' development in the developing countries (Dada, 2006). Heeks (2003) suggests that major failure in e-government applications development is attributed to the gap between the e-services design and the reality of the technology infrastructure in developing countries (Heeks, 2003).

Table (2-9) below draws together a list of factors that have been discussed in relevant literature to affect the adoption and implementation process of e-services and similar I.T. enabled innovations. It should be noted, however, that the list of factors reviewed here is not meant to be exhaustive. The purpose of this review here is to map out the most relevant factors when investigating e-government initiatives' adoption and implementation in order to get a general understanding how the process flows forward. Furthermore, it is obvious that since every adoption situation is unique, there are a number of special contextual factors that cannot be predefined or presented in any general framework.

Context	Factors	Description	References
<b>Technological characteristics</b>	<b>Relative advantage</b>	Represents the factors related to the innovation characteristics that will influence the employees decision and ability to transform the potential e-services	<i>Zaltman, et al., 1973, Tornatzky and Klein, 1982 Moore and Benbasat, 1991; Rogers 2003; Ebrahim and Irani, 2005; Troshani, 2005;</i>
	<b>Ease-of-use</b>		
	<b>Compatibility</b>		
	<b>Trialability</b>		
	<b>Observability</b>		

			<i>Schwester, 2009</i>
<b>Organisational characteristics</b>	<b>E-champion managerial style</b>	Source the internal organisational attributes that constrain or facilitate the adoption of e-services in public organisations	<i>Tornatzky and Fleischer 1990; Iacovou et al., 1995; Akbulut 2002; Rogers, 2003; Damanpour et al., 2008; Arendsen et al., 2008; Nurdin et al., 2010</i>
	<b>Organisational readiness</b>		
	<b>Organisational slack</b>		
	<b>Centralisation</b>		
	<b>Formalisation</b>		
	<b>Organisational Culture</b>		
	<b>Organisation's Size</b>		
<b>Environmental factors</b>	<b>External pressure</b>	The external environmental attributes that affects the organisation's ability to adopt and implement e-services	<i>Rogers, 2003; Ndou, 2004; Dada, 2006; Pudjianto and Hangjung, 2008; Schwester, 2009; Al-Ghaith et al., 2010; Marianos et al., 2011</i>
	<b>The level of I.T. knowledge and the availability of expertise</b>		
	<b>ICT Infrastructure</b>		
	<b>Communication level and techniques</b>		

**Table (2-9):** Overview of factors influencing adoption and implementation in Innovation, ICT and E-government Literature

## 2.5 The Conceptual Framework

The literature review helped in generating some conceptualisation of the e-service's adoption and implementation process as well as contexts that are represented in the preliminary conceptual framework (Figure 2-10, below). The constructs in the preliminary conceptual framework were not necessarily meant to describe the concrete reality of e-government initiatives assimilation process in Dubai public organisations and its influential attributes. Instead, this early framework reflects a synthesis of the literature review conducted from journals, conference's proceedings and other countries' e-government experiences. Thus, the study adheres to Miles and Huberman's classification of a "framework" (1994, p. 18):

*'A conceptual framework explains either graphically or in narrative form, the main issues to be studied – the key factors, constructors or variables and the presumed relationships among them. Frameworks can be rudimentary or elaborate, theory-driven or commonsensical, descriptive or causal.'*

The framework of this study draws its basic conceptions and its constructs in regards to the previous discussions but some distinctions are made. First of all, the study argues that implementation issues should be taken into consideration already in the initiation stages of the e-services development process, in order to map out the necessary activities and to prepare for difficulties that might transpire as the process goes on. The framework of this study sees the initiation and implementation phases both as parallel processes as well as sequential ones.

Furthermore, because the success of the implementation process is heavily dependent upon the individual level adoption decision (i.e. e-service users), it is argued that organisations cannot make the adoption decision separately from the users. Implementation will have better chances of success if the users are also involved in planning and in making the actual adoption decision. However it is not within the scope of this study to account for the users' perceptions on the e-services development process.

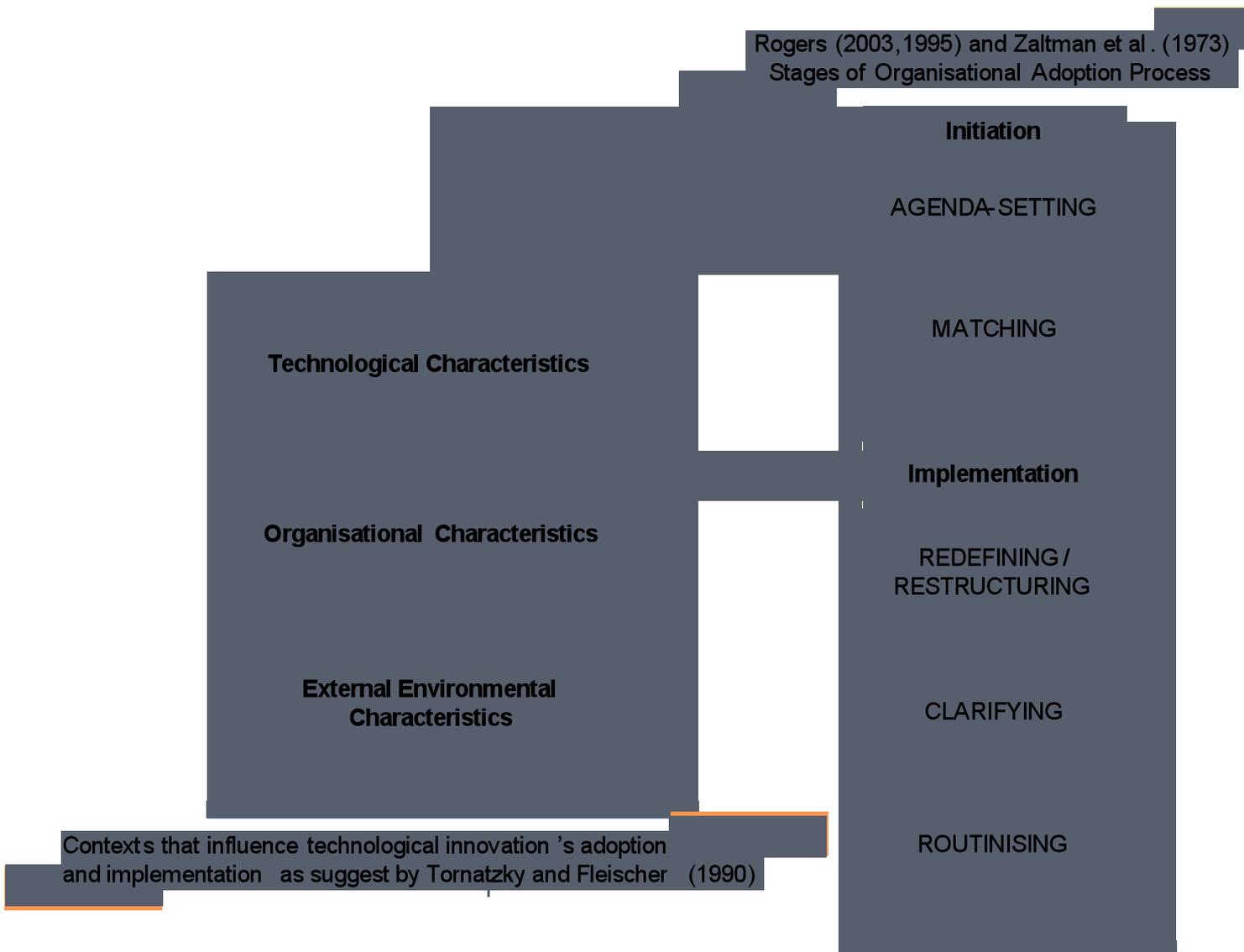
E-government initiatives are viewed in this study as information and communication technology (ICT) enabled innovations developed through two main stages. First, the initial adoption is instigated by external environmental pressures from government on the public agencies to adopt electronic provision of their over the counter services. A second level of the adoption process is promoted by the public organisation's manager

known as the E-leader or E-champion acceptance of the innovation and the facilitation for the implementation stage. Hence, the final level deals with the implementation of e-government initiatives is accomplished by the policies of middle managers and the E-staff who carry out the transformation of services to its electronic state until the publishing, marketing and actual usage of the e-service is achieved. The study of the way public organisations utilise technology to develop and provide their services at different levels unveils at the same time hurdles, risks and inner contradictions. The composite analysis of the development and the provision of technologically enabled services can offer a new perspective to this phenomenon.

In this respect, the framework (*see* figure 2-10, below) is represented by three contexts, namely technological context, organisational context, environmental context. The three contexts are represented as to contain the attributes that could be influencing the whole e-government' initiatives' (i.e. e-services) adoption and implementation (i.e. development) approach and thus they can facilitate or hinder any of the e-government initiatives' assimilation process. The theoretical framework offers the possibility to group complex issues of investigation together in a more manageable research overview for the purpose of this study.

The initiation stage and the activities involved in it (agenda-setting and matching) can be seen as pertaining to the organisational level of decision making. The implementation stage and the activities it involves (re-defining/re-structuring, clarifying, routinisation) have more to do with the individual level decision within the organisation.

Although it is obvious that these two decision-making levels exist (i.e. adoption and acceptance for implementation), it is argued that they should not be separated but they should be fitted together because they are highly interrelated. Hence, the stages of initiation and implementation are presented in parallel positions to one another and the dotted –line in the middle illustrates an interconnected nature of those processes (see figure 2-10, below).



**Figure (2-10):** *Conceptual Framework for studying e-government initiatives development adopted from Roger's (2003) and modified by contexts used in Tornatzky and Fleischer (1990) framework of studying technological innovations*

Notably, the framework categorises the contextual factors into three major categories. The first category includes characteristics of the innovation itself, within additional reference to the technological aspects unique to e-government initiatives. Thus the first context adopted from Tornatzky and Fleisher (1990) and Roger's (2003) is identified as the 'Technological context' and is accounted for the e-government initiatives' characteristics as it is perceived from both its technological and innovation criteria. The second category involves the characteristics of the organisation adopted by also the aforementioned researchers who specify cultural, structural and managerial influence as important actors in the organisational innovation diffusion process of technological innovation (Rogers, 2003; Tornatzky and Fleisher, 1990). The final category of characteristics is clustered in the Environmental context which includes the state of the ICT infrastructure of the city, external pressure exerted by the government, industry and competitors, and the regulatory environment (Tornatzky and Fleisher 1990).

A list of questions is derived from this framework to the interviewees (*refer to **Appendix A: Interview Protocol***). The theoretical framework have aided in identifying the areas of interest depending on the interviewees' roles and responsibilities in the e-government initiatives' development process. (*C.f. Chapter (3) - 3.4.1 Research procedures: data collection strategies.*)

The study proposed a preliminary conceptual framework that served the following purposes:

- Reflected the current researcher knowledge and assumptions about e- services adoption and implementation in public organisations
- Suggested a bounding of the scope of stages of the assimilation process and the contexts within which they interact that are a likely focus of this study
- Oriented the study toward a holistic understanding of the phenomenon by viewing the interrelated components of e-services assimilation process as a whole entity.

As far as the identified components of this framework are concerned, it should be noted that after a more thorough and spherical knowledge is gained by the researcher while on going with the particular research, it is likely that more components or an alteration of those presented here, might occur. Therefore, the components of symbolic use presented in the framework play an indicative role, at least at a preliminary stage of analysis.

## **2.6 Progressions in understanding reasons For choice of methodology**

Previous discussions and review of literature have steered the author to establish some methodological principles towards the choice of this study's investigation approach. The majority of the surveyed e-services adoption and implementation research has been based on variance research, discerning the attributes related to individual adopters acceptance and usage of innovation. Its purpose was to investigate the variables related to citizens or users perspectives in a generalised way across different innovations. However, variance research does not provide insights of events towards the adoption or implementation of the innovation under study neither does it provide insight into the process of innovation (Van de Ven and Andrew, 1993; Gallivan, 2001). It merely investigates the "variables related to innovativeness" (Rogers 1995, p. 188). Process research, by contrast, seeks to study the conceptual stages of the innovation-decision process is usually conceived of as a 'hierarchy of effects' model (Gatignon and Robertson, 1991; Shaw and Jarvenpaa, 1997).

Variance research which deals with variables and the correlations among them fits in the category of positivistic research (Mohr, 1982; Maxwell, 2004). The utilisation of process theory as an alternative to variance theory in studying innovations is becoming more common in the social sciences (Maxwell, 2004). Rogers (1995), maintains that the utilisation of quantitative methods, such as surveys, to study the adoption and implementation processes of innovations "is intellectually destructive of the 'process' aspects of the diffusion of innovations" (p. 122).

Moreover, variance-theory methods allow probabilistic and random influences which may drive the cause-and-effect paths to deviate from the expected route (Shaw and Jarvenpaa, 1997). In its analysis, it is more contextually conscious and may even be supported by interpretive assumptions. Still, diffusion research was focused on finding generalised variables (or particular events) which could determine the rate of a particular (fixed) technology. The limitations of this “technology-push” approach have been recognised (Baskerville and Pries-Heje, 2001). This type of research has also been criticised for its simplistic linear cause-and-effect explanations which neglects the interplay between them (e.g. Pettigrew 1990).

In this thesis, the author analyses his cases using Rogers’ (2003) Organisation Innovation Process model which is more socially informed and has a more qualitative nature than the general diffusion theory framework that stems from variance research. Notably, the author also recognises that organisational innovations incline to have a unique emergence and development pattern which is highly associated with the social context conditions. Both the local and side conditions of the social context are expected to limit the model transferability to another region or social context of innovation adoption (Mlecnik, 2011). Hence, the author adheres to the aforementioned suggestions that a tailored e-services development model needs to be specified according to the social context of the adoption and implementation pattern of Dubai’s public organisation.

Taking into account that e-services are developed as a result of cultural and human elements (Abe, 2005; Marianos et al.,2011) This study has adopted the socio-technical approach which posits that technological phenomena should be examined within the

contexts in which they are embedded (Orlikowski and Iacono, 2001). In conclusion, this research framework proposes that local agencies' development process of potential e-services will be strongly influenced by: (a) characteristics of electronic government initiatives (technological context), (b) agency's structural and cultural characteristics (organisational context), and (c) external pressure attributes (environmental context). At its most parsimonious, the conceptual framework has these three components in addition to the five organisation's adoption and implementation stages.

## **2.7 Conclusions and Summary**

The guidance that informs this literature review comes from Glaser (1978, p. 3) who instructs the qualitative/naturalistic researcher to enter the research setting with "as few predetermined ideas as possible--especially logically deduced, a priori hypotheses" so that the researcher can see and record data without having filtered them through these hypotheses and biases. Glaser (1978) also suggests, however, that the theoretical sensitivity of the researcher "is necessarily increased by being steeped in the literature that deals with both the kinds of variables and their associated general ideas that will be used" (p. 3).

Reviewing the literature served several purposes. First, it examined how others described and assessed e-government initiatives adoption and implementation processes to provide background for this study, and to increase the researcher's theoretical sensitivity, and to corroborate certain assumptions and conclusions the researcher reached about e-government initiatives development process (i.e., it is a multifaceted and complex social process). Accordingly, the first finding of the literature review is that lack of a comprehensive definition of e-Government.

Second, the literature review served the purpose of confirming that few empirical and analytical studies have been conducted on e-government initiatives' (i.e. e-services) adoption and implementation. Notably, previous studies were not directed at producing a holistic understanding of e-government development process, which was the primary goal of this study. Moreover, studies about e-services focus on stages and factors separately and most of the surveyed empirical studies focus on the individual level and are not suitable for organisational level adoption unless they are extended and they also tend to underestimate external environmental factors. In addressing this relative void, the author has analysed and identified the implementation process of e-services by suggesting a modified conceptual framework based on Rogers (2003) Organisation Innovation Process model with Tornatzky and Fleischer (1990) framework in order to provide a holistic framework for e-services' assimilation.

Third, the literature review revealed a number of models and frameworks that address one or more aspects of the e-government initiatives development. These models influenced the researcher's choice of the preliminary conceptual framework (see Section 2.3.1) and suggested components to include in that framework. The integration of these models – Rogers' (2003) (OIP) with Tornatzky and Fleischer (1990) (TOE) framework lead to formulate a strategic framework for e-services development process which helped to outline a road map for understanding the adoption and implementation of e-government initiatives in public sector organisations and more specifically in the developing and Arab world.

This study examines the technology's internal diffusion processes within Dubai's organisations and concentrates in particular on the adoption and implementation of an array of e-government initiatives acquired by public agencies. The study focuses on two different streams of innovation assimilation studies. First, the stages and activities of the adoption and implementation processes are under scrutiny. Another main area of interest is research on different attributes influencing the progression of the development process.

The primary objective of the chapter was to construct a preliminary research framework to guide the empirical investigating by combining ingredients from both stage models and factor models that describe organisational level e-services adoption and implementation. As a contrast to the prevailing understanding, the model developed here suggests that the two main stages of adoption, namely initiation and implementation, should be seen more as parallel or overlapping processes rather than sequential ones.

**CHAPTER 3**  
**RESEARCH METHODOLOGY**  
**3.1 Introduction**

The aim this chapter is to present methodological guidelines into developing an e-government initiatives adoption and implementation model for guiding public organisations in Dubai in their e-service development endeavours. Consequently, this chapter is set to present the philosophical assumptions underpinning this research, as well as to introduce the research strategy and the empirical techniques applied to answer the study's research questions.

Hence, the author commences his schemes for carrying out the empirical part of this study by reinstating the motivations, objectives and research questions previously outlined in chapter (I). The chapter then continues by juxtaposing the positivistic paradigm to that of the interpretivist paradigm. It then outlines the reasons for the selection of the interpretivist paradigm and its phenomenological orientation in the context of the research. The qualitative approach is then explained in terms of use and appropriateness for this research purpose and objectives. This leads to the justification of the case study method. Thereafter, data collection strategies are outlined in the research design, and issues of case selection, units of analysis, sampling, interview protocols and piloting of data collection instruments are addressed. This is followed by consideration of issues of research quality and ethics and outlining of the measures adopted to optimise the trustworthiness of data and findings. Finally, the research analysis and a brief summary of the expectations from the theoretical framework adopted are presented.

In summation to the methodological approach adopted, the present study required both a descriptive and an exploratory method to describe the activities of the e-government initiatives' diffusion processes as well as to identify the significant technological, organisational and environmental determinates appropriate for Dubai's public organisations deployment efforts. The philosophical assumptions underlying this research stems from the interpretive tradition. This implies a subjective epistemology and the ontological belief that reality is socially constructed. The research strategy adopted was to conduct multiple case studies in Dubai's public organisations. The fieldwork was carried out during the period from June 2007 to March 2008 allowing approximately 2 and half months for data collection at each site via semi-structured interviews, participant observation and documentary evidence.

### **3.1.1. Research problem & motivation for the study**

Previously, the literature review chapter has provide a detailed account of the issues related to the topic of e-government initiatives diffusion and highlighted both the critical need for tailored frameworks for e-government initiatives development process and the current lack of systematic, empirical research on e-government initiatives' dissemination globally and in particularly in developing countries.

To summarise these issues, the main reasons for conducting this research are due to: a) noticing the high failure rate in e-government initiatives around the world (Heeks, 2003) which necessitates meeting the literature needs of understanding the application of technological innovation dissemination in public organisations (Osborne and Flynn, 1997; Osborne, 1998) and b) due to the concept of electronic government remaining a new

phenomenon, lacking of literature recommendations and findings as well as a universally applied model or framework to guide the deployment of e-government (Andersen, 2004; Gronlund, 2005) and more specifically due to the research vacuum which could provide crucial insights into the technological, organisational and environmental determinants to adopt and implement e-government initiatives in the case of Dubai city and regional GCC countries (Sahraoui, 2003). These conditions were primary motivations for the researcher.

### **3.1.2 Study Goals, Objectives, & Research Questions**

The major research question was to understand: “*How are e-government initiatives developed within Dubai’s public organisations?*” The “how” question directed the study towards the innovation diffusion literature concerned with process studies as opposed to variance or factor approaches. Notably, the growing interest among scholars conducting empirical studies on the innovation’s process (cf. e.g Van de Ven and Rogers 1988), are calling for innovation process related research to include historical and contextual analyses (Pettigrew, 1985). Hence, the author will attempt to investigate the diffusion process of e-government initiatives in order to delineate the temporal order and sequence in which a discrete set of change events occurs based on a story or historical narrative (Abbott, 1988; Pentland, 1999; Van de Ven, 1992; Poole et al., 2000).

Consequently, the first goal of this study became to (G1) *Document the Development process of e-services and discover related attributes* through information in organisations’ historical records and documents, in addition to information collected through interviews. In the literature review chapter of this study, the author came to the conclusion that the diffusion of innovation theory by Rogers (2003) offers a suitable lens to guide the

investigation throughout the e-government initiatives adoption and implementation processes and provide some answers to the first subsidiary research question, *RQ1*: “*What are the activities encompassing the adoption and implementation of e-government initiatives in Dubai?*”

Chapter 2 also highlighted both the critical need for improving the implementation of e-government initiatives worldwide and the current lack of systematic, empirical research on e-government diffusion as well as the important gaps related employing Rogers’ (2003) Organisational Innovation Adoption theory to study such complex innovations. Thus, under these conditions, the author finds that he needs to consider a number of supplementary theories to conceptualise a more complete and holistic view of the e-government initiatives’ diffusion process within an organisation. Hence, the Technological, Organisational and Environmental (TOE) model devised by Tornatzky and Fleisher (1990) was seen appropriate to supplement Roger’s theory as it became in the contention of the author that this research will require taking on an exploratory approach along side the descriptive approach specified earlier, as relevant influential factors need to be explored, proper managerial and organisational issues resolved, and interoperability of the relationship between the process stage and factors to be established. Thus, the second question of this research developed is *RQ2*: “*What are the technological, organisational and environmental determinants that can facilitate or obstruct the adoption and implementation of e-government initiatives in Dubai public organisation?*” The exploratory strategy is chosen to uncover the determinates affecting the diffusion process. 'What-questions' can be presented as part of these how questions, following Yin's (1994) advice that case studies that address what questions are most appropriate when the purpose

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of the study is to explore a new phenomenon. (Yin 1994). Consequently, the second goal of this study became to (G2) *Develop a holistic understanding of e-Services Development process.*

The theories in this study are employed as a scheme of reference, this means that the empirical evidence may reformulate the theory, alter it, or add dimensions to it. The theory guides the researcher to certain empirical domains and to address certain themes and ask certain questions.

Finally, on the basis of the exploration and description of e-government initiatives' development process, the researcher planned to identify a set of working hypotheses. Hence, the third question is (RQ3): *What working hypotheses are warranted based on e-government diffusion to guide future research?.* Consequently, the third goal is to *develop working hypotheses from e-government diffusion to test and explore in other governmental technological innovation diffusion efforts.* These statements, will be based on study findings, propose relationships between temporal sequences of activities which occur in the development and use of e-government initiatives and significant determinates to be tested in subsequent research. The author adheres to the notion that qualitative methods are often used when the field of research is yet not well understood or unknown and aim at generating new hypotheses and theories, while quantitative methods are frequently used for testing hypotheses and evaluating theories (cf. e.g. Atteslander, 2003, pp.83-85; Glaser & Laudel, 1999, p.2; Kelle, 1994, pp.41-52; Mayring, 2003, pp.20 23).

Two complementary goals, a set of objectives, and three specific research questions provided overall guidance and direction for this study. Table (3-1) lists the study's goals, objectives, and research questions.

Research question	Research objectives	Subsidiary questions
How is E-government initiatives Diffused within Dubai's public organisation?	<i>O1: Identify and describe the context within which e-services occurred and discover the important factors that enabled or constrained its deployment.</i>	RQ1: What are the activities and processes of adoption and implementation of e-government initiatives in Dubai?
	<i>O2: Revise and refine the preliminary conceptual model guided by Rogers (2003) Organisation Adoption process and Torotazky and Fleischer (1990) Technological, Organisational and Environmental framework to reflect e-government initiatives' adoption and implementation in Dubai.</i>	RQ2: What are the technological, organisational and environmental determinants that can facilitate or obstruct the adoption and implementation of e-government initiatives in Dubai public organisation?
	<i>O3: Develop working hypotheses from e-government Initiative's deployment to Guide further research in the exploration of other governmental technological innovation deployment efforts in the area.</i>	RQ3: What working hypotheses are warranted based on Dubai's e-services development experiences to guide future research?

**Table (3-1):** study's goals, objectives, and research questions

### 3.2. Research Philosophical Assumptions

This section will provide an introduction to the term '*Paradigm*' and will attempt to provide justification for its application and significance. The aim of the section is to lay the ground work for presenting an introduction into the study's philosophical assumptions.

According to Thomas Kuhn, a paradigm is a framework for understanding the world that is on one hand "*sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity*" (Kuhn 1996, 10). Burrell and Morgan describe the term paradigm as a: "*commonality of perspective which binds the work of a group of theorists together*" (Burrell and Morgan, 1979; p. 23). According to Guba and Lincoln, "A paradigm is a basic belief system or world view that guides the investigation" (Guba & Lincoln, 1994, p. 105).

Consequently, research methodologists and philosophers of science do not agree on what constitutes a paradigm, there is some agreement beginning with Kuhn (1996) and subsequent philosophy of science authors (ibid) that the term *Paradigms*, those past and those currently emerging, are often characterised by the way their proponents respond to *ontological, epistemological, and methodological* questions (Guba, 1990; Guba & Lincoln, 1994) and to a series of research issues such as inquiry aim, researcher values, voice, representation, and goodness or quality criteria (Lincoln & Guba, 2000).

In addition to the issues concerning the *ontological, epistemological, and methodological* questions of the nature of social research discussed above, different authors have proposed different classifications of the "paradigms" underlying qualitative research. Myers (1997) as well as Orlikowski and Baroudi (1991), following Chua (1986), suggest three categories: positivist, interpretative and critical, while Guba and Lincoln (1994) suggest four such paradigms: positivist, post-positivist, critical theory and constructivism among others such as Delanty's (1997) and Jennings (2001) who classify other major research traditions.

These labels or groupings of the diverse views of the world are not that different from each other: they are all systems designed to analyse, compare and contrast the same phenomenon. The following paradigms: *positivism*, *interpretative social sciences*, *critical theory* and *post-positivism* suggested by Guba and Lincoln (1994) are used below to demonstrate the different approaches and views concerning ontological, epistemological and methodological stances.

	Positivism	Interpretive / Constructivism	Critical Theory	Post-Positivism Realism
Ontological View	Reality exists out there and is governed by unchangeable natural laws. The job of research is to discover the 'true' nature of reality and how it 'truly' works. The ultimate aim is to predict and control natural phenomena (Guba 1990).	Reality is relative; realities are multiple and 'they exist in peoples minds' (Guba 1990, p26). Constructs ( 'the social world is largely what people believe it to be' (Neuman, 1994, p. 69).	Reality can be known but it is a reality shaped by racial and ethnic, gender, social, political, cultural, economic factors (Guba & Lincoln 1994) that create structures of oppression.	The post positivist view of Inquiry integrates subjective as well as objective outlook and try to incorporate cultural beliefs or causal significance of tradition(s). Guba and Lincoln (1994)
	<b>REALIST</b>	<b>RELATIVIST</b>	<b>CRITICAL REALIST</b>	<b>“real” reality but only imperfectly and probabalistically apprehendable</b>
Epistemological View	Since there is a real world out there operating according to natural laws, the researcher must objectively and without influencing study the world and objects within the world (Guba & Lincoln 1994).	Knowledge is created when the researcher and the researched undertake the inquiry. 'Findings are literally the creation of the process of interaction between the two' (Guba 1990, p27).	The researcher and those researched come together with histories and values that cannot be ignored. What is known is intertwined in the interaction between these two people. Any findings therefore are value laden.	Researcher seeks to 'transcend' subjectivity by building theory that reflects setting and thorough testing.
	<b>Objectivists</b>	<b>SUBJECTIVIST</b>	<b>SUBJECTIVIST</b>	<b>Modified DUALIST/OBJECTIVIST</b>
Methodological View	The researcher states A hypothesis or Question as a proposition and then tests the proposition to see if it is true. Any thing that might influence the test must be controlled to prevent bias. (Guba & Lincoln 1994).	The aim is to build a consensus understanding that is more sophisticated than previous understandings. 'Interpretive researchers study meaningful social action' in natural settings (Neuman, 1994, p. 69).	"The transactional nature of [research] requires a dialogue between the investigator and the subjects of the inquiry' (Guba & Lincoln 1994, p110).. Methods must be participative and dialogical	According to Guba and Lincoln (1994) the post positivist view focuses on efforts to falsify a Priori hypotheses converted into a precise mathematical Formula (quantitative hypotheses) expressing Functional relationships.
	<b>EXPERIMENTAL/ MANIPULATIVE</b>	<b>HERMENEUTIC/ INTERPRETIVE</b>	<b>DIALOGIC/ TRANSFORMATIVE</b>	<b>Explanation, enabling prediction and control of phenomena</b>

**Table 3-2:** Categories of Paradigms and their elements Adopted from : (Guba, 1990) ,(Guba & Lincoln 1994) & (Neuman, 1994)

The illustration in table (3-2) above provides a summary of different scholars' (Guba & Lincoln, 1994; Neuman, 1994) definitions and approaches to their philosophical assumptions; the researcher's adopted stance for this study is highlighted in the second

column of table (3-2). The illustration in table (3-2) is used as a framework to reflect on the role of the researcher and the research process of examining e-government initiatives' development process in contrast to the other paradigms that can most inform this research investigation.

It's is not within the scope of this proposal to outline the positivists, critical and realism stances in detail. Hence to summarise, in the view of the researcher, the social world of e-government initiatives' development is too complex to lend itself to theorising by general laws. Rather, the researcher believes that the interpretation of the world is socially constructed (Berger & Luckmann, 1966), and thus subscribes to the alternative view of reality. The stance adopted by the researcher views reality as a product of social interaction, whereby knowledge is perceived as subjective, and based on human experience (Burrell & Morgan, 1979). Hence, adopting such a view entails the belief of a relativistic nature of the social world, where the human being is regarded as the creator of his or her environment. Hence, the researcher concluded that the interpretive approach oriented towards discovery, description, and holistic understanding of processes and activities was a suitable to gain more understanding about the reality concerning the questions raised in this research.

### **3.3 The Research Strategy: Qualitative, Case Study and Model Building**

Unlike the rigorously structured explanation-oriented form of case study methodology maintained by Yin (2003), this study required an inductive, flexible and interpretive form as in Merriam (1998), Creswell (1998) and Walsham (1993). Sometimes the interpretive forms of case study research are called qualitative case studies (for example, by Merriam

1998). Its many methodologies and techniques, (i.e. action research, case studies, ethnography, feminist perspectives, grounded theory, hermeneutics, and participatory enquiry) have helped researchers to improve their understanding of a phenomenon, especially when this phenomenon is complex and deeply embedded in its context (Creswell, 1998).

E-government initiatives' development is recognised in this study as a social process in which a variety of employees come together to agree on one or more ways of doing something. Qualitative research shares the theoretical assumptions of the interpretative paradigm, which is based on the notion that social reality is created and sustained through the subjective experience of people involved in communication (Morgan and Smirich, 1980). A qualitative approach assumes that each employee brings various interpretations and values to the process. Hence, this study directs its attention to the individuals and their perceptions, values, and interpretations on their experiences of e-government initiatives' development process. The critical importance of respondents' own interpretations of the relevant research issues is highlighted and it is accepted that their different vantage points will yield different types of understanding and views. Qualitative research seeks to identify, map and explore the multiple perspectives held by individuals and groups within their social setting and does not seek to identify a single 'truth' or to chart the general message or dominant pattern. Nevertheless, in the course of investigating the adoption and implementation process of e-government initiatives there is huge value in exploring individuals' perspectives on their experiences or attitudes which can yield reliable evidence for policy-makers and proper implementation of the innovation.

However, the author believes that careful steps in sampling, data collection and analysis is required to ensure that qualitative research can validly assist evidence e-government initiatives' development. Moreover, a consensus has yet to be reached to determine the exact qualitative research boundaries and the main components of a qualitative research design (Lee, 1999).

As a result, the author devised three facets to characterise the research strategy: qualitative, multiple case studies, and model building. The following sections discuss these three facets of this research strategy in more detail.

### **3.3.1 A Qualitative Study**

Smith and Fletcher (2001) define qualitative research as “It is about asking, in a flexible way, comparatively small samples of people questions about what they do and think, and listening carefully to, and subsequently interpreting what they have to say”.

Qualitative research involves the informed use and collection of a variety of empirical materials—case study, personal experience, introspective, life story, interview, observational, historical, inter-actional and visual texts—that describe routine and problematic moments and meanings in individuals' lives. (Creswell, 1998).

Accordingly, qualitative research deploys a wide range of interconnected methods, hoping always to get a better fix on the subject matter at hand. (Denzin 1994, p. 2) Thus, qualitative research can be used differently by a multitude of disciplines, studying just about anything. Qualitative researchers are concerned in their research with attempting to

accurately describe, decode, and interpret the meanings of phenomena occurring in their normal social contexts (Fryer, 1991).

Qualitative analysis provides local groundedness, its focus on naturally occurring ordinary events in natural settings generates rich, ‘thick descriptions’ (Huberman & Miles, 1994). Qualitative studies also emphasise the lived experience and this suits them for exploratory studies that proceeds the generation of hypotheses (Merriam, 1998). They do, however, tend to be limited in the conclusions and inferences that can be drawn from typically small samples but are, useful for supplementing, validating, explaining or illuminating quantitative data (Miles and Huberman, 1994). Interpretation takes the form of analytic induction (Huberman & Miles, 1994) through the trends of thematic analysis, meaning generation, confirmation, and synthesis and illumination (Shank, 2002). The analysis does not assume a single, interpretive truth (Denzin & Lincoln, 1998), but respects the relativist ontology’s possibility of multiple realities.

Quantitative studies, on the other hand, offer greater opportunity for generalisation as the research tends to involve a larger number of individuals (items, entities, instances of the phenomena and so on), drawn from a wider, or even the whole, population. Quantitative methods can be fast and economical, provide wide coverage of the range of situations, and can be of considerable relevance to policy makers when statistics are aggregated. But they can be inflexible and artificial, and may not be very effective in understanding the processes or the meanings that people attach to events or incidents (Easterby-Smith et al., 1991).

Each of the approaches has different strengths and weaknesses. (Table 3-3) provides a useful outline highlighting many of the qualitative and quantitative characteristics and assumptions:

**Table 3-3. Characteristics of Qualitative and Quantitative Research.**

<i>Point of Comparison</i>	<i>Qualitative Research</i>	<i>Quantitative Research</i>
Focus of research	Quality (nature, essence)	Quantity (how much, how many)
Philosophical roots	Phenomenology, symbolic interactionism	Positivism, logical
Associated phrases	Fieldwork, ethnographic, naturalistic, grounded, constructivist	Experimental, empirical, statistical
Goal of investigation	Understanding, description, discovery, meaning, hypothesis generating	Prediction, control, description, confirmation, hypothesis testing
Design characteristics	Flexible, evolving, emergent	Predetermined, structured
Sample	Small, nonrandom, purposeful, theoretical	Large, random,
Data collection	Researcher as primary instrument, interviews, observations, documents	Instruments (scales, tests, surveys, questionnaires, computers)
Mode of analysis	Inductive (by researcher)	Deductive (by statistical methods)
Findings	Comprehensive, holistic, expansive. richly descriptive	Precise, numerical

**Table (3-3):** *Characteristics of Qualitative and Quantitative Research Source (Creswell, 1998)*

Linking the assumptions to the specific character of the research demonstrates that a qualitative research approach was appropriate for this study. The study of e-government initiatives' development required:

- A holistic orientation to address the complex of activities, entities, processes, and forces, and their interrelationships

- A flexible research design to allow the researcher to pursue new directions in data collection as understanding developed during the research
- An orientation towards detailed description that addresses both the context and specifics of e-government initiatives' adoption and implementation.
- A focus on the participants and the process through fieldwork activities
- An inductive process that identifies and characterises categories and patterns in the data and grounds the findings in the data.

### **3.3.2 Multiple Case Studies**

Case study research can seek to accomplish various aims: to describe, to test, or to generate theory (Eisenhardt, 1989; Maxwell, 1996). This qualitative research uses the case study strategy to gather and interpret data collected from documentary evidence and interviewing individuals in their work setting to provide rich insights into a dissemination process and its affiliated contextual facilitators in order to build a model and propose related hypothesis. Notably, case study is not a method but a research strategy (cf. e.g. Hartley, 2004, p.323; Titscher et al., 2000, p.43). "Case study is not a methodological choice but a choice of what is to be studied. By whatever methods, we choose to study the case" (Stake, 2000, p.435). Hence, the term "case" in case study refers to the object or phenomenon under study.

Case studies can be single or multiple, multi-sited or within-site and can include quantitative evidence (Yin, 1994; Stake, 1995). Case studies can be embedded as well as holistic. An embedded case study is one in which there is more than one sub-unit, whilst in a holistic case study a global programme of organisation is contemplated (Yin, 1994).

Upon conducting a case study, the researcher has to decide which case(s) to study. This decision demands first of all a choice concerning breadth versus depth (Ahrens and Dent, 1998), i.e. whether to apply a single or a multiple case study approach.

Consequently, to ensure a fuller and wider variety of data as evidence that can be used to develop theory and/or model (Yin, 1989; Eisenhardt, 1989) for e-government initiatives diffusion; the author pursued a multiple case study strategy. The choice of a multiple case study research design is in harmony with Miles & Huberman (1994) assertion that it offers in-depth information related to the phenomenon under study and adds reliability to the findings. Additionally, multiple case study strategy allows the use of replication logic, while researching in a highly complex and fast-changing phenomenon (Yin 1989, 1994). Additionally, a combination of cases allows to test propositions obtained from one instance in another case (Harrigan, 1983), thus reinforcing the external validity of the analysis, as the evidence from multiple case research designs is often considered as far more compelling and is therefore more likely to be regarded as valid and acceptable (Yin, 1989).

During this research multiple case studies' analysis, a detailed description of each case and the themes is provided (within-case analysis), followed by a thematic analysis across the cases (cross-case analysis) (Merriam, 1998). The report must provide a complete picture of the case and its context, must consider the data from different perspectives, must provide sufficient evidence, and be written in a clear style (Creswell, 1998; Yin, 1994). In the final interpretative phase, the "lessons learned" from the case are reported by the researcher (Lincoln and Guba 1985, cited in Creswell, 1998). In terms of the generalisability of the findings, Yin (1994:10) notes that case studies, like experiments, are generalisable only to

theoretical propositions (analytical generalisation) rather than to populations (statistical generalisation). The aim is not to infer findings from a sample to a population but to produce patterns and linkages of theoretical importance (Bryman, 1989).

In summary, the author decided to carry out four case studies employing multiple sources of evidence and different data collection techniques to allow validity of findings and gain deeper knowledge. The primary sources in this study are interviews with key participants, materials and documentary evidence and participant's observation of diffusion process employed. Each of these data sources is utilised to provide the study with specific types of information. This type of study methodology chosen for this research involves collecting and analysing data from several cases and can be distinguished from the single case study that may have subunits or sub cases embedded within.

### **3.3.3 Model Building**

The third facet of the research strategy was that of model building. The preliminary conceptual model introduced in Chapter 2 guided the initial stages of the research by identifying a framework for what was in scope of the case as well as reflecting the literature knowledge of e-government initiatives' adoption and implementation process and related determinates.

The model expected to result from the findings of this study is an "explicit interpretation of one's understanding of a situation, or merely of one's ideas about that situation" and a "description of entities and the relationships between them" (Wilson, 1984, p. 8). Model development is to emerge from the interplay of the developed codes based on participant

responses to the qualitative interviewing. Qualitative methods enable the study of a phenomenon within the context and process of key informants, and enable the development of models that capture the key contributing (causal) constructs. New theories can then be inferred from the understanding of the new models so developed (Maxwell, 1996).

### **3.4 Research Design**

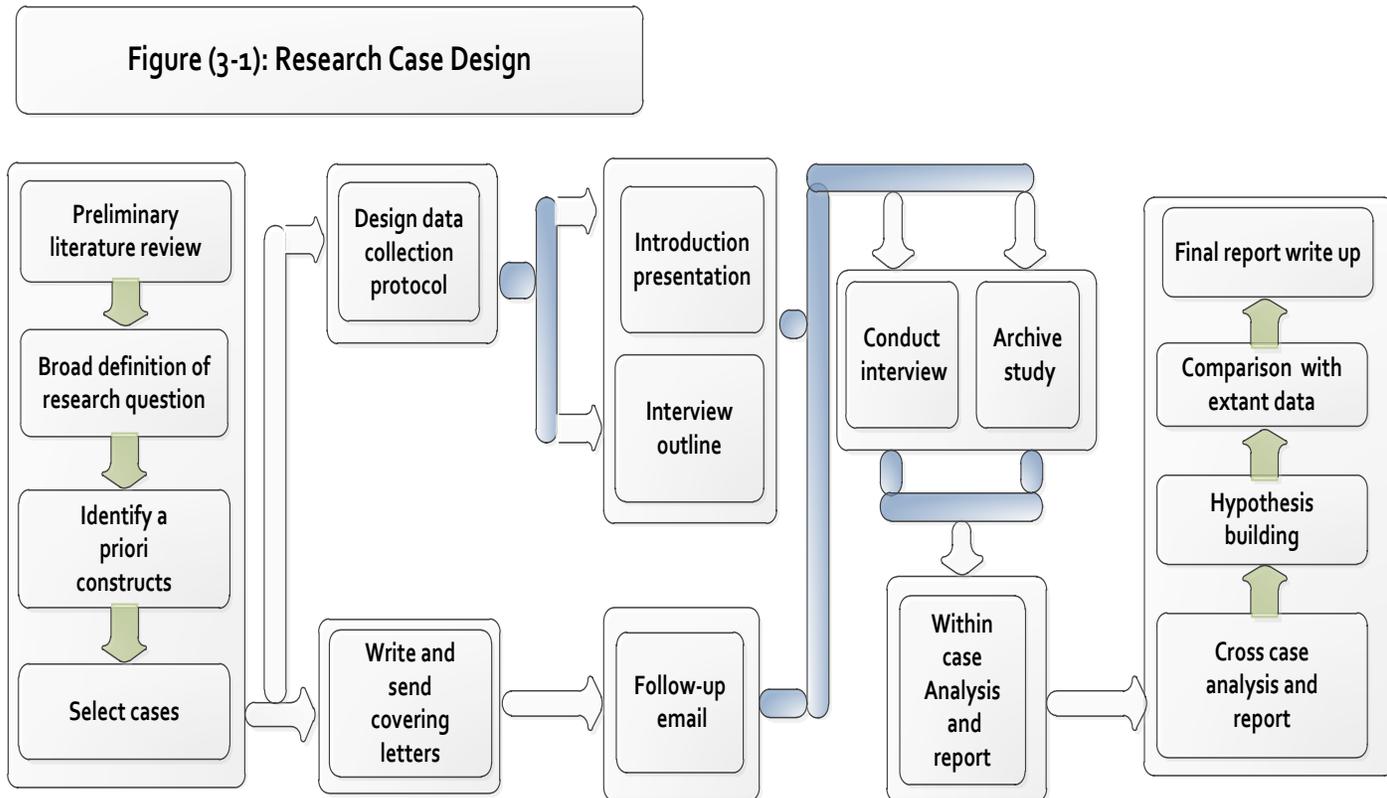
The research strategy provided directions towards addressing the study's goals, objectives, and questions. This section summarises the overall study design, activities, and the extent of data resulting from this approach.

Hamel (Hamel et al., 1993), Stake (1995), and Yin (1984, 1989, 1994) provide specific guidelines for the development of the design and execution of a case study. Following Yin (1994). The research had three main stages: 1) Define & design, 2) Prepare, collect & analyse and 3) Analyse & conclude. Every stage was also divided into smaller steps. One relevant point is that every case stands alone.

Stake (1998) maintains that when it comes to designing the qualitative case researcher has six conceptual responsibilities: (a) bounding the case, (b) selecting the issues, or research questions, to emphasise, (c) seeking patterns of data that will allow development of the issues, (d) triangulating observations and bases for interpretation, (e) selecting alternate interpretations which may be pursued, and (f) developing assertions or generalisations regarding the case. Walsham (1995) recommends interpretivists to provide details on research sites; site selection criteria; amount of people interviewed and their organisational

positions; data sources (including the amount of cases); period of study and data analysis techniques.

Figure (3-1) presents an illustration of the study's design. The illustration reflects the logical flow from the preliminary activities that initiated the study and the development of the preliminary conceptual framework through the data collection and analysis, the refinement of the conceptual model, and the articulation of a set of working hypotheses.



**Figure (3-1):** An illustration of the case design adapted from Eisenhardt (1989)

These conceptualisations in figure (3-1) above will serve as guidelines for this study, although the journey may be influenced by other criteria as the study develops.

### **3.4.1 Research procedures: data collection strategies**

In-depth interviewing was the major data collection methods in this study. The primary purpose of conducting interviews is to obtain a special kind of information “in and on someone else’s mind” (Patton, 1990, p. 278). The interviews are supplemented with internal documents, external reports, organisation reports, official records, letters, newspaper accounts, diaries, as well as the published data used in the literature review. Documents and texts can be valuable sources of qualitative data (Kaplan & Maxwell, 1994; Miles & Huberman, 1994). Finally, whenever possible, observations accompanied the qualitative assessment. Observation was achieved by spending time within the organisations concerned. Observation in qualitative studies produces detailed descriptive accounts of what was going on.

The study's three data collection techniques offer balancing perspectives on the development process of e-government initiatives. Each technique is employed to collect different types of information, each of which has a special utility for the research. A primary concern of the data collection is to develop a data repository upon which the researcher could answer the study's research questions, especially the first and second research questions. Table (3-4) summarises the sources of data and the utility of each type of data.

The author adheres to Yin (2003, pp.78-80) recommendations about conducting a pilot interviews as a final preparation for data collection. Since four organisations were selected for this study, four pilot interviews were conducted with each research’s site. This has

helped to refine the data collection plans with respect to both the content of the data and the procedures to be followed. Collectively, documentations, observational and interview data involved a four-phase model (groundwork, data collection, data analysis, and theory building) in order to discover underlying assumptions of activities and attributes comprising the e-government initiatives development process, to gain insights into the technology acceptance decision process, and to address emerging themes and theories. Each of these data sources can provide the study with specific types of information (see Table 3-4 below for a summary of the data sources and type of data to be collected). By using a combination of observations, interviewing, and document analysis, the fieldworker is able to use different data sources to validate and cross-check findings (Patton, 1990). Merriam (1998) notes that rarely are all three strategies used equally. One or two predominate, while the other(s) provide supporting information. In the case of this research interviews is the primary data collection strategy. All of the interviews were tape-recorded and subsequently, each interview was transcribed and then coded. Following the strategy suggested by Miles and Huberman (1994), a combination of within- and cross-case analysis was undertaken.

Data Source	Type of Data	Utility of Data	Purpose
Semi-Structured Interviews	Textual data in the form of: - Participants' Constructions, Reconstructions, and Projections; - Historical and Contextual Information	To provide in participants' own words, their interpretation and understanding of problems and issues related to e-government development; Corroborated data to be gathered from other sources	To assist in discovering activities, entities, processes, and forces, and the contexts that influenced, enabled, or constrained the development of e-government
Documentary Evidence	Textual data in the form of: - Official Records; - Historical and Chronological Data; - Administrative Procedures	To provide official and semi-official accounts of e-government <i>observations about initiatives</i> development; Corroborated data gathered from other sources	To assist in describing the stages ,activities, entities, that constitute the development of e-government diffusion process
Participant Observation	Textual data in the form of: - Researcher's Field Notes (Observations and Experience of Individuals, Events, Activities, and Process	To provide researcher with experience of e-government development in the natural context of the people and activities involved.	To assist in collecting descriptive details about current e-government development and to interpret and understand data collected in the guided interviews.

**Table 3-4:** Type and Utility of Data from Each Data Collection Activity

Prior to the data collection, a theoretical framework was developed. This theoretical framework and the initial pilot case study was used to develop the interview guide. During the interviews, specific follow-up questions were posed tailored to the specific circumstances of the cases. In the process of conclusion drawing and verification, conclusions were verified as the analysis proceeds.

The first attempt of data examination has occurred within-case analyses, in which the researcher identified themes within the individual cases. The researcher has pulled the data apart and reassembled the information in meaningful ways, drawing significance from it through direct interpretation. Patterns were sought, with correspondences between categories developing in naturalistic generalisations. After the analyses of individual cases,

examination through a cross-case analysis the author was searching for themes among cases to determine themes that are common to all (Creswell, 1998).

#### **3.4.1.1 Development of Interview Protocol**

Initially, the process of developing the interview protocol for this study (*see* appendix A) was devised from the theoretical framework of this study. By developing a conceptual model that was both well supported by the literature and tied together into a cohesive framework, the researcher was able to get an idea of the types of questions he wanted to ask in order to learn more about the adopter's perception of the activities and factors profiling his or her e-services' development experiences. A second drafting of the interview protocol followed the analysis of protocol test results, and a final draft of the protocol was re-evaluated after the first four pilot interviews were completed.

The pilot interviews with the organisations' E-champions were taped and then transcribed. In this case in point, the author needed to be assured that he is getting to the heart of the matter in terms of the study's conceptual model. Significant learning occurred from these interviews. Some questions were dropped for relevance or for being redundant; more relevant questions were refined or expanded significantly to get into deeper meanings on important topics (Maxwell, 1996).

Interview questions were written as evidential probes for specific research questions. The interview guide in appendix (A) displays a progressive chain of questions to answer general information in part (I) and identify the process of e-government initiatives in part (II). Part (III) of the interview protocol has served the purpose of exploring and probing the

technological, organisational and environmental determinates that were found to be influential from the participant's prespective. The format for the interview protocol was adopted from Creswell's model (1998, p127). The interviews were transcribed verbatim and transcripts were returned to staff and for further comments and verification of researcher's interpretation. Each unit of data was coded during the analysis, mainly using the interviewees' words as a label for the meaning of the unit. Codes with similar meanings were grouped together as categories and an appropriate term, often taken from the relevant literature, was used to describe them.

#### **3.4.1.2 Sampling Strategy**

As generalisation in a statistical sense was not one of the objectives, a non-probabilistic sampling method was favoured for this research. For this reason, "probabilistic sampling is not necessary or even justifiable in qualitative research" (Merriam, 1998, p. 61). Thus, the consecutive or random selection of participants that is common in quantitative research is replaced by purposive sampling which is a characteristic of qualitative inquiry and is based on "informational, not statistical, considerations ... Its purpose is to maximise information, not facilitate generalisation" (Lincoln & Guba, 1985, p. 202).

Notably, purposeful sampling seeks information-rich cases which can be studied in depth (Patton, 1990). This is because qualitative inquiry typically focuses in depth on relatively small samples specifically chosen for certain features (Patton 1990). There are several different purposeful sample strategies and more than one strategy can be utilised in a study (Miles and Huberman, 1994). Ultimately the sampling strategy must be selected to suit the

purpose of the study, the resources available, the questions being posed and the constraints (Patton, 1990). This point is also relevant for determining sample size.

Patton identifies and describes 16 types of purposeful sampling. These include: extreme or deviant case sampling; typical case sampling; maximum variation sampling; snowball or chain sampling; confirming or disconfirming case sampling; politically important case sampling; convenience sampling; and others (1990, pp. 169-183). In the next section, the author will present the types of purposeful sampling adopted in this research. The sampling strategy is employed to specify the number and criteria for the cases and individuals selected to provide information richness to this study which in turn will substantiate the validity, meaningfulness and insights of the research's findings (Patton, 1990).

#### **3.4.1.3 Selecting the government agencies**

In the literature there is no clear consensus as to exactly how many case studies should be included (Eisenhardt, 1989, Patton, 2002, Yin, 1994). The number of required cases could depend on the focus of the research question (Broadbent et al., 1998). Ideally, researchers should stop adding cases when theoretical saturation is reached (Eisenhardt, 1989). In practice, however, theoretical saturation often combines with pragmatic considerations to dictate when case collection ends. In fact, it is not uncommon for researchers to plan the number of cases in advance (Eisenhardt, 1989).

Patton (2002) recommends minimum samples based on expected reasonable coverage of the phenomenon. The number of cases chosen is *four*, this sits between the four and ten site

range set by Eisenhardt (1989). Such a small sample is justified since the number of replications is basically a matter of discretionary and judgmental choice; it depends upon the certainty a researcher wants to have about the multiple-case results (Yin, 2003). Furthermore, the details represented in the framework indicated that each public organisation has a wide range of variables that would have to be investigated. This called for selection of a few cases rather than a large survey of all the public organisations in Dubai, not only to keep the research to a manageable size but more importantly, to gain sufficient detail on each organisation studied so as to be able to conduct a replication case study and provide a “rich, thick description” (Lincoln and Guba, 1985, p. 41 and Merriam, 1998, p. 29) of the structural and cultural dynamics among the interviewees in the public organisation’s diffusion phenomenon studied.

Selection of cases represents another important but difficult aspect of case study research (Yin, 2003; Lee, 1989; Benbasat et al., 1987; Eisenhardt, 1989). The case-study organisations were selected utilising a typical case sampling strategy. As Patton (2002) asserts, this should be used when the sites are not in any major way atypical, extreme or unusual. The author did not notice any extreme or unusual differences from reading publications related to the sites selected, additionally pilot interviews have established such claims. Using typical case sampling strategy for the case study sites have allowed the study findings to consider the similarities found in the public sector organisation practices allowing for richness of information and validity of findings.

Establishing that the typical case sampling strategy provided by Patton (2002) serves as the most appropriate case selection strategy, the researcher identified four criteria (table 3-5)

prior to selecting government organisations for this research. These criteria were based on the research objectives, which calls the ability of the cases to provide rich information on the construction of the e-services development process in addition to technological, organisational and environmental determinants in order to develop a set of propositions and an e-services development model appropriate for the city of Dubai public organisations.

These criteria included:

**Table 3-5** : Specifying the criteria for choosing participating organisations

- The extent of use and diversity of information and communication technology applications. All the government agencies in Dubai use (ICT) technology. However, the extent of usage differs from one agency to another. Also the diversity, highly innovative and successful e-government departments will employ the use of geographical information systems (GIS) to display locations, provide live interactive data and services, the employment of kiosks and web enabled applications in an effort to reach and appeal to more customers. The selection was based on agencies with the highest ranking of e-government scores provided by Dubai E-government office in their annual ranking report.
- The procedures of adopting and implementing e-government initiatives has to be done with organisation own resources, e-government initiatives will have to be initiated and developed through its internal staff and not outsourced to IT companies; and finally
- The role the agency plays in providing services to the general public and the collaboration and sharing of information with various government agencies, as these e-government services will have to be providing vital and necessary roles and not just providing web presence with two way communication that is beneficial to its society and city's economy.

Some of these criteria will resolute upon initiating pilot interview with E-champions of the organisations.

Furthermore, the agencies selected in this study expressed an interest in participating in the research over telephone conversations, emails or during a scheduled site visit with each e-government department's administrator. The prospective participants expressed willingness to grant the researcher access to their departments' personnel and required documentation. Stake (1995) emphasises the importance of including agencies, which have displayed willingness to participate in the research and will therefore be accessible to the researcher.

Initially the four civil agencies consented to participate in this research include: the Dubai police headquarters, the Municipality of Dubai, Dubai Civil Aviations' Authority and finally the Dubai Department of Health and Medical Services. Additional data will be gathered from periodic publications by other government and quasi-government agencies, namely, Dubai School of Government and the E-government office of Dubai. In this research the cases were selected as equally representative, with no predetermined ideas. If the author had chosen theoretical replication the cases would have been selected differently.

#### **3.4.1.4 The unit of analysis**

In case study research “the unit of analysis identifies what constitutes a ‘case’, and a complete collection of data for one study of the unit of analysis forms a single case” (Darke et al. 1998). The unit of analysis may be an individual, a group, an organisation or it may be an event or phenomenon (Yin, 2003).

This research is concerned with the processes individuals and organisations go through in adopting and implementing technologically enabled innovations such as government electronic services. The unit of analysis here is the e-services development process itself. Much of the research concerned with innovation from the innovation process perspectives seeks to label and order identifiable stages in the process of innovation (Rogers 2003, 1995; Cooper and Zmud, 1990; Zaltman et al., 1973). The researcher chose to set this boundary to the unit of analysis (as opposed to studying the entire government agency as a case or having “subcases” embedded within it) for reasons of feasibility and to gain a holistic understanding of the investigated process.

When a program, phenomenon, group, organisation, or community is the unit of analysis, qualitative methods involve observations and description focused directly on that unit: The program, phenomenon, organisation, or community, not just the individual people, becomes the case study focus in those settings (Merriam, 1998).

#### **3.4.1.5 Selecting participants**

In the process of selecting interviewees, purposive sampling techniques was used due to the more limited nature of the research issue, and also because “social processes have a logic and coherence that random sampling can reduce to uninterpretable sawdust” (Miles & Huberman, 1994, p. 27). Such sampling involved the intentional selection, as opposed to random methods. The type of purposive sampling employed in this study is “reputational” and “stratification” sampling strategies. Creswell (1998) suggests that the researcher should select individuals who make positive contributions, display leadership qualities and reveal independent thinking. Creswell (1998) also notes, "for one-to-one interviewing, the researcher needs individuals who are not hesitant to speak and share ideas and needs to determine a setting in which this is possible, “the less articulate, shy interviewee may present the researcher with a challenge and less than adequate data" (p. 124).

In determining the quality of the participants, the author employed a reputational selection strategy, i.e. the instances were chosen on the recommendation of an “expert” or “key informant” (Goetz & LeCompte, 1984; Weimann, 1994). The author employed pilot interviews to inquire E-champions or E-government experts during the pilot interviews about the individuals who made positive contributions in the development of e-government initiatives. Individuals were selected on the basis of their professional capabilities and

achievements in previous current e-government initiatives and similar (ICT) driven projects, which were designed to improve government's services delivery efficiency and effectiveness. This process enabled the researcher to reduce the workload in the selection process and save much time, which would otherwise have been devoted to vetting a wide spectrum of candidates.

Once key participants were identified by the “experts” during the pilot interviews, the author employed a more informed strategy of selecting the participants. Initially through literature findings, table (3.6) identifies the distribution of the four categories in the interviews. The four cited categories, which reflect the participants responsible for the adoption and implementation of technological innovations within their respective departments. As people remember different things and things differently at times, speaking to people from various organisational levels was seen as one possibility to deal with contradictory statements (cf. Silverman, 2001, 88). This selection approach is labelled in qualitative research as "stratification," which means to choose layers or groups of individuals relevant to the research project. Gorman and Clayton (1990) state that in "undertaking research in organisational settings, there is a good reason to interview a full range of staff stratified within the organisation in order to ensure a representative range of view is heard" (p.127). As a consequence the staff was selected as : (1) E-Champions or Senior Managers who have the initial decision making unit in adopting the e-government initiatives (2) Middle Managers (E-Mangers) who instruct the staff to adopt and implement the e-government initiatives (3) E-government employees (E-Staff) who are responsible for technical aspects such as developing, programming and setting up the website and proper execution of all its functions to its final diffusion stage and finally, (4) System

Administrators staff, e-government web site operators who provide the resources and supervises the implementers staff in the adoption process.

<b>Positions</b>	<b>Number of Staff</b>
Senior Management (E-champions)	4
Middle Management (Project directors)	4
Technical Personnel (System Designers, Programmers)	12
CIO/ IT individuals (operators)	4

**Table (3-6):** *Participant categories*

Table (3-6) above provides an overview of the categories and number of participants. Initially, the researcher have predicted the number of informants to be a total of 24 interviewees in all of the four research's sites; making the interview subjects in the range of 6 participants in each organisation. Such a small sample is verifiable for conducting exploratory and descriptive qualitative study (Yin, 1993).

Furthermore, the researcher's selection criteria for the participates in this study was based on Rogers (2003, 1995), to assure that the researcher is asking the right respondents who are responsible for carrying out the e-services development process. The people chosen as respondents were expected to be involved in the following five stages: (1) Agenda-setting —learning about an innovation, (2) Matching —forming an opinion concerning an innovation, (3) Redefining and Restructuring —acting to engage in or reject an innovation, (4) Clarifying —implementing an innovation into practice, and (5) Routinising —either reinforcing the innovation decision or rejecting the innovation (*see* Chapter 2).

In determining the exact number and the type of categorisations for the informants, the researcher conducted a pilot interviews which have also help redefine the research questions, interview protocol and interview questions.

### **3.5 Data Management and Analysis**

According to Patton (1990: 371-372), the challenge of qualitative analysis is to ‘make sense of massive amounts of data, reduce the volume of information, identify significant patterns and construct a framework for communicating the essence of what the data reveal.’

Eisenhardt (1989) purported that qualitative data analysis is both the most difficult and the least codified part of the process.

Hence, the following sections are going to provide description of the activities related to the: 1) management of the data, and 2) analysis of the data as inspired by the work of Patton (1990), Eisenhardt (1989) and Miles & Huberman (1994).

#### **3.5.1. Data Management and Preparation for Analysis**

The data collected during the research field study have taken a number of forms: transcripts of interviews, documents, summaries/abstracts of documents, and researcher memos. The majority of data were transcribed in machine readable format (e.g., interviews were tape recorded and documents were scanned and then transcribed). Prior to formal analysis of the data, the researcher put in place several data management procedures to organise and stabilise the various types of data.

In order to facilitate the data management procedures the author used FolioViews software (Folio, 1994), a full-text database management software program. The software allowed the creation of several databases to store and manage the data collected. Folio Views has hypertext capabilities that allowed the researcher to link between various data instances. It also provided the ability to code and index the data. Integrating the various research activities and products (e.g., raw data, coding, codebook development, recording methodological decisions, reflective memos) as well as providing the basis for an "audit trail" (Guba, 1981, p. 87).

The primary source material were gathered from interviews, the researcher recorded all the interviews and then transcribed the tape of each interview. Although this has been a time consuming process, the richness of the interviews warrants such an effort. For research such as undertaken in this study, Lofland and Lofland (1995, p. 88) suggest that "it is generally not necessary for you to transcribe every word, exclamation, or pause that occurs in an interview .... You do not need a verbatim transcription of everything the interviewee said ... " Hence, the primary rule for transcription in this study was: transcribe and/or summarise the portions of the interview that are relevant to the research. The rule allowed the researcher flexibility in transcribing verbatim or summarising sections of the interview. During the interviewees' description of the e-services development process, verbatim transcription was essential to get the interviewees exact words related to their experiences. The general rule allowed the researcher to determine the level of effort in the transcription based on a sense of what data would be useful in subsequent analysis.

Another source material was gathered from various archival repositories which consisted of documentations such as: reports, meeting agendas and minutes, correspondence, and standardised forms used by various individuals. To the extent possible, the researcher made copies (electronic or paper) of relevant documents for his research files. When source material was scanned in machine-readable form, the entire document was stored in FolioViews™. In cases where copying the material were not possible, the researcher summarised salient points from the documents. The researcher created document inventory records and log them in a Folio Views database. These records contained a unique document identifier, date of the document, archival source, author of document, a short summary, and an indication whether the research file contained a copy of the document.

Field notes from the observations of the e-government implementers staff meetings was transcribed in machine-readable form and contained descriptions of the meeting, activities and processes, participants, and observer comments. The researcher created another Folio Views database for these field notes. Other documents and records from the meetings (e.g., attendance lists, agendas) were also inventoried in a similar manner to the primary source and documentary evidence as described above.

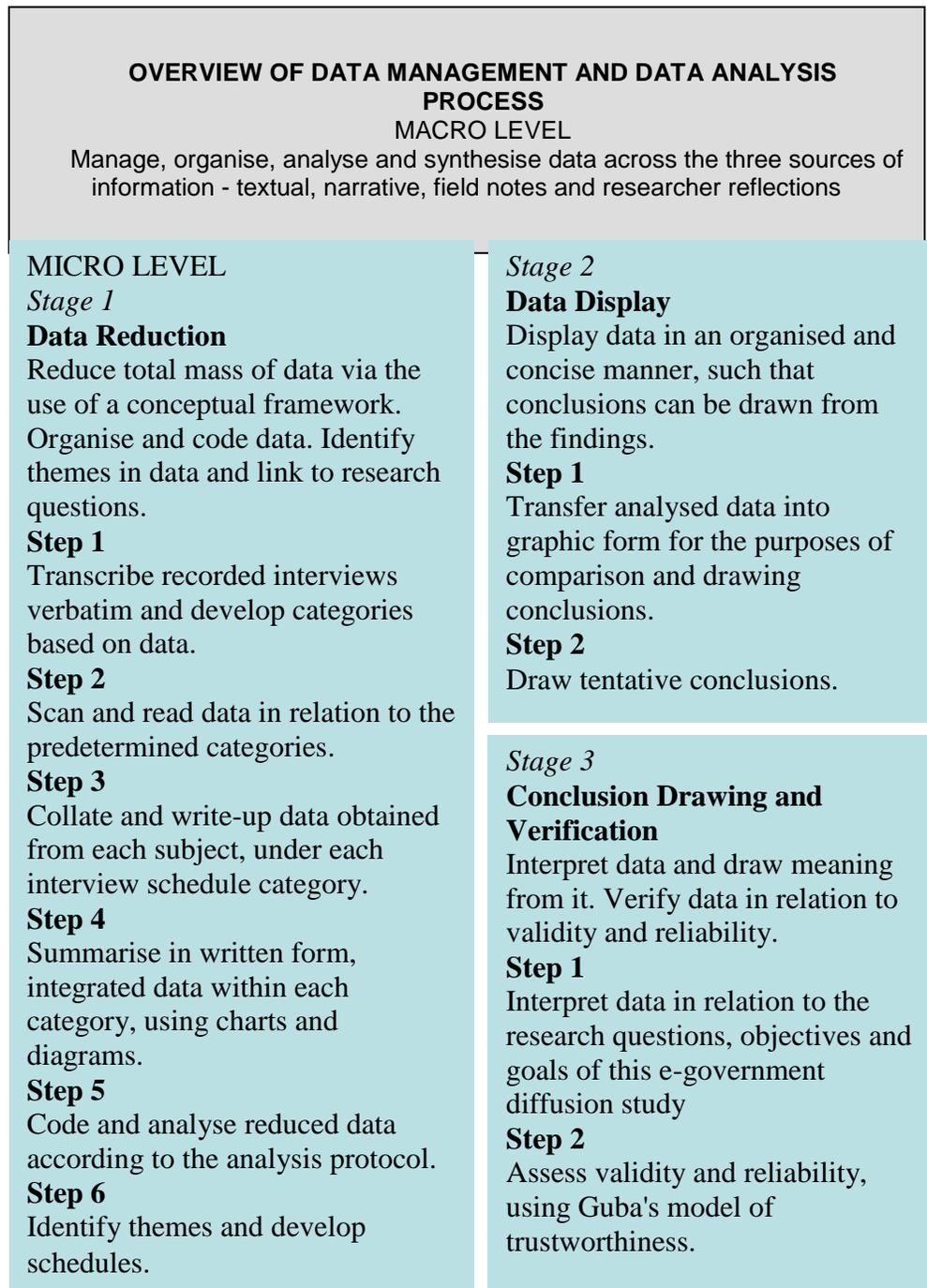
Finally, the researcher identified a range of published accounts of e-government and its adoption and implementation efforts in Dubai public agencies (e.g, periodical publications by the targeted agencies as well as monthly news letters by the Dubai e-government office, alongside other documents such regional e-government conferences proceedings to be collected during the data collection phase). These documents included articles, books, and

technical reports in both paper and electronic formats. The researcher intends to manage these using conventional bibliographic control procedures (i.e., citation).

### 3.5.2. Data Analysis

Analysing data is the heart of building theory from case studies, but it is both the most difficult and the least codified part of the process (Eisenhardt, 1989; Miles & Huberman, 1994). Qualitative studies tend to produce large amounts of data that are not readily amenable to mechanical manipulation, analysis, and data reduction (Yin, 1994). Therefore, the basic goal of qualitative data analysis is understanding, i.e., the search for coherence and order (Kaplan & Maxwell, 1994).

Miles and Huberman(1984) suggested analytic techniques such as rearranging the arrays, placing the evidence in a matrix of categories, creating flowcharts or data displays, tabulating the frequency of different events, using means, variances and cross tabulations to examine the relationships between variables, and other such techniques to facilitate analysis. Hence, qualitative modes of data analysis provide ways of discerning, examining, comparing and contrasting, and interpreting meaningful patterns or themes. Meaningfulness is determined by the particular goals and objectives of the research or study at hand: the same data can be analysed and synthesised from multiple angles depending on the particular research or evaluation questions being addressed. Miles and Huberman (1994) state that data analysis consists of three concurrent flows of activity: *data reduction, data display* and *conclusion drawing/ verification*.



**Figure (3-2):** Stages of Research's Data Analysis based on Miles and Huberman's (1994) three concurrent flows of activity.

Miles and Huberman (1994) recommend that scholars develop a visual model to display the process of data analysis. According to Miles and Huberman (1994), a researcher(s) has to understand the analysis process to develop a visual model. Other recommendations from

Miles and Huberman are for: write-ups, contact summary sheets, codes and coding, pattern coding, and memoing (p. 50-76). Notably, the different steps involved in qualitative analysis outlined in figure (3-2) also overlap in time. Part of what distinguishes qualitative analysis is a loop-like pattern of multiple rounds of revisiting the data as additional questions emerge, new connections are unearthed, and more complex formulations develop along with a deepening understanding of the material. Qualitative analysis is fundamentally an *iterative* set of processes, the author has adhered to the previous guidance of Miles and Huberman (1994) in his analysis process. More details of the qualitative data analysis of this study will be explained and demonstrate throughout the remaining chapters through Data Display, Cross Case Analysis and drawing of conclusions.

### **3.6 Approaches to verification and standards of quality**

Kirk and Miller (1986) state that issues of validity and reliability are built into the design of the study in qualitative research, rather than being treated as issues of measurement. Validity and reliability are applicable to all research, although qualitative researchers use different procedures to quantitative researchers to establish these notions. In qualitative research, the concepts of validity and reliability are often included under credibility, transferability, dependability, and conformability (Guba and Lincoln, 1989). A number of strategies are suggested to assist researchers in achieving these criteria shown in table (3-7) below.

Criteria:	Case Study Tactics:	Research Phase:
Conformability	Triangulation Establish chain of evidence Review of finding by domain experts	Data collection Data collection Data analysis
Credibility	Triangulation Member check and peer debriefing Use of pattern-matching	Data collection Data analysis Data analysis
Transferability	Use of replication logic in multiple-case study design	Design
Dependability	Use of case design protocol Use of case study database	Data collection Data analysis

**Table (3-7): CASE STUDY QUALITY CONTROLS as suggested by Lincoln and Guba (1989)**

The following paragraphs explicate how strategies were used to meet these four criteria in this study.

The first criterion is *credibility* where the researcher had to examine if he has captured valid, accurate and complete data in regards to what he saw and heard; that is, his understanding of the perspective of the people studied and the meaning the participants attached to their words and actions. Among the strategies suggested by Lincoln and Guba (1989), this study adopted *data triangulation*, *member check* and *peer debriefing* to ensure this criterion had been met.

The purpose of *data triangulation* is directed at judging the accuracy of data. Multiple data sources, such as interview transcripts and document reviews including organisations' publications, research articles, conference papers, and internet resources, were compared to confirm the emerging findings. In addition, interview transcripts and document reviews were brought back to the persons who participated or generated them to see if the interpretation was correct and the results were plausible. In the final step to ensure data

credibility, the research emailed the interpretation and the results back to the participants for checking.

*Member checking*, was used on numerous occasions and involved telephoning, e-mailing and re-interviewing respondents to verify the accuracy and overall credibility of facts and observations as data collection segued into data analysis. The researcher discussed his preliminary findings with various individuals involved in e-government development (i.e., adoption and implementation) and his unfolding understanding (i.e., construction) of the e-government development process. These informal conversations occurred primarily with practitioners from the four major public organisations. A second, more formal, member check involved individuals who had been key participants throughout most of e-government development process (i.e. e-champions). These participants reviewed a draft of the historical reconstruction presented in the study's analysis. Comments and clarifications from the review assisted the researcher in refining and improving the quality of that historical account. In *peer debriefing*, the author consistently shared the emerging findings with dissertation advisors and explained to them his thinking process.

The second criterion is *dependability* which refers to the stability of the findings over time while the third criterion *conformability* refers to the internal coherence of the data in relation to the findings, interpretations, and recommendations (Denzin & Lincoln, 1994). An audit trail was used to accomplish dependability and conformability simultaneously (Lincoln & Guba, 1985; Padgett, 1998). The author kept a reflexive journal or a memo on a daily basis at the stages of data collection and data analysis. The journal consisted of: (1) the daily schedule and logistics of the study, (2) a personal diary that provides

opportunities for reflection on what is happening in terms of my own values, interests, and biases, and (3) a methodological log with methodological decisions and rationale. The journal documentations or memos were the basis for internal organisational audit trails which enabled the department managers understudy to act as external reviewers in order to examine the processes by which the researcher collected and analysed the data. This procedure provided accountability for how the research will be carried out. Additionally, to support conformability, the respondents were provided with process evaluation forms to be filled out at the end of the meetings, the results of each meeting was captured in summary form, and the researcher has also keep notes as the meetings progressed.

The reader of the report helps to determine levels of *transferability*, the final element of trustworthiness. Transferability concerns the ability of the study results to be applied to additional contexts (Erlandson et al., 1993). This was accomplished through a thick report (Zeller, 1987). This thick description in the case reports offered an entry for the reader into the research experience and an appreciation for information grounded in the context (Bouma & Atkinson, 1995; Lincoln & Guba, 1985; Rodwell, 1998). While transferability is not the primary goal in a context-dependent inquiry, it is up to the reader to determine the value and usefulness of the report.

### 3.7 Conclusion and Study's Implications

This chapter detailed the approach to the qualitative inquiry and methodology upon which this study was based. At this stage of the PhD study, detailing and clarifying the primary components of the study, including the paradigm, research strategy, study design, and methods and strategies for data collection, management, analysis, reliability and validity of the findings was shown as a natural winnowing down and refinement of the investigative scope of this study. The researcher used both a descriptive and exploratory approach in the study to address the complexity of e-government initiatives' development process.

In response to this study questions and objectives, qualitative case study approach was selected to describe the organisational adoption and implementation stages/activities as well as to identify technological, organisational and environmental determinants for developing an e-government initiatives' diffusion model for Dubai's civil agencies. Four e-services departments were selected in order to trace the e-government initiatives development processes. Twenty four individuals with the appropriate experience and know-how were selected from within these sites to participate in the face-to-face interviews.

Examination of documentary evidence was also utilised in order to gain in-depth detail information about the diffusion process. The findings of documentary evidence were necessary to build the foundation for developing the historical reconstruction of e-government initiatives development. This historical reconstruction was critical in laying the groundwork for a holistic understanding of e-government initiatives and the study's findings.

A pilot interview have been utilised at each of the research sites to refine the questions and provide insights to the e-services development process of that particular organisation. The results of the findings of this study are expected to reshape a literature framework and furthermore produce explanatory recommendation or hypotheses that could guide future studies and deployment processes in similar contexts.

To sum up, the expected results of this research project are: the conceptual conclusion, derived from the synthesis of the case studies and the conceptual framework, will be the basis to produce managerial policy implications to facilitate current and future ICT enabled initiatives and contribution to the theory.

## **CHAPTER IV PRESENTATION OF INDIVIDUAL CASES**

### **4.1 Introduction**

As part of the analysis' scheme for this study, this chapter is set to present the information gathered during the data collection phase of this research in an effort to provide accurate and thick descriptions to the researcher's main inquiry into understanding the e-services' initiation and implementation processes in Dubai public organisations. The general aim of this study was to inform theory and improve e-services' deployment practice. The findings that are extrapolated from the analysis of the four case studies are to be classified and mapped onto a tentative e-government initiatives' adoption and implementation process model and presented in terms of strategies, barriers and drivers.

In this chapter, the data is presented in two main sections. The first section describes participants' profiles, which addresses the answer to Part I of the interview protocol. The second section presents the participants perspective in addressing the main categories, which were identified during the data analysis process. The presentations of data concerning the four case studies were constructed in a question and answer format suggested by Yin (2003). Yin (2003) posits that the question and answer format is often superior to other case study reporting formats when multiple cases are reported within a single report. Patton (2002) identifies the concept of a thick description, where as much detail as possible is presented in order to portray participants' responses most accurately. The case study reports combine Yin's (2003) format with Patton's (2002) reporting technique.

It is important to note that this chapter does not posit to be a complete and exhaustive presentation of all facets of Dubai's public organisations e-service implementation efforts, nor all the efforts of the individual cases, since it would be difficult for all these details to be captured adequately in one thesis effort. Rather this chapter's primary objective is to provide the details necessary to reveal the conclusions drawn by the researcher presented in later chapters of this thesis. Participants were asked to chart their organisation's e-service deployment process and narrate their experiences in more of a conversation-style than formal questioning (Marshall & Rossman, 1999).

#### **4.1.1 Participants and organisations' coding**

Participation in the data collection stage of this study was voluntary and confidential, with involvement being anonymous. Interviewee's anonymity was guaranteed in the request to participate (see Appendix A) that was sent to each selected potential participant.

In reporting the case studies, the researcher identifies each participant with a code that indicates the case and participant. These codes are used in lieu of the participants' actual names or pseudonyms.

That commitment was reaffirmed to participants who expressed concern about the confidentiality of their identities. To ensure this anonymity, the codes presented in Table (4-1) are used for all participants and cases.

	Case One	Case Two	Case Three	Case Four
Participants' Job titles				
Initiator / E-Champion	C1EC	C2EC	C3EC	C4EC
Deployment Team				
Project Leader	C1PL	C2PL	C3PL	C4PL
System Designer	C1SD	X	X	C4SD
System Analyst	C1SA	C2SA	C3SA	X
System Programmer	C1SP	X	C3SP	C4SP
Database Officer	X	C2DO	X	X
I.T Coordinator	X	C2ITC	X	X
After Launch Team				
System Tester	X	X	C3ST	X
Marketing Officer	X	C2MO	C3MO	C4MO
Quality Assurance Officer	C1QAO	X	X	C4QAO

**Table 4-1: Participants' Codes (source: Author)**

**4.1.2 Description and illustration of participants' data**

Twenty-four participants (100%) identified as e-government workers; ten (41.7%) were identified as females (Figure 4-4); four (16.7%) were senior managers who claimed to have final decision on initiating and approving the launch and execution of e-services initiatives. Nine of the participants (36%) were information technology personnel. Four individuals (16%) occupied senior management positions, while six (24%) were from middle management. Another SIX (24%) were functional department staff. 16 participants (66.7%) had direct involvement on carrying out the e-services such as programming, designing and analyzing the projects (Figure 4-

1). The mean duration of participants' involvement in e-government was 6.4 years (range 1.8–8.2; SD 4.6); all participants described their internet, computer skills and computer usage in daily activities as very high (Figure 4-5).

Participants' mean age was 31 years (range 25–37; SD 4.5). Approximately 84% of participants identified themselves between the ages of 25 to 50 years old. Eight percent were below the age of 25, and another 8% were over the age of 50 (Figure 4-6).

Eighty four percent of the participants hold an undergraduate degree or higher. Eight (33.3%) had a postgraduate degree/diploma, twelve (50%) had an undergraduate degree, two (8.3%) had a national diploma or equivalent, two (8.3%) had qualifications equivalent to GCSEs/O-levels (Figure 4-2).

The four organisations under study represent the high fliers of government practitioners in the field of electronic service delivery, with three of the organisations employing over 10,000 people and one just under 8,000. The organisations understudy have won many governmental and international awards including 'Best Application of e-Government Award' from the United Nations in 2006 on their e-services' implementation practices as well as numerous local awards.

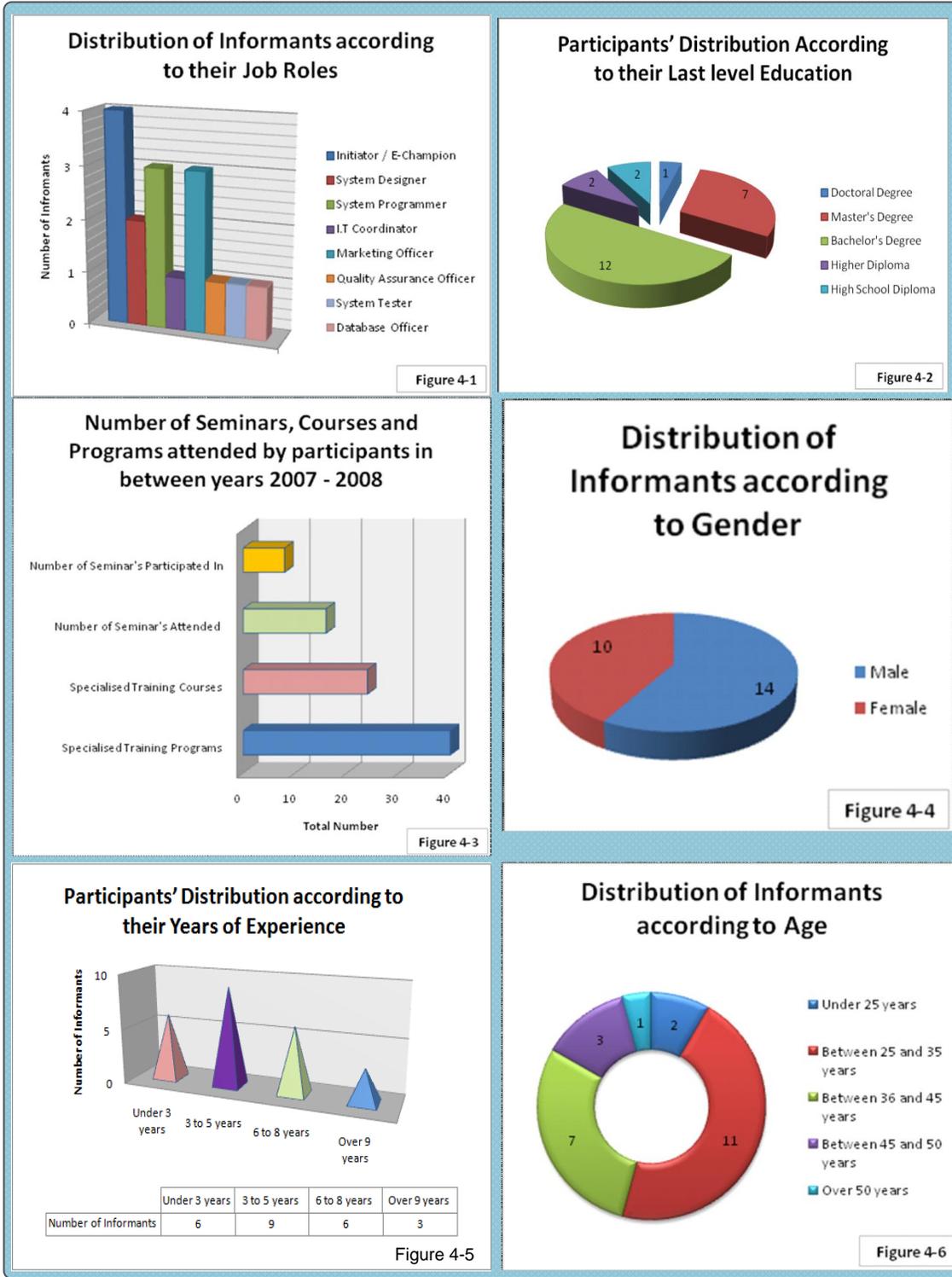


Figure 4-1 Distribution of Informants according to their Job Roles ; Figure 4-2 Participants' Distribution According to their Last level Education ; Figure 4-3 Number of Seminars, Courses and Programs attended by participants in between years 2007 – 2008 ; Figure 4-4 Distribution of Informants according to Gender ; Figure 4-5 Distribution of Informants according to Age ; Figure 4-6 Participants' Distribution according to their Years of Experience

### **4.1.3 Background about the Emirate of Dubai – The e-government initiative story**

The launch of Dubai e-Government initiative was in April 2000, its genesis was through a mandate from Dubai's economic development mastermind and ruler, Sheikh Mohamed Bin Rashid Al-Maktoom (Al-Shaer, 2003; Al Bastaki and Geray 2005). Passing several phases; beginning with the formulation of a strategy, the assessment of needs and requirements as well as of existing services and infrastructure. The launch of basic e-government services, followed by the unveiling of the e-government portal at: [www.dubai.ae](http://www.dubai.ae) , eighteen months later, on the 29<sup>th</sup> of October 2001 (Kamli, 2004).

By August 2004, there were about (1,444) online services. Dubai started the mobile government initiative towards the end of 2005, however, transactions have not yet been started through the mobile phones until early 2006 (UN ESCWA, 2005). By the end of the 2005, a couple of new targets were set by the ruler of Dubai, Sheikh Mohammed; one target was set to deliver seventy per cent of all government services in Dubai through new innovative means by the end of 2005, and to raise that target up to ninety per cent by the end of 2007. Another target was to ensure all customers to government transactions would reach a level up to fifty per cent of usage rate (Lootah, 2005).

By late 2004, more than (1,600) of total of (2,300) services have been migrated to on-line channels resulting in an eighty one per cent electronic transformation ratio (figure 4.7, below). The transactional on-line services offered varying levels of electronic maturity, some only offered information about the service; others offered downloads of electronic form; while the remaining offered a complete process of on-line execution, excluding or including electronic payment of fees (DEG-e4all, 2011).

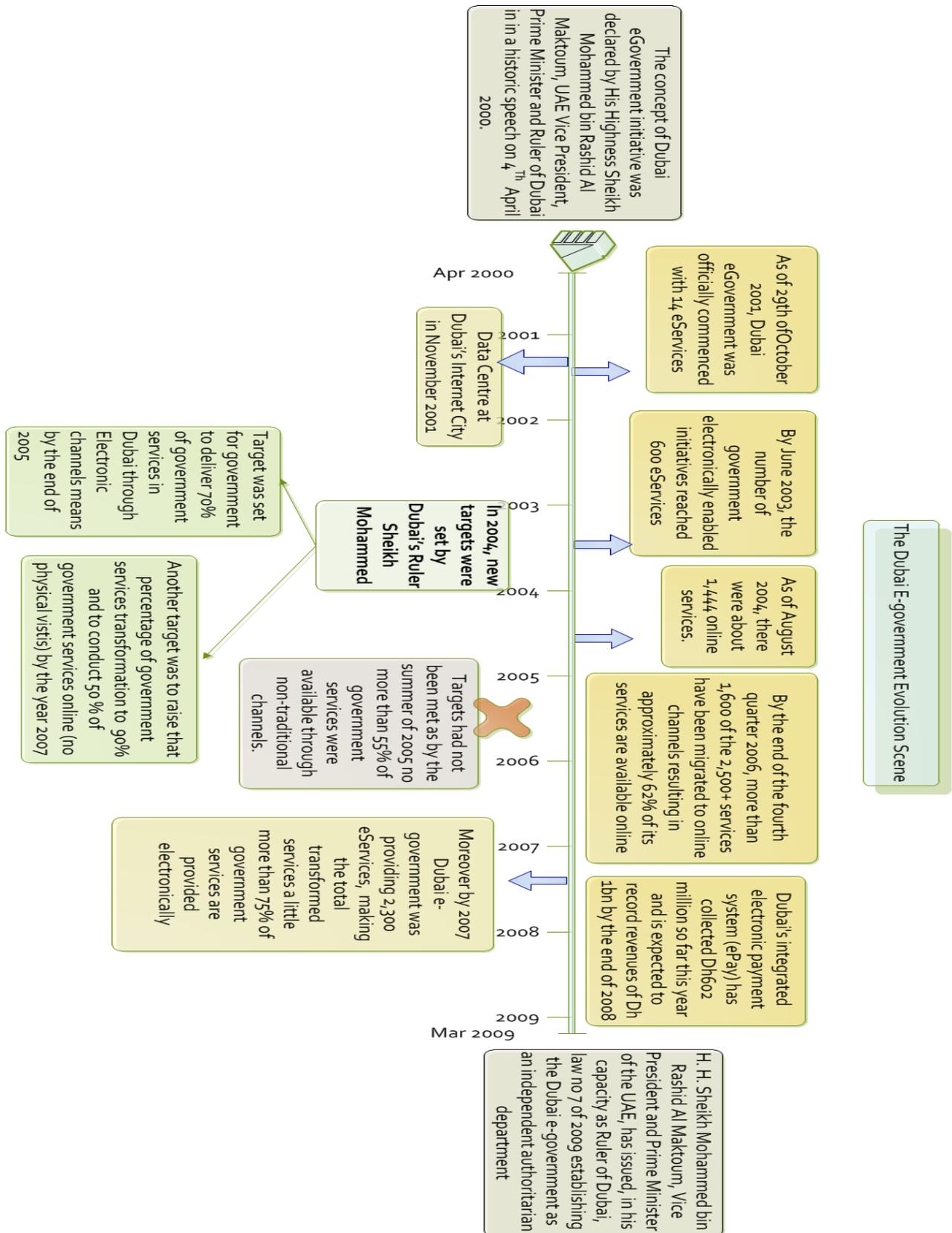


Figure (4.7): The e-government storyline in Dubai

By the year (2007), more than seventy five per cent of government services were provided electronically, with approximately 10 synergistic services such as: a unified e-government payment portal for all Dubai services branded as e-Pay; which resulted in more than AED seventy million cost savings for the Government of Dubai. (Sethi and Sethi, 2009). Dubai e-government is currently in the 5th and final stage of e-Government (seamless stage) based on the United Nations evaluation maturity ranking (United Nations E-Government Survey, 2010a). Dubai e-government are already handling electronic financial transactions as part of its e-services delivery. (DEG-e4all, 2011).

#### **4.1.4 Dubai Information and Communication Sector**

The United Arab Emirates is anticipated to spend (45.8) billion American dollars by the year 2012 in the information and communication technology sector. The country is positioned 24th in the world and first among Arab countries in its use of ICT to enhance competitiveness and development (World Economic Forum Global Information Technology Report, 2010-2011)

According to another report “Measuring the Information Society 2010” the UAE was ranked fourth in the world after Japan, the Republic of Korea and Hong Kong (China) in terms of fibre-optic penetration, with (30.8) per cent of households and businesses connected to fibre-optic networks.

Pons (2004) observed that the United Arab Emirates (UAE) has the highest rate of Internet usage in the Arab world. Kostopoulos (2003) reported that the UAE, and in particular the emirate of Dubai, stand out as undisputed leaders in e-government. He further states that Dubai’s e-government initiatives are considered among the most citizen-centric, serving as an example not only in the Gulf region but worldwide (Kostopoulos, 2003). Awan (2003) has studied the major

government websites of GCC (Gulf Cooperation Council) countries and ranked the United Arab Emirates (UAE) government websites the highest (Awan, 2003).

#### **4.1.5 Dubai's Public Sector and Workforce**

There are three levels of governments in the United Arab Emirates, the federal government which oversees the country strategy, the administrative government which rules each emirate and finally the municipalities within each emirate (Malhotra et al., 2008). The last tier consists of the traditional government departments, such as the Dubai Municipality and the eighteen authorities involved in the day-to-day running of Dubai such as the Dubai police, the electricity and water authority, roads and transport authority (Hvidt, 2009).

With an area no more than (4,114) square kilometres equivalent to only (4.9) per cent of total size of the UAE, (Ramos, 2010). Non-nationals dominate the Dubai's labour market (IMF, 2005). Dubai is an extreme example of globalisation, as only a small fraction of its population is nationals, and this is a matter of a global workforce serving a global population (IMF, 2005). Total population has doubled in a decade mostly through expatriate labour migration Emirati population is growing rapidly, 50% of the Emiratis are below the age of 25 (Naithani, 2010).

## 4.2 Case One

The public organisation in case one was established on the 1<sup>st</sup> of June, in the year 1956. At present, it employs a labour force in excess of 15,000, working within the city and suburbs of Dubai. The Department of e-Services understudy was established in October, 2001 in conjunction with Dubai's e-government transformation vision. With approximately 150 employees, the department's key purpose is to provide the latest technological support for the whole organisation. Currently, the Department of e-Services provides 172 services through several channels such as: the Intranet, Internet, Kiosks, IVR (Interactive voice response), and mobile messaging to ensure swiftness of services delivery and convenience for its internal and external clients.

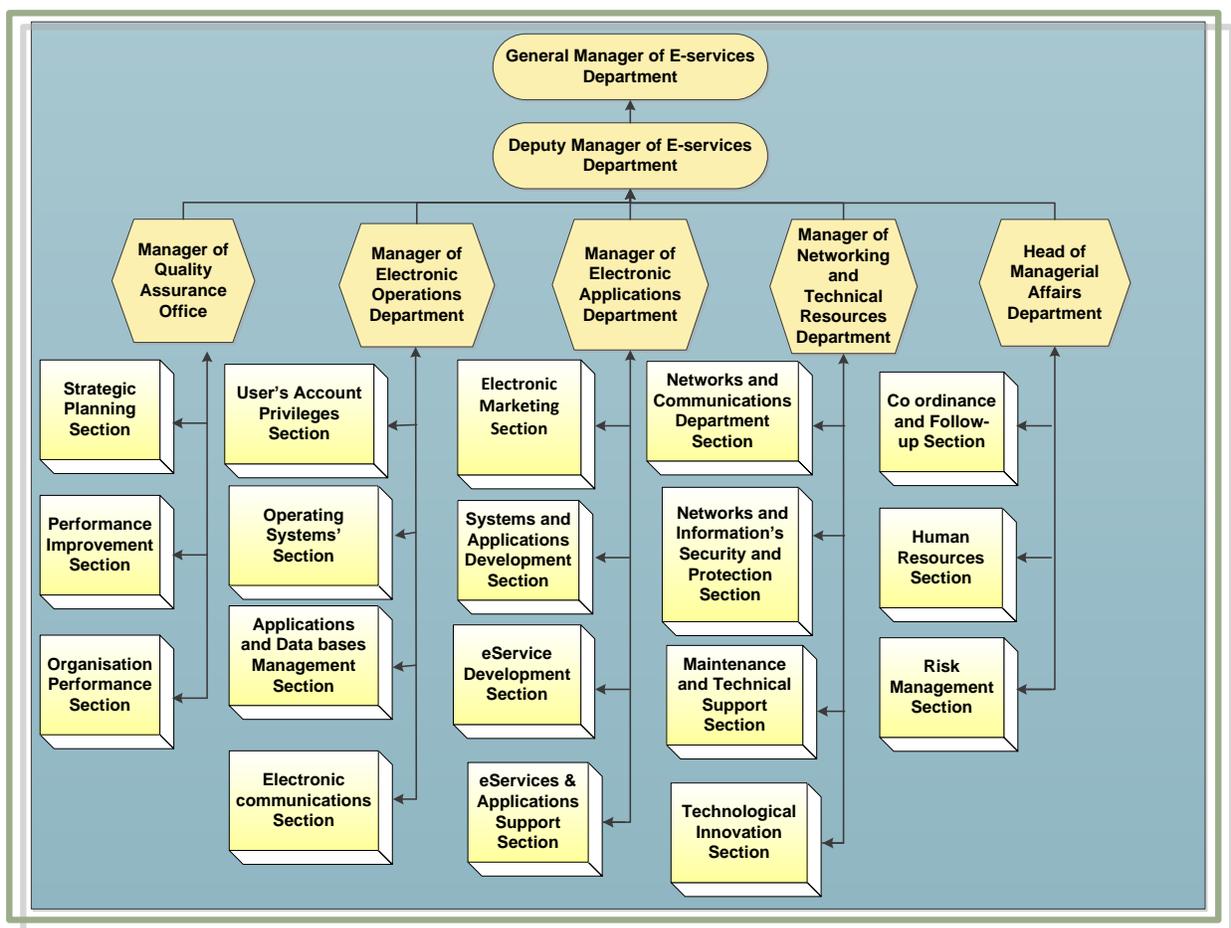


Figure (4-8): Case One Organisation's Chart

To understand Case one internal innovation journey, interviews were conducted with six informants: the organisation's e-champion, the head of the IT division, three technical employees directly involved with programming and designing the organisation's e-service projects as well as a quality assurance officer.

#### **4.2.1 Stages and sub-stages of adopting and implementing public e-service in Case One**

In the following section, the author will attempt to provide a detailed account of the e-services adoption and implementation activities. The aim of this section is to provide answers to the **RQ<sub>1</sub>**: *How are e-services adopted and implemented in Dubai public organisation?*

##### **4.2.1.1 Phase One Planning**

At the outset of the interview, participants were asked to provide their experience on "How were the e-services initiated in their organisation?" Organisation's E-champion, **CIEC**, identifies the initiation practices as the 'Planning Stage'. According to him, *"the transformation starts with the information gathering part of the process. This activity is accomplished by scanning our surrounding environment for information. We conduct site visits to different departments of our organisation to understand their needs and get familiar with the nature of services they provide."*

Subsequently, the department in case one will form an e-services' evaluation team to scrutinise the services for electronic transformation feasibility. The department's manager, **C1PL** notes *"a committee or work group will be formed from within our department with a goal of gaining*

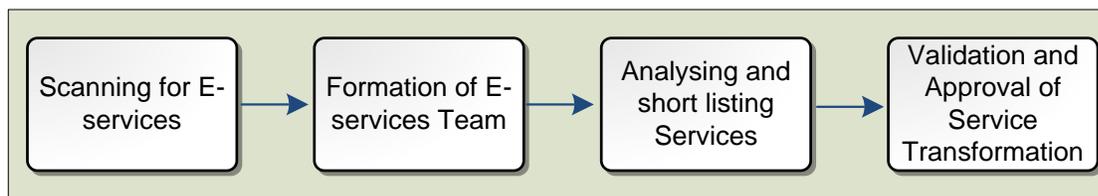
*executive understanding and commitment before undertaking a project.” She also adds in her comments on the team role specifics “Risks, benefits and costs are hence appraised in a feasibility report to determine priorities and validate resources’ commitment.” She further sheds some highlights on her role at this stage. “The I.T. department manager has to make sure that the project has a designated e-Services champion and pinpoint the necessary technical, operation and economic deliverables to justify the project needs in order to continue to gain adequate executive support during the project’s life cycle”*

According to the respondents, the next step in the planning stage entails making the organisational preparations that are necessary to identify the indicators of potentially online-capable services. C1EC notes that potential ‘Customer Usage’ and ‘Return of Investment’ as important indicators for selecting services for transformation. He explains, *“As a team, we will choose a service depending on how its prospective usage and economic turnout.”* He points out that it is necessary for the potential e-service to possess a certain level of attraction and demand. C1EC adds, *“Our organisation, just like the others in Dubai (government agencies). We are putting our efforts to be financially independent by generating our own sources of income. Hence, decreasing a service transaction cost and increasing its’ revenue are some of the key features we seek in a service.”*

In the final step of the planning phase the manager must provide his consent prior to the project launch. As the department’s general manager, C1EC explains his role in this process *“Before an initiative takes off, I need to carefully study the project’s proposal documentation. I need to determine the feasibility of implementing a project. The available resources either human or*

*financial have to be met, deadlines have to be realistic. My responsibilities take place before, during and after project implementation.” He adds further clarifications to his statement, “Before the project is initiated, my role is to explain the concept, the model and create awareness. I need to close the gap between the (organisation’s) vision and the implementation team realisation; during the project, my role is needed to manage change and support the project; and after the project, my role will be needed to pledge the required flexibility and adaptability of the initiative.”*

The enquiry so far, has revealed that the planning stage consists of four main steps:



**Figure (4-9): Steps Concerning the Planning stage in Case One**

#### **4.2.1.2 Phase Two: The Implementation phase**

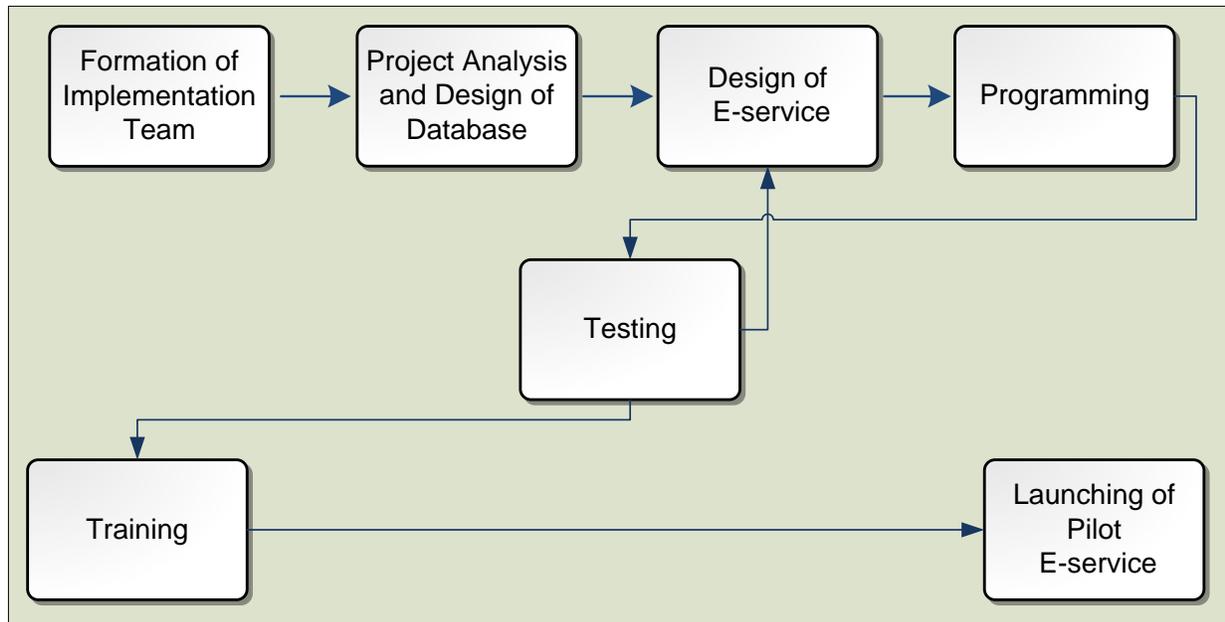
The next major activity is best described by participants as the ‘Implementation phase’. Once the plans are in place, e-Services can be implemented. **CIEC** describes how a process is instigated at this stage. *“After the proposed services are identified, listed, analysed, filtered and approved we begin the implementation stage. First, we brief the concerned departments that we are on the verge of transforming their potentially online-capable services. After that, we will form a team of designers, developers, analysts and programmers in case we decide to undertake the project internally through our own staff. We would also assign a coordinator to be working in synchronisation with the associated department.”*

Next action is the 'Project Analysis and Database Design'. Several activities like procurement of hardware, development of application software, site preparation, establishment of communication infrastructure, preparation of data, training of personnel and change of services' procedures would need to be carefully evaluated at this part of the process. According to the system analyst, **CISA**, he comments "*Depending on the nature of e-service, there might also be major changes in the intranet: new servers such as database and application servers, new workstations and new network components like switches, routers, hubs may be added. The identification of such requirements is critical to the agency to guarantee the efficiency of the workflows until a level of detail is reached that can be directly transferred to the technical IT solution.*"

After identifying the critical requirements for the e-services project, system designers are requested to produce their own visualisation of the e-services projects. **C1SD** denotes "*As a system designer I carry the task of visualising the outlines of the service web pages. First, I'm required to automate the administrative processes of the e-service, and then provide all the necessary tools on the web page that will enable the required user interaction. Next, my task will be to design the databases required to store and access the service related information. Finally, I will produce a report with all the fields and a design of all the web pages for our department's programmers.*"

The next interview is carried with one of the department's programmers as a logical step in understanding the chain of events. **C1SP** explains his role "*My foremost task is to examine the web site design and select the most suitable programming language according to the web page*

requirements such as graphics, navigational tools, search fields, the number of systems to integrate with.” He continues explaining his tasks, “The webpage is then activated and put on a server and the associated department will work on testing it for a couple of months and that’s after our internal testing that is done by the programmers for any bugs or missing functionalities.”



**Figure (4-10): The activities of the implementation phase**

CIQAO sheds details on the next part of the implementation stage, ‘the testing phase’. The information depicted during the interviews indicates that the testing procedure is an iterative process that depends on the results of the testing activity. He notes, “*The testing phase involves producing prototypes consisting of hardware and software components required for implementing e-services pilot schemes. This process enables the department we are supplying with the e-service to investigate the performance of the new e-service before committing to full-scale implementation.*” He adds, “*The results of the trials and tests enable our department and the client department to assess whether the e-service meets its original objectives in terms of*

*expected and required performance and function, whilst at the same time highlighting those areas where further re-design or refinement are necessary or would be of benefit.”*

After the department has completed the testing part of the process, informants reveal that the ‘user training’ comes next. The **C IPL** notes that *“We conduct internal training at our computer training centre for all the potential e-service operators.”* She explains the benefit of this phase, *“The information and skills gained at these sessions in conjunction with seminars, workshops are essential in order to provide necessary operation skills and to eventually reap the benefits of the new technology.”*

The respondents reveal that ‘the internal launching of the pilot e-service’ concludes the implementation stage. The department in case one utilises the feedback collected in the pilot testing to enable the product development team in refining their plans and complete the build up of the e-service. **C ISD** states *“The full functionality undergoes a pre-launch testing with users through a technique known as usability testing. Our department at this stage will publish the e-service internally through our intranet. Users will be able to experience the pilot e-services functions on their own computers to mimic their real work situations.”* He concludes his statement by explaining the purpose of such procedure, *“The internal launching procedure may identify the need to implement minor changes in the content, structure, presentation and navigational tools, to major hitches in the e-service such as critical programming bugs or hardware insufficiency that can make or break the service.”*

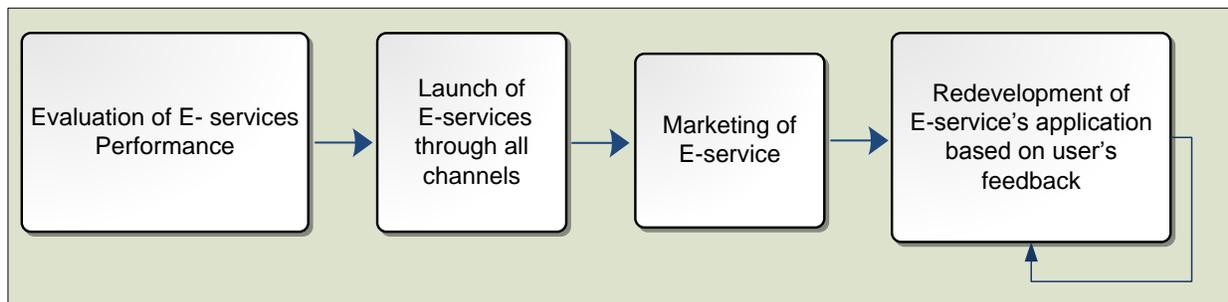
#### 4.2.1.3 Phase Three : Evaluation, launch & marketing of Service

According to the informants in case one, the final e-service deployment strategy is the 'evaluation and marketing' stage. The informants also reveal that the first step in the final stage is the 'performance evaluation' procedure. **C1QAO** states, "*Before the service is set for operational launching, we perform several benchmarking and performance evaluation methods.*" **C1QAO** discusses that as a part of his duties he is required to evaluate the performance of the networks, servers, websites functionality and usability before the operational level of the E-service can commence.

Following the evaluation and benchmarking activity, department one next procedure is to 'launching the e-services through the desired electronic channels'. **C1SA** notes, "*We move the project to a different server were it could be launched online. We also produce a service user's guide manual for all our clients and also provide logins access to operators and key users and developers.*" **C1SA** adds, "*Another aspect of this stage is the choice of the delivery channels which the services are proposed to be launched through. The options of delivery channels are: Business Service Centres, Private Internet browsing centres, Kiosks, Departmental outlets and obviously access from home PCs.*"

The next activity in the deployment process is 'Marketing' of the e-service simultaneously with the launch. During this procedure, the public agency starts to inform the public in detail about the e-service to promote its use. **C1QAO** mentions specific marketing practices adopted by his organisation, "*Press releases, participations at trade shows and exhibitions are the main marketing techniques we utilise to raise interest of media and public in our new electronic*

services.” He also mentions more aggressive marketing strategies, “*We also produce posters and brochures and display them in shopping outlets and on street-lights’ signs. We send SMS advertisements, informational targeted audiences’ e-mails, produce and distribute our own e-service themed screen savers, purchase advertisements contents on websites banners and on ATMs around the city.*” Additionally **C1QAO** talks about some ‘pull’ enticing marketing strategies used by his department, “*We also put in order competitions with valuable prizes to educate the general audience about our services and we produce gift items for our departments’ visitors as well as informational items stored in CDs. The focus is to persuade the public about the advantages that the use of the new service will provide them personally.*”



**Figure (4-11): Key procedures in the ‘Evaluation and Marketing stage’ in case one**

The ‘Redevelopment of e-services’ brings the deployment of e-services in case one to a conclusion. However, the data deduced from the interviews indicate that the redevelopment phase, similar to the testing phase, is an iterative process (figure 4-11, above). **C1QAO** depicts that the ‘redevelopment of e-services’ as a vital procedure for e-services’ continuity. He explains, “*Due to our commitment to adopt international standards such as the ISO and some local performance measurement schemes such as GeSS (Government eServices Statistics System) and RADAR, we have been committed to continually review our services and obtain feedbacks from our customers and act upon*

*the suggestions we receive.” He adds, “Hence the contents and design of the webpage of the e-service, the electronic payment functionality and security and many other tools have been constantly reviewed and improved to suit our customer needs.” He concludes, “It is the continuity we are seeking. By that, I mean the continuous development and use of our service. We have been able to achieve 99% of electronic services’ transformation in our organisation. Our next goal is continuity.”*

#### **4.2.2 Drivers and Enablers in Case One**

In this section, the researcher attempts to identify certain facilitators and drivers that affect the deployment process in order to achieve a better understanding of the influential elements during the services’ transformation procedure. Most of these factors or drivers were identified through semi-structured interviews.

Several participants commented on their department ‘adopting abundant e-services measurement and evaluation techniques’. Organisation’s E-champion (CIEC) responds in regard to this topic by indicating that *“Our e-services are constantly evaluated and upgraded, but to be able to achieve efficient reforms we use several performance measurement systems.”* CIEC provides more details, *“The performance measurement system used by our department includes the customer satisfaction survey as provided by Dubai e-government office, we have also adopted a new internal assessment appraisal procedure called the Secret Shopper. This assessment technique entails an assigned employee to provide his feedback on one of our services in a formal report from.”*

Department and projects Leader in Case One (**C1PL**) offers her explanation on how the monitoring of e-service is a vital strategic procedure *“Our department regularly evaluates the progress and effectiveness of e-services to determine whether stated goals and objectives are being met on schedule .The transaction workflows monitoring section delivers reports on the rate of completed transactions as well as cases of workflow or load blockages, and investigates the reasons behind such electronic service provision delays. Recommendations for the enhancement of the system are submitted to the higher management to improve the network performance.”*

The second strategic scheme identified by the research participants is the importance of having an ‘explicit vision’ for the civil agencies and the importance of having a ‘strong leadership’ to help communicate this vision of e-government to the employees. This point is highlighted in **CIEC** statement *“Our organisation’s leaders are building schemes through the strategic planning department to aid us in laying down the plans to achieve our objectives.”* The department leader emphasises the importance of communicating the vision of e-government to the employees involved in the implementation process. **C1PL** states, *“Without communicating the vision to the employees it is difficult to convince them to change the way they perform their work.”* **C1PL** further justifies her opinion by indicating that, *“civil agencies’ employees prefer to maintain the status quo in relation to their day-to-day function and duties. They feel new initiatives or projects, which lack clear objectives will be burdensome and time consuming and therefore not really in their or the public’s interest to adopt and implement.”*

Department leader, **C1PL**, points out that one of the main drivers for instigating a service’s transformation is the ‘demand’ for the service to be online. She notes, *“Well, we select our e-*

*service projects based on the needs of a certain department.” C1SD believes that an important driver from his own work experience is the service’s ‘return value’ or ‘relative advantage’ from implementing the e-services. He explains, “Our eligible services for transformation must have a considerable value of return, it is like an investment. The department does not want to spend effort and resources on a service that will not be used. Conversely, we encourage projects that would seem to have high transaction’s rates or valuable information for our clients.”*

Participants have also indicated that there are traits that make certain services more eligible for transformation. C1QAO mentions the ‘cutting time and cost’ as an alluring attribute during his interview, *“A services is chosen based mainly on the number of transactions it carries. After all, the main purposed of performing our services electronically is to cut time, costs and the number or clients visiting our department. We call a project a success when we cut the number of queues and see them carrying on their transactions online.”*

System Designer, C1SD, has referred to the ‘contents of the service website’ as a vital driver for customer’s usage. He identifies ‘complexity and richness’ of site information as two determining factors; he states, *“We can easily see the reasons that led to the success of our organisation’s main portal by looking at two factors. The first is the homepage which is rich in content and represents an interactive area with up-to-date news and activities. The second factor, which we believe has played a part in increasing the popularity of the website, is the e-Services team’s proficiency in developing the services without any technical complications that could alienate the average user.”*

‘Providing robust security and ensuring clients’ data privacy’ were major factors influencing Dubai residents’ in adopting e-payment methods according to quality assurance officer in Case (1). **C1QAO** illustrates the importance of such aspect surrounding e-services usage, *“The very nature of the Internet introduces risks, our firewalls have not been successfully penetrated by hackers and our data is highly encrypted and constantly stored away on mobile media storage devices. We cannot afford to lose our data nor can we afford to lose our clients’ trust.”*

Another important determinant according to the project leader and quality assurance officer is related to the ‘reward system’. As **C1PL** recognised this virtue and emphasised that *“in the development and implementation of e-government projects we need to include financial rewards, promotion and any other perks which set such employees’ aside from individuals who have little or no input to the improvement and reform of the government administrative system.”* **C1QAO** also believes that, *“Employees will be willing to devote their time and effort to projects if senior management can recognise and appreciate their contribution.”*

#### **4.2.3 Barriers towards adoption of public e-service in Case One**

It was evident from the researcher’s observation of the work flow processes related to e-services deployment and data deduced from interviews and documents, that despite strong government and organisation’s leaders backing of the initiatives; the planning, implementation and evaluation processes of case one services did not materialise without glitches. Hence, this section highlights some of the issues and barriers encountered by the informants in an effort to identify the significant obstacles that impeded their deployments’ efforts.

According to **C1EC**, one of the major challenges he has faced is developing e-services without incorporating users' feedback. He explains that at the outset of government services' transformation, his organisation's views of the procedure was merely perceived as a *"technological mission."* **C1PL** believes that incorporating user's feedback in planning and executing the e-services is the *"most vital issue for e-services' success"*. She notes, *"In the beginning we were carrying out E-services because it was the current fad, we failed to notice the importance of tailoring the right service to get the right usage. Consequently we didn't get the right return of cost saving and revenues."*

Another notable issue extracted from respondents' interviews is the inadequacy of the I.T. department, in terms of its current size to fulfill the entire organisation's services transformation needs. **C1EC** notes, *"The I.T. department is a very small component of our organisation, which, prior to the e-government initiative, was justifiable, as I.T. was not the core business of (our organisation). However, after starting the e-government initiative, the whole paradigm of the way our organisation's service provision has changed. But our I.T. department still remains small in comparison with the new tasks and responsibilities that are assigned to us."*

**C1SP** describes his own experience in relation with inadequacy of the I.T. infrastructure in his organisation; he notes *"In the case of the e-SMS and the e-Pay services provided by the Dubai E-government Office, the administrative units were not able to forecast the possible difficulties of the absence of enough IT infrastructure and technologies to meet the demands of the customers."* He points out that *"this was evident in the volume of complaints the department faced due to delayed and inefficient services. This was also the result for the lack of definite standards and*

*objectives which were supposedly delivered by DEG to every government department from which to build the organisations e-Transformation projects.”*

For **C1PL** his department’s transformation dilemma is not principally a technological one but he believes it is more of a collaboration issue on the external level; he notes, *“Collaboration between the private and public sectors is needed, in order to provide resources, skills and capabilities that the government lacks. Although we were have met all the government deadlines for the provision of our online services, most of these services lake integration on the external level.”* **C1EC** offers his own opinion on the same issue, *“Collaboration and cooperation are not simple to realise. Most of the other government department often exhibit considerable resistance to open and transparent systems as they try to preserve their authority, power and hierarchical status.”*

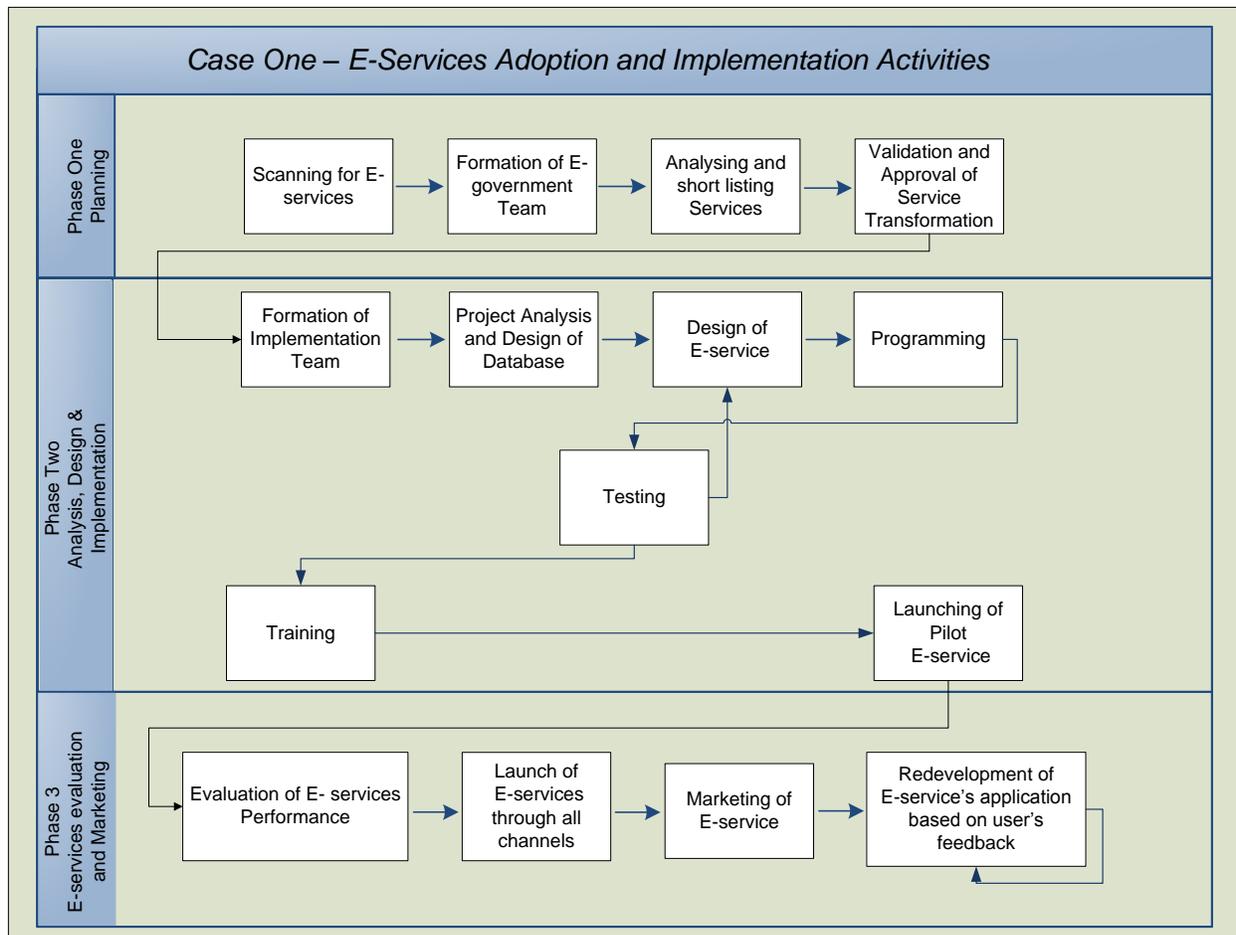
For **C1QAO**, another issue that concerns him is the ‘need to increases public awareness’. He reveals that, *“There are over 200 eServices available in our organisation’s portal; most of them are still unknown to the public. The accomplishments of the past eight years need to be boosted through immediate strategic marketing campaigns.”*

**C1EC**’s expresses the need to *“change the traditional work processes in be able to usher the employees into incorporating the modernised services implementation methods into their work operations.”* He explains, *“There is a growing need to work harder through thorough examination of possibilities and risks as well as exploration of reengineering processes and systems to come up with ways to implement the e-Government initiative.”*

#### 4.2.4 Summary

The data acquired from the field study in case one implies that there is a uniquely developed strategy for the organisation e-services' deployment practice. According to **CIQAO**, *“There is a guideline that is handed down to us from the Dubai E-government Office. However, it is just a set of basic and general outlines and recommendations on how to implement e-service more efficiently. They do also advise us on following international methodologies and strategies from the United Nations studies.”* He adds, *“We currently developed our own methodology from practice. It requires that our employees constantly document all their work process as part of their implementation scheme, which makes the execution process of the work tasks a reliable and unsophisticated procedure. Moreover, it provides us with the opportunity to review our work methods.”*

The process model for e-service deployment depicted in Figure (4-12) below consists of three main phases: Planning, Implementation and Evaluation. The process model illustrates a step-by-step progression through the e-transformation procedure in Case One. The chart consists of number activities representing each phase, and arrows to show the direction of activity through the transformation procedure. Some Activities show feedback loops representing iterative processes such in ‘redevelopment’ and ‘testing’ activities. These re-occurring activities will be analysed further in the next chapter when the researcher will have to make an educated decision on choosing the most appropriate Process model to represent the Dubai e-services’ transformation experience.



**Figure (4-12):** The activities of the services transformation process in Case One

The primary purpose of the e-transformation process chart is to unearth the information needed in understanding the e-services adoption and implementation processes and gain a holistic understanding of the procedure in an attempt to build a modified process model to provide well informed guidance to the practices of e-service deployment in Dubai. The researcher will attempt to provide a holistic e-transformation Process Model for public agencies in Dubai in Chapter (5).

### 4.3 Case Two

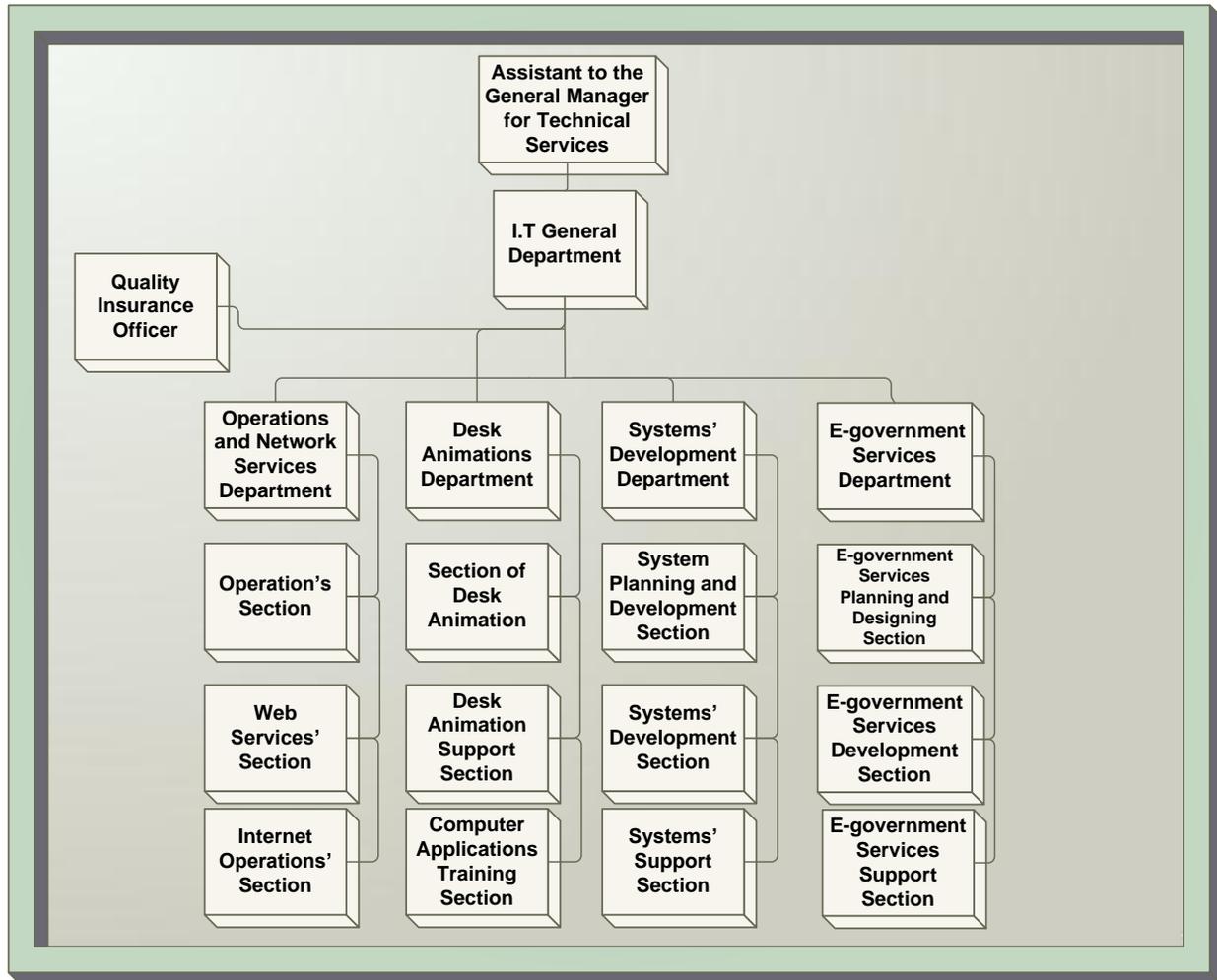
Case Two represents the IT department at the second government agency understudy. The organisation depicted in Case Two is regarded as one of the largest establishments in Dubai, in terms of the number of people it employs, the volume of services it provides to the public and projects it carries out. The organisation was established in the 1940s with three employees and housed in a one room office. The organisation kept up its steady growth since its inception and now employs over 11,600 people.

The e-services' department in Case Two was founded in October 2001 in line with the Dubai e-government vision. It took over four years from the date it was established for the organisation to process its first million transactions and by 2008 there were (26,670) transactions per week as compared to (12,000) in the first phases of the project. The jump has been attributed partly to an increased number of e-services provided through the portal, which started with just (15) and now offers (105).

Within the period of three months comprising this study data collection phase for this department, Case Two recorded 95.67 per cent online transactions. Out of a total 99,174 transactions, (94,224) were completed electronically. The organisation represented by Case Two provides around (105) e-services through its portal , (27) of them being primary e-services and (78) secondary e-services. Of these, (89) are transactional services and 16 information services. The advanced e-services are provided through a network of 7,800 computers connected to 80 servers, which are interlinked through a network that links over 90 sites across the emirate of Dubai.

Currently as of the of 2009, the organisation e-services have over (24,000) registered user organisations and online businesses, and provide (186) transactional and (195) informational services with more than 1.4 million transactions annually. The organisation has won the prestigious "Best Application of eGovernment Award in 2006" from the United Nations in the area of IT and telecommunications applications in the government sector.

The interview carried out in DM I.T department was with six employees, the I.T. department manager, one systems analysts and two programmers, one customer's marketing officer and I.T section head. Due to the small number of employees involved in the e-service deployment; developing a survey instrument and conducting a statistical analysis was not possible. Prior to the interview a pilot interview was conducted with I.T department manager as with all the other cases. One significant feedback from the pilot was the need for difference in emphasis of interviews questions based on employee's roles in the organisation. Interviews were conducted at the workstation of the interviewee. Each interview lasted between one hour and thirty minutes to two hours depending on the level of engagement of the participant, i.e., their willingness and ability to provide information around the questions posed.



**Figure (4-13):** Organisational Structure of I.T Department in Case Two

Since the IT department in the organisation under study in Case Two is responsible for carrying out the e-Government initiatives; it is enlightening that the organisational structure of this department is discussed to some detail. Figure (4-13) above, represents the organisational structure of the IT department. According to the informants interviewed in Case Two, this department performs operation tasks, beneficiaries support, planning and development of information systems, computer-related tasks, data processing and ensuring the safety thereof. It also provides staff with sets, programs and necessary telecommunication networks, supplying and linking all facilities and websites of the public organisation with e-Government websites and

information telecommunication network with standard specifications and protection of the same against various risks.

#### **4.3.1 Stages and Sub-stages of adopting and implementing public e-service in Case Two**

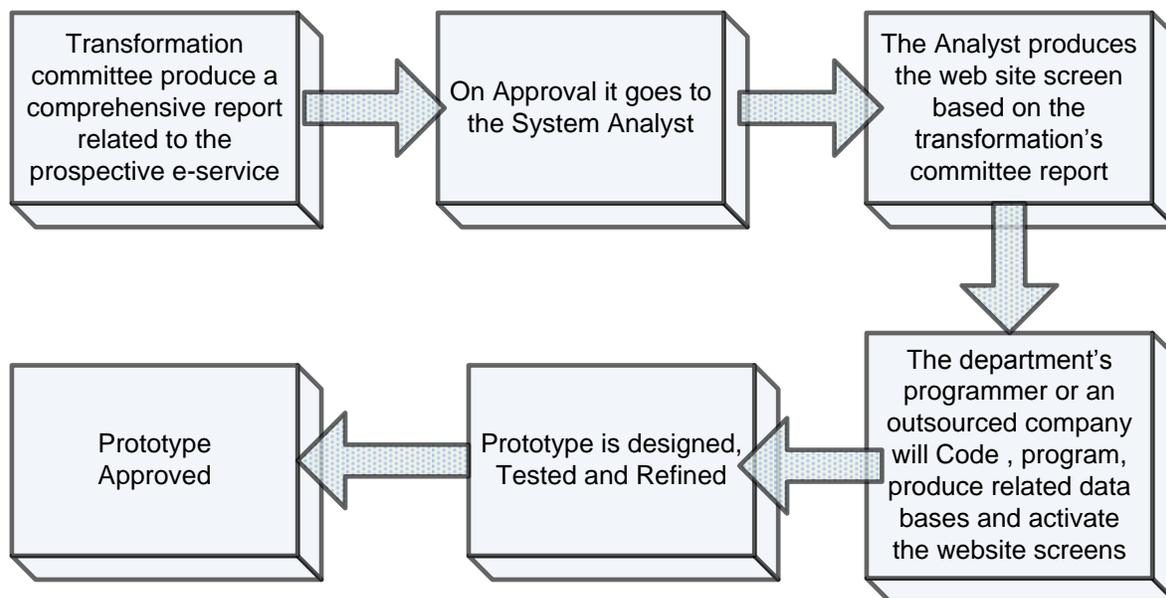
As the previous deployment process portrayed in Case One, the deployment process in Case Two commences with the 'identification and selection of the prospective e-service'. The E-champion, **C2EC**, explains the procedure *"We follow an internally developed strategy to carry out the transformation of our e-services. The transformation cycle starts with determining the most suitable services to adopt from a business perspective."* He explains, *"We determine the most appropriate services with three major attributes in mind; Visibility, Usefulness and Complexity."*

I.T. department's manager in Case Two, **C2PL**, explains that the next stage is the 'understanding' of the services related activities. He notes, *"In this scheme we attempt to conceptualise the processes encompassing the prospective services by visiting the department of concern and getting a closer understanding of the activities undertaken towards accomplishing their services from (A to Z)."* He continues, *"We record all of the information and conduct a study and produce a report. Our project is then either implemented internally by our staff or carried out to be executed to private companies by issuing a tender. In summation, this stage is performed through three different procedures where the services are recognised, analysed and filtered."*

According to **C2PL**, following the conceptualisation stage a committee is formed to produce a transformation document. He notes, *"The transformation committee collaborates the reports which were separately submitted by both the internal and external consultants for the internal*

users review. A meeting between the consultation people and the internal users is conducted to come up with comprehensive e-Transformation plan for the public services. The transformation committee check all the information needed to fulfil the requested electronic services and inquire on the value and justification of such information need.”

**C2PL** elucidates further on the subsequent stage, “Once a service is selected for web-enablement, the next stage is to **define the requirements** for the service to be implemented. Based on the definition of the to-be process, system requirements are defined, and the **defined system** is designed.”



**Figure (4-14):** Service design process in Case Two

Figure (4-14) above, summarises the service design process. Based on the process design, system definition is finalised in terms of the workflow, hardware, and software platforms needed to support the implementation. The department’s system analyst, **C2SA**, explains, “Once the process flow is designed and approved, a systems analyst is appointed to do the system design

*and the database design. After the system design is complete, coding starts. Coding can be done either internally by a programmer or can be outsourced to an external vendor. Once the coding is complete, the systems analyst evaluates and approves it and then it goes for the approval of the custodian. Once that approval is obtained the service is tested online.”*

The e-services department's I.T. co-ordinator, **C2ITC**, sheds some light on the testing stage. He explains, *“The system is tested with **developing a prototype for the service**”* **C2ITC** adds, *“This procedure often requires a period of 3 months where we launch the site and give specific customers access for testing and provide us with feedback, so sites' enhancements are also done in this stage.”* He continues to explain the benefit of such procedure, *“This prototype provides the capacity to initially assess major problems or conflicts within components of the system and to check that everything is compatible. Once the results of the acceptance tests are analysed, the prototype is refined.”*

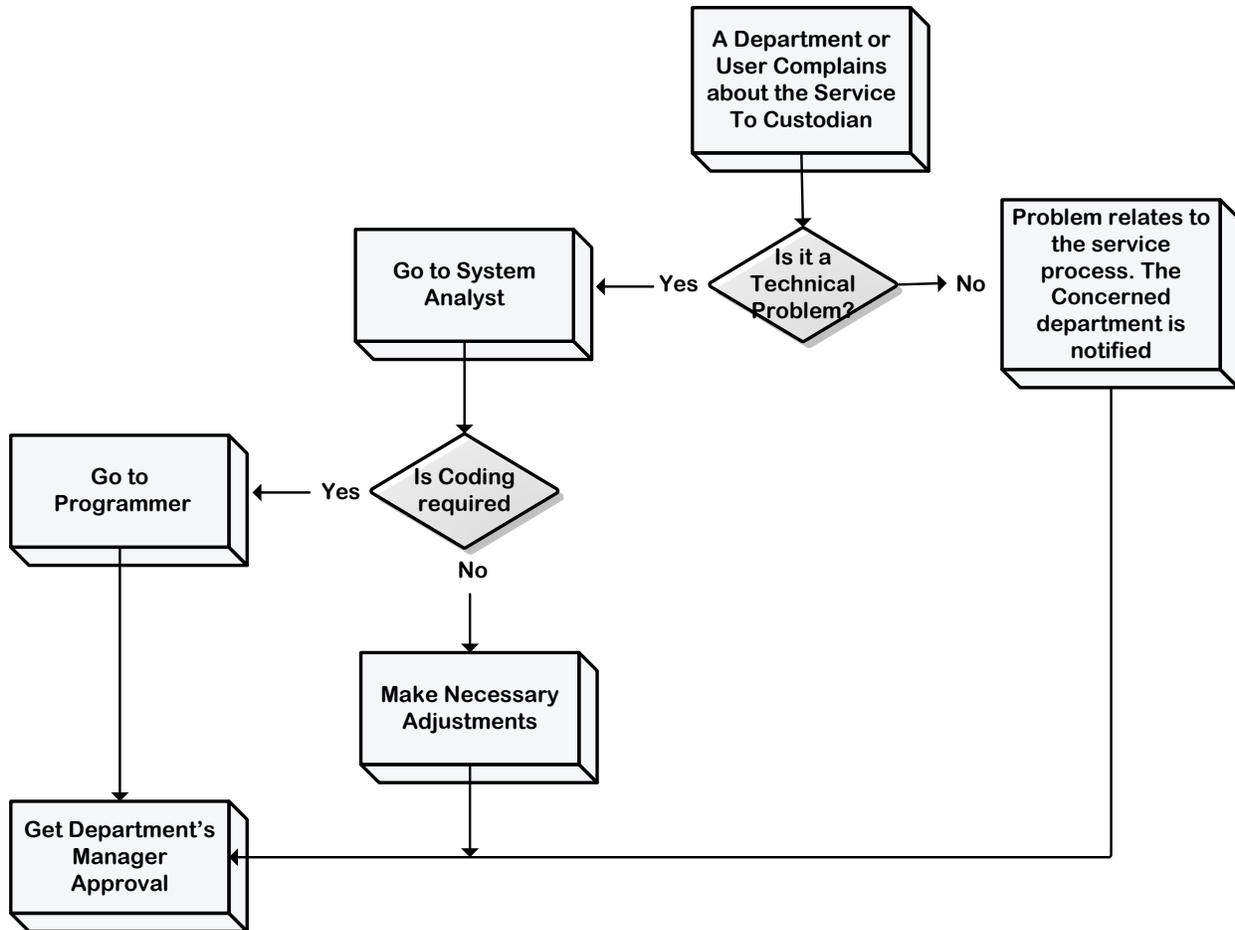
The subsequent four steps can be summarised under two main activities: business reengineering and marketing. According to **C2SA**, *“At the business reengineering stage, the analysis team revise the electronic work flow of the service to accommodate the new e-Services. Irrelevant electronic steps of availing the e-Services are amended to shorten the process and speed up the transaction.”*

Consequently, the next activity in Case Two e-services' transformation cycle is 'Training'. **C2MO** notes, *“Prior to a complete launch, our organisation organises free training sites across the city, where our potential service users are encouraged to know about and participate in*

*modifying our new service. The advertising for training camps is focused on groups that will be potential users for the particular service.”* The organisation takes advantage of the training sessions to get input from potential users, **C2MO** adds, *“Feedback from both the internal and external training sessions are collected to evaluate the performance of the e-Services from which changes will be based to increase the service value provided by our organisation.”*

After training, another launch is carried out of the service; referred to by the informants as the ‘Mini-launch’. However, at this point, the emphasis is still on collecting data about the quality of service and citizens’ experience of the service. **C2MO** explains, *“We have a soft launching period of two weeks where the site is tested internally among the departments. We try to provide any update or fix any issues within this period.”*

Prior to the final launching the department the concluding refinement activity is undertaken. According to **C2PL**, *“we perform additional testing as we go externally to our customers and test our application for 3 months. After analysing the data from minor launch, the system is further refined and prepared for a final launch.”* Figure (4-15) below depicts the final refinement process.



**Figure (4-15):** Case Two Service refining process

Figure (4-15) above, illustrates the service maintenance process. Depicted from the interviews with **C2PL**, **C2SA** and **C2MO** as they individually discuss how the service is refined before it complete launching. For most part **C2PL** explains, “Once a service is launched, our clients, external users or the relevant municipal department can contact our help desk if they have a problem with any part of the service. Once the problem is reported the service custodian is notified. The service custodian decides if the problem is technical or not. If the problem relates to the process then the municipal department concerned, is notified and once their change is approved by the service custodian the problem is rectified. If the problem is technical in nature then the systems analyst is notified.” In addition, **C2SA** offers, “I make the decision whether

*there is any need for coding. If there is a need for coding then the programmer performs the coding and the changes are implemented after the approval of the service custodian. If no coding is needed, then the systems analyst makes the necessary adjustments and sends the changes for the approval of the service custodian.”*

After the final refinements, the service is launched, and the e-government section hands over the ownership of the service to the relevant department within the organisation of Case Two. However, the e-service is constantly under development and refinement stage. Were actual real databases are integrated, some additional site services are introduced, the site is re-engineered to fit the public usage and finally the site is integrated with the different department so they can also make actual use of. The complete launching brings the e-services department to the conclusion of the e-services transformation procedure.

### **4.3.2 Drivers and Enablers in Case Two**

Informants in Case Two presented a number of adhered by strategies complementing their organisation's implementation of e-government initiatives. One of the major strategies revealed by the informants stemmed from the need to start to educate and urge people to interact electronically which necessitated an increase in raising public awareness among the agency's clientele. C2EC notes, *“The major approach was to bring about a paradigm shift among our customers in the way they conduct their transactions with us and educate them about the advantages of using the e-services.”* He further elucidates on the approaches undertaken by his organisation, *“We conducted many customer satisfaction and awareness campaigns. We offer free training on our web services when we first launch them to educate people on their use, as it is not enough to just launch the service.”*

**C2PL** concurs that ‘increasing customer’s awareness and usage’ is a key policy for successful implementation of e-service initiatives in her organisation. She notes, *“The success of e-services can be measured by the frequency of visitors and usage of the service. Hence our core strategies are deployed to increase customer’s awareness of our services.”*

Marketing officer at Case Two, **C2MO**, explains her section’s role in supporting the policy, *“We are concerned with having a close encounter with our clients. We have introduced our services through exhibitions and seminars and conducting learning workshops. We have even went further than any governmental department (in Dubai) to provide the Online week initiative where our traditional over the counter services are closed and every transaction concerning a certain chosen department will have to be executed online for a certain week.”*

Informants have also indicated that ‘monitoring performance indicators (PIs)’ is an important method of directing a successful implementation of the organisation’s e-service deployment strategy. According to **C2SA**, *“performance indicators are used in our department to cover a range of different objectives. We utilise web traffic metrics which are tools used to gather data on the amount or type of traffic on a web site or web portal. Such tracking may include most visited sites, frequency and duration of visits.”*

**C2MO** indicates that such a practice has become a common practice in her organisation, she notes; *“We go beyond centralised strategic measurement and progress monitoring methods and adopt our own internal measurement procedures. Our measurements are conducted periodically depending on the indicator, be it monthly, quarterly or annually.”*

**C2EC** offers his opinion on ‘building trust’ as his organisation’s strategy for encouraging customer’s usage of e-services. *“The success of e-government projects often comes down to building trust and common understanding with the variety of players early in the process. As a manger I must work on building trust within agencies, between agencies, across governments, and with businesses and citizens.”* He adds, *“In my opinion this is my biggest challenge and we try to overcome it by educating our users and operating customers’ feedback channels.”*

According to **C2MO**, a major strategy for encouraging use is also the ‘building of trust’. She believes that her strategy is centred on two main pivotal aspects, *“Since we are a government agency, our most concern is providing **Privacy** for our clients by ensuring the protection of their personal information and second is **Security** where we protect our e-government sites from attack and misuse.”* She offers insights on her organisation’s approach, *“We utilise multiple firewalls to keep out intruders; such a solution can slow down our system performances but security is our number one concern.”*

#### **4.3.3 Barriers towards adoption of public e-service in Case Two**

Based on the interviews, some of the issues were highlighted during the conversations. Such as:

- 1) Lack of integration and collaboration with other government agencies;
- 2) Lack of adequate IT infrastructures and services to meet customers demand;
- 3) Need for Constant Infrastructure Upgrade;
- 4) Lack of Expertise and IT skills.

**C2PL** shares his key concern, *“Proper ICT infrastructure in the public sector is a key prerequisite for e-government dissemination. The chief obstacle we are facing is developing a collaborative approach for facilitating interoperable ICT infrastructure with other government*

*departments.” C2SA express a similar view, “Despite the cost of IT going down, an adequate IT infrastructure still represents the key barrier for our organisations’ e-services deployment efforts.”*

During the interview with **C2ITC**, he also confirms that, *“The lack of technical infrastructure has been a significant barrier to the development of our organisations’ capabilities to make available online services and transactions.”* He shares some lessons from his past experiences with early e-services projects, *“Unreliable IT infrastructure have degraded the performance of our e-services. Our customers reported that they experienced several technical problems that prevented them from benefiting from the online services.”* He adds, *“Some of the issues that we received from the feedbacks concerned the slow performance and e-service unavailability at times due to technical faults or system incompetence.”*

With the aim of all government department to increase the usage of the e-service to be able to realise the sought out benefits, many interviewees expressed their concerned the need for ‘constant technological and departmental upgrade’ to be able to cope with the web site traffic. **C2PL** explains the issue *“as more e-services are added and, thus, more users are brought online, the current solution is bound to exhibit performance limitations, architecture design flaws, and far-from-perfect vendor support.”*

The database officer, **C2DO**, mentions a similar issue with outdated systems, *“We needed to look hard at our existing systems due to their age, and we decided to move to the Service Oriented Architecture standards, and we brought in IBM to help us,”* says **C2DO**. *“We wanted to be able*

*to run our systems more efficiently, and we wanted to be able to have more services and run them faster."*

**C2MO** was able to pinpoint specific system inhibitors that required technical upgrades. She notes, *"Due to some of our outdated systems, our e-services clients' survey indicated that the most common barriers to using our e-services were: poor search capabilities; inappropriate or incomplete information; difficulty navigating and difficulty reaching the desired service on our portal as well as concerns about security and privacy."*

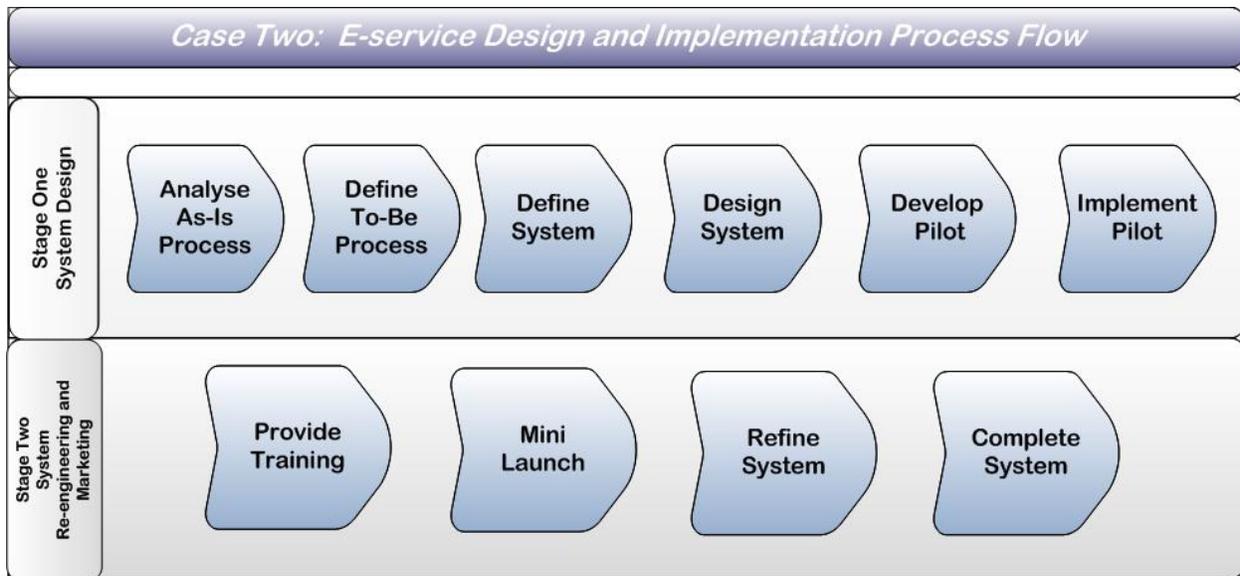
**C2SA** expressed his concern about the need to change traditional work processes to be able to incorporate the new challenges accompanying the e-services provision in his organisation. He explains, *"As (our organisation) provides over 150 services to the business community and the general public in Dubai, Also, frequent changes to our organisation's business model in terms of infrastructure, growing public services, channel diversification, and service delivery restructuring add another challenge."*

**C2ITC** expresses his concern about the lack of I.T. related skills in his organisation. He notes, *"Our department was confronted with several implementation barriers that slowed the improvement stages of the e-Government initiative during its early years. These barriers still exist now but at a much alarming rate, such as the shortage of qualified IT expert employees and the lack of updated technologies. Very often we had to outsource the transformation process because our staff lacked the technical expertise to complete certain tasks, it was a costly option and as a government department there were always privacy and security issues when the applications were integrated to our databases via private developers."*

**C2SA** shares a similar issue *“The shortage of employees, their skills and expertise lead us to increase our dependability on private companies and outsourcing. This has lead to many problems regarding service’s functionality, design and even security in addition to the fact that when you develop a project internally it is much easier to update it and redesign it. In addition, you have the advantage of troubleshooting the problems quicker and more effectively.”*

#### **4.3.4 Summary**

In Case Two, a (10) step service e-transformation process was depicted in figure (4-16) below. The transformation cycle starts with the Business Developing stage which involves the participation of the external and the internal consultants to determine the services need from a business perspective. The second stage is the refinement, launching and marketing of the e-services. These classifications were deduced by the author based on the interviews, both redundancies and steps adding no value to the process were eliminated, and then a holistic descriptive term for the process proposed. This is a very comprehensive process. In the first six steps, internal vision, strategies, and future business goals are incorporated, and in the later four steps, the quality of the service is refined through user tests before it can finally reach the customers.



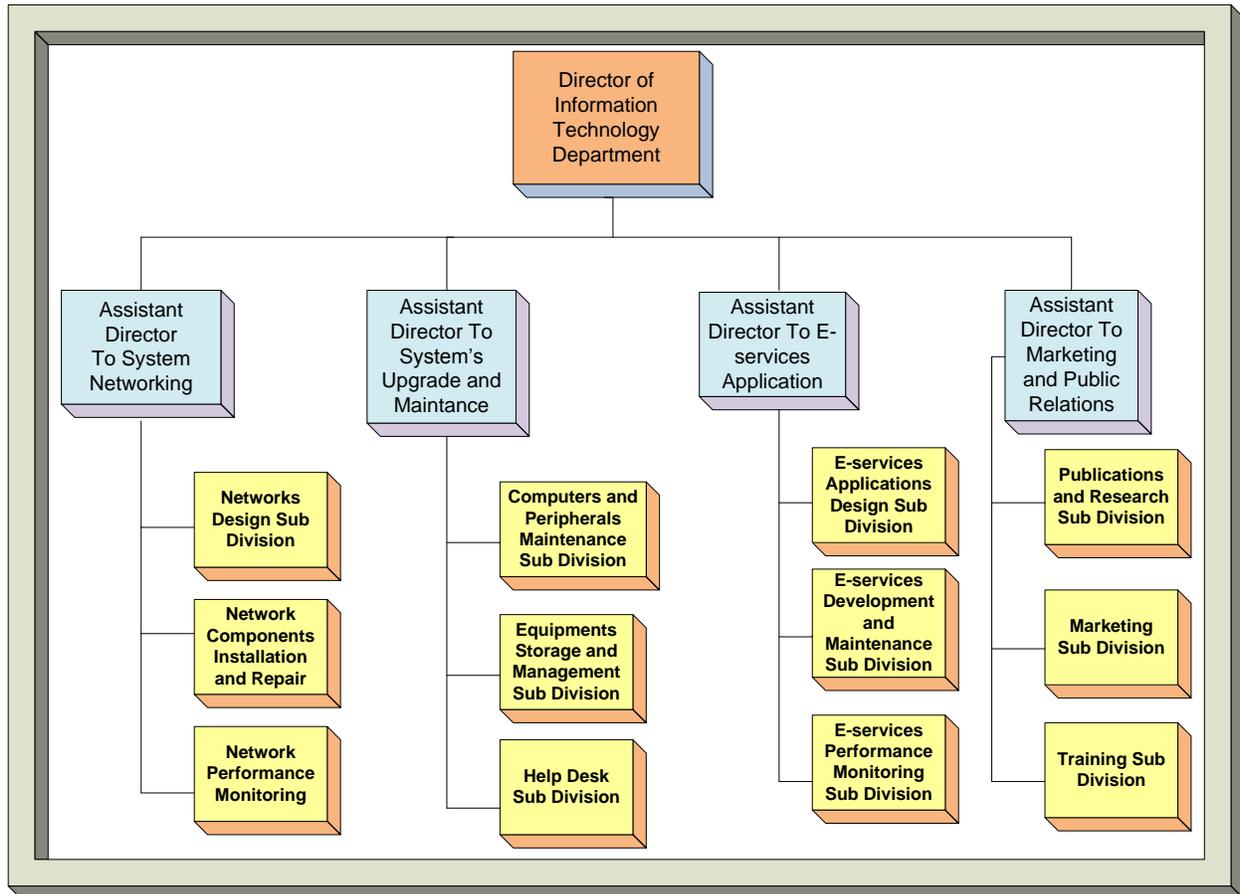
**Figure (4-16):** Case Two Activities in E-Service's Design and Launching process

#### 4.4 Case Three

The organisation under study in Case Three was established on March 18th, 1971 in recognition of the need to upgrade and improve the safety, efficiency, quality and security of air transport services in Dubai, thereby supporting the Emirate's economic and social development.

The IT department at Case Three, like the other previous cases, was also established in the year 2001. At the outset of the department's e-services deployment efforts, the I.T department have successfully migrated 26 services through electronic channels by the end of 2004. By 2007, Case Three has succeeded in transforming a total 81 as it has succeeded in migrating 93% of public services to electronic channels, surpassing the e-Government target almost a year ahead of schedule. 56 services has payment transactions, 29 services are fully electronically interactive, while 27 services are partially online with electronic payments capabilities.

Case Three recorded 98 per cent for e-enablement, with 199,304 out of a total of 201,604 transactions for the first quarter of 2007 being conducted electronically. The total number of transactions carried out electronically during the last two years stands in excess of one million.



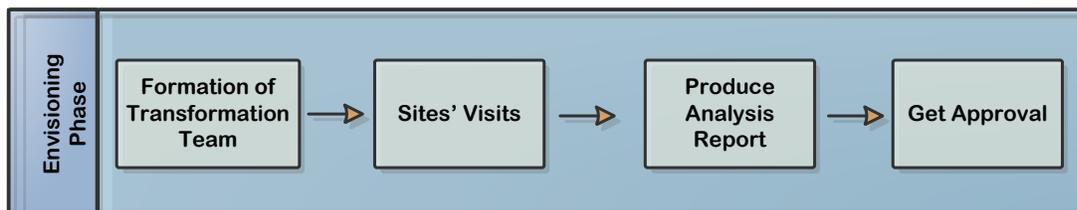
**Figure( 4-17):** Case Three Organisation's Structure

#### 4.4.1 Stages and Sub-stages adopting and implementing public e-service in Case Three

Interviews with Case Three department's manager and project leader have revealed that their organisation adheres to an international framework throughout their department's e-services deployment procedures. C3EC explain, *"We adopt Microsoft Solution Framework (MSF) as our implementation framework which provides us with guidelines for developing our technological solutions. It is helpful in developing sound planning and analysis to bring together resources,*

*people, and techniques with our organisation's objectives.*" He adds, *"There are five main phases in this process model; Envisioning, Planning, Developing, and Deploying and Stabilising."*

The project leader, **C3PL**, clarifies the activities accompanying first stage of Case Three deployment process. She shares her views on what she describes as the 'Envisioning' stage'. She notes, *"First we draw up a team. I would normally be the e-service transformation team leader. My role will be to identify the tasks, constraints and deliverables that address the requirements and goals for the transformation process. This phase culminates when the department we are carrying out the transformation process for and the e-services team agrees about the purpose and direction of the project."* Figure (4-18) below depicts the activities forming the 'Envisioning' phase in Case Three, the phase is concluded with the approval of project plans.



**Figure (4-18):** Case Three Envisioning Phase Activities

After the transformation team is formed and the sites' visits are conducted. The I.T. department is required to produce a feasibility plan for the e-service project that needs to be undertaken. Hence for the department in Case Three, the next stage is 'planning'. **C3PL** sheds the light on the activities accompanying this stage, *"I would file a report with a list of the e-services and their initial requirements to the management to get their approval in order to carry out the desired projects. The reports will carry all necessary requirements such as the projects' resources,*

*budget and construction of the projects' time frames. The study will be based on three main aspects; the e-service's project charter, e-service's Scope definition and a complete Implementation plan."*

**C3SA** explains the role of team during the 'Planning Phase'. He notes, *"The e-service transformation team defines the project specifications and requirements and develops a methodological implementation plan for the specified project. The team members' roles will also be assigned in addition with costs estimates and schedules for the various deliverables."* He add, *"The activities in the Planning Phase are critical to the success of the project, they often involves several iterations of plans and schedules, we try to mitigate the risks and increase our chances for success by analysing all the project's dimensions."* The activities of the Planning Phase are depicted below in figure (4-19).

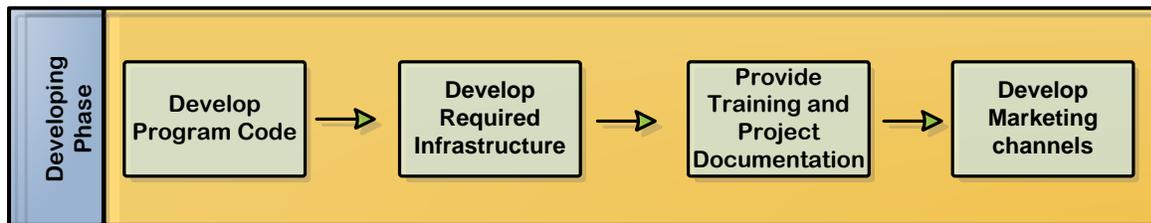


**Figure (4-19):** The Planning Phase activities in Case Three

**C3SA** continues the description of her organisation's transformation process cycle. He states, *"After Planning comes the Development phase. The development of e-services is conducted through a programming and development team. Usually our development team will consist of 3 to 4 people. We start the procedure by writing the programming code for the e-service, provide the technical I.T. infrastructure from network caballing to servers and databases. When the programming is concluded we will then produce a prototype and set it for testing and provide the*

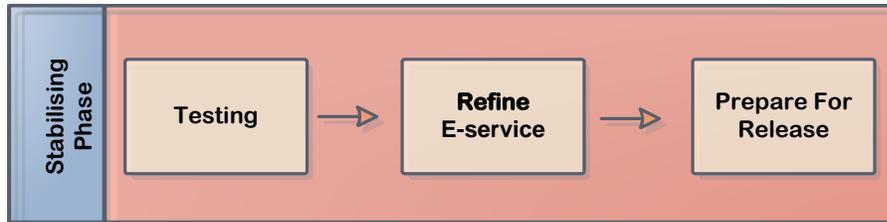
*related training and users' manuals and related project documentations. We conclude the stage by creating the awareness among the client department to start using our e-services."*

Figure (4-20) below illustrates the activities forming the 'Developing Phase'. **C3PL** explains, *"This stage comes to a conclusion when all technical requirements of the e-services are fulfilled and the project is ready for testing by the client departments. This objective provides the opportunity for our staffs and users to evaluate the e-services initiative and identify any remaining issues that must be addressed before the initiative is released."*



**Figure (4-20):** The Developing Phase activities in Case Three

The organisation's Systems' Testing Officer, **C3ST**, explains that his role comes in the next stage that he define as the 'Stabilising Phase'. He notes, *"During this stage, the e-transformation team performs the testing procedure by emulating the environment working conditions and scenarios. The team tasks are to identify, prioritise, and resolve any issues so that the e-service can be prepared for release."* He adds, *"The objective of the testing procedure is to improve the e-services performance and meet the required standards in order to release the project and get it working in an unwavering state, preparing it for release."* Figure (4-21) below, illustrates the activities accompanying the 'Stabilising phase'.



**Figure (4-21):** The Stabilising Phase activities in Case Three

The conclusion of the implementation process of e-services in Case Three is achieved when the team has addressed all outstanding issues and has released the solution or placed it in service. **C3MO** explains, *“The final phase for our e-service is the Deployment phase. In this stage we publish the site online for our customer use. Meanwhile we also market the website or service through customers’ orientation and training programs, new press and conferences.”* **C3MO** elaborates, *“During this phase, the team deploys the solution technology and site components, stabilises the deployment, transfers the project to operations and support, and obtains final customer approval of the project.”* The marketing officer adds, *“After the deployment, the team conducts a project review and a customer satisfaction survey. The department will use the survey results as guidelines for improving the service. Further refinements and upgrades will be carried through our development team as required.”*



**Figure (4-22):** The Development Phase activities in Case Three

The data concluded from the interviews with Case Three informants have indicated that the e-services transformation process in Case Three is an iterative and incremental development

process. It starts with an initial ‘envisioning’ and ends with ‘deployment’ with the cyclic interaction in between. This model emerges as an equitable solution for Case Three as it embraces the rapid iterative progression during the planning, development, testing and refinement activities adhered by the organisation in executing their e-services’ transformation process. These activities occur in overlapping iterations resulting in incremental progression ensuring a flow of value of the project. Each iteration has a different purpose and result in a stable part of the overall transformation process. The author shows an overview of Case Three transformation process using *Microsoft Solution Framework (MSF)*, figure (4-23) depicted in section (4.4.4) below.

#### **4.4.2 Drivers and Enablers in Case Three**

The I.T. department in Case Three employs a number of different strategies in deploying their e-services. Several informants have indicated that the ‘Presence of a government body such as Dubai E-government office (DEG), as a primary instigator for services’ e-enablement. **C3EC** describes the implementation approach prescribed by the DEG is characterised as a balance between "*centralisation*" and "*decentralisation*". He clarifies, "*their (DEG) approach is about Centralising systems and decentralising authorisation.*"

**C3PL** sheds the light on the role of the Dubai E-government office, "*The Dubai E-government office works in collaboration to identify standard measures that can assist us in evaluating our online services. They provide the necessary training to equip our staff with the knowledge and skills to evaluate our online services performance. They will also provide us with the evaluation results and recommendations that could guide us in improving our transformation procedures.*"

**C3MO** notes that the Dubai E-government Office “*lay down the strategies and suggests methodologies for governmental department to follow. They work as a link that helps us understand the government vision more clearly.*”

Some informants have also indicated that ‘internal and cross government integration and collaboration’ have been a viable strategy to their deployment efforts. **C3PL** states, “*The assimilation of our organisation online services with various internal and cross-Government systems has allowed us to considerably shorten the overall processing time for transactions, identify holdups and address key service performance issues.*”

**C3MO** also indicates that the ‘diversification of service delivery channels’ have added value to his organisation’s services. He notes “*Our customers are able to access our services through the use of portable gadgets, personal home computers, use of information kiosks.*” He goes on expressing his enthusiasm about the accompanying features. He notes, “*Our services feature online payment of transaction facilities with versatile payment options such as major credit cards as well as government sponsored smart cards.*” He also adds, “*Our services provide advanced search capabilities which allow our customers to search for their transactions effortlessly, check status and to use their previous transactions as a template for creating new requests.*”

Many participants agreed that the success of e-government initiatives in Dubai civil service agencies necessitates ‘a clearly defined vision’ that can be easily understood by and communicated to the concerned parties to assist them in realising the agencies' objectives and improving the quality and efficiency in the delivery of public services. **C3EC** states, “*e-*

*government initiatives are a long-term strategy that have to be implemented in accordance with the country's long-term strategy to ensure commitment and resource allocation for acquiring technology, training employees and increasing the publics' awareness towards the application of technology in their day-today lives.”*

**C3PL** attributes the success to the vision carried by the ruler of Dubai. She presents the researcher with a book that was carefully displayed on a glass book cabinet entitled ‘My Vision’, a delineation of the ruler of Dubai’s philosophy on successful leadership and governing. She happily notes, *“Our organisation’s e-services strategy is very much aligned with the e-Government vision of H.H. Sheikh Mohammed bin Rashid Al Maktoum, which intends to ease the lives of people and businesses interacting with the government and contribute in establishing Dubai as a leading economic hub.”*

**C3EC** indicates that his organisation ‘adopts international and local performance measurements methodologies’ to monitor and assess the functioning of e-services. He explains, *“We have tweaked our I.T. e-transformation procedures and strategies with the Dubai e-Government office standards to keep posted with the general public service provision strategy set by the Dubai government for its administrative units. As such, our department started the implementation of the Balance Scorecard and the RADAR methodologies in order to improve the performance of our work procedures.”*

**C3MO** points out some of the measures he adopts when evaluating e-services’ performances. *“Our benchmarking includes quantitative or subjective measures. Benchmarks can include: number of organisation’s services and functions online, reduction in average time for processing*

*citizen requests or applications, reduction in number of complaints about the level and quality of government services, increased users registration and/or turnout, increased citizen participation in consultations and comment proceedings, lower costs to government in delivering services, and increased revenue.”*

**C3PL** explains the organisation’s e-services employs ‘international deployment strategies’ to guide its services transformation process, *“We use the Microsoft Solutions Framework (MSF) as our methodology for implementing and transforming e-services. Many of our partners in the private sector use it as well. It provides the necessary guidance through project planning and initiation, service improvement, service evaluation, and service maintenance. MSF is a process model that is applicable to all related I.T. project, using it has contributed to high quality results as well as the distinction of the weaknesses and strengths of our e-Services.”*

#### **4.4.3 Barriers towards adoption of public e-service in Case Three**

Several Barriers and Challenges were noted during the interviews with the informants in Case Three. Participants provide numerous remarks on ‘Leadership Commitment and Support’. **C3PL** discusses her experiences on Leadership failures, *“At the very beginning of our e-services deployment endeavors, we encountered some failure as a result of poor resource planning, inability to manage complex ICT-based projects and the inability to motivate our employees.”* She carries on, *“The previous manager didn’t have the experience nor do I think he had the will or understanding of the importance of the e-government vision. I don’t think he believed in the rewards of e-government, he probably thought it was a fad.”*

**C3MO** expresses his discontent, *“I still find it difficult to convince our department managers to turn their focus outward to the customer, rather than inward to the organisation. Our success will require our leaders to think more like private companies, it is difficult I know but they need to transform the way our organisation thinks.”* He wonders, *“Or maybe it is the way they think.”*

**C3ST** notes that he experienced difficulties in challenging and convincing his department’s managers to review service provision processes and streamline them in order to make the processes more efficient and cost effective. He explains *“I forwarded a proposal that would make the testing and evaluation procedure more competent. But I haven’t received any feedback.”* He remembers, *“But, this (incident) is not the first time, it happened before (him not getting feedback).”*

**C3SA** discusses the challenges surrounding their department’s ‘internal communication’, *“The main issue is the way we internally communicate. There are too many letters and documentations that have to be approved and published which may slow down the process or cause some frustrations. Add to that is, when we communicate with other departments it would take sometimes weeks if not months to get a reply. However, I have to say the letters helped document our work process.”*

**C3PL** discusses her personal disappointment with ‘collaboration and communicating’ with other governmental departments, *“We called for electronic integration between (our organisation) and other departments in order to develop and enhance government services.”* **C3PL** adds *“The result was disappointing and shocking. Seven months after we sent the message, we received responses from only four departments. To date, the rest have not replied.”*

Beyond the issue of collaboration, **C3SA** discusses the ‘technical issues’ that affect governmental communications. *“Incompatibilities in hardware, software networking infrastructures within and between public agencies have always been the challenges we faced when we tried to share information across other government department. Indeed, many e-services today are still based on an upgrade of earlier public administration systems and ICT network infrastructures, which have created technical incompatibilities between systems even within our department. This is basically why we cannot integrate with other government agencies; electronic transformation was easy, integration is not”*

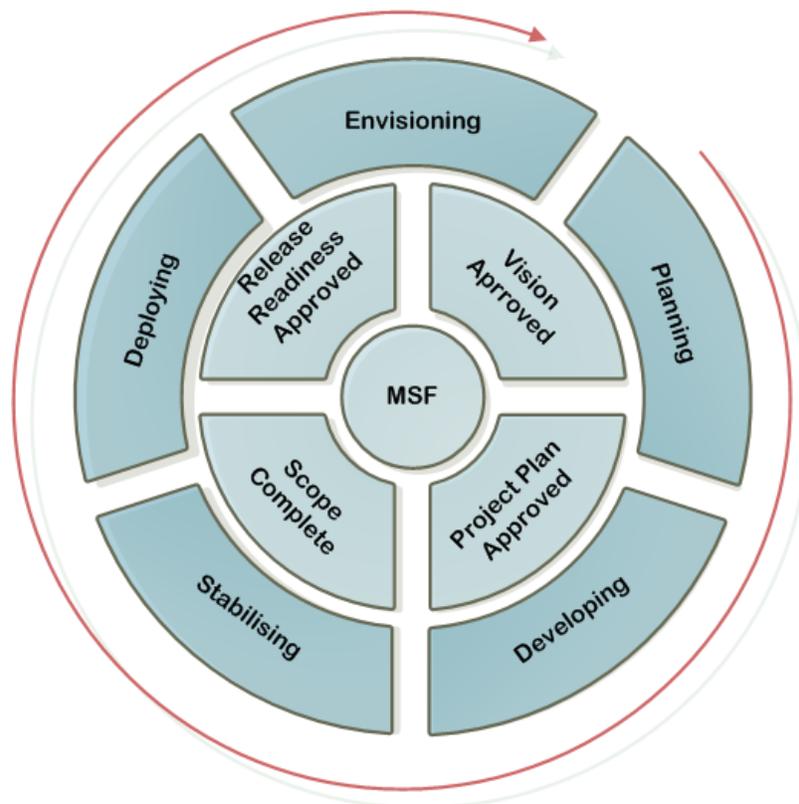
**C3SP** notes that the main issue is the ‘Lack of integration and collaboration’ with other government departments, *“Basically we don’t share information online because technical integration among public departments does not exist. The government departments are in competition with each other because everyone (government departments) is anticipating be recognised and hailed as the e-transformation leader which has resulted in less of information sharing. But, perhaps it could be the next phase where the Dubai e-government will instruct the government agencies to integrate and share information online.”*

The ‘work process reform’ was one of the important recommendations according to the organisation’s E-champion. However, **C3EC** acknowledges the difficulties of initiating the reform process and explains that it can be implemented through continuous small improvements as part of e-government initiatives. He states, *“Reforming the way service is delivered has to be an essential component of the e-government strategy.”* He adds, *“From my experience, employees like to automate their daily tasks and functions, it makes their daily takes much easier to accomplish. However, they are always reluctant to change the way they perform their tasks.”*

He concludes, “*You just have to introduce it in gradually to them.*”

#### 4.4.4 Summary

Case Three utilises *Microsoft Solutions Framework (MSF)* as a guideline for implementing all their technological projects, in particularly their e-services projects. The iterative life cycle model combines two process models: the waterfall and the spiral. It covers the life cycle of an e-service from project inception to live deployment. Evidence from interviews revealed that they were more sub activities involved in the implementation procedure. (Section 4.4.1 Above)



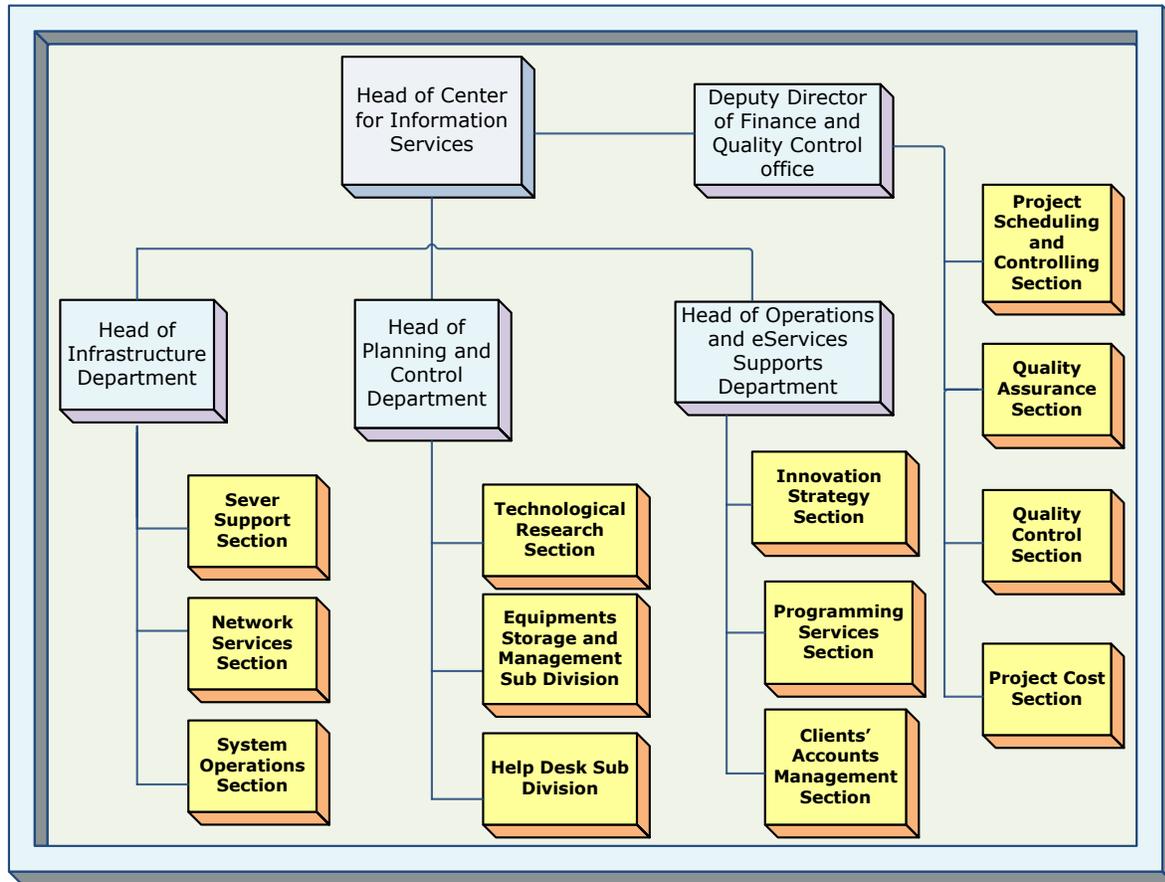
**Figure (4-23): Case Three adopts The MSF Process Model showing phases and major milestones (Source Microsoft, adapted by author)**

**C3PL** notes, *“The key to successful utilisation of an international methodology, as such, for our practice is to rigorously validate its requirements upon completing every phase. Each phase of the five phases we complete is concluded with a milestone or goal that concurs its completion. The milestones usually require validation from our organisation’s E-champion. As the life cycle of the transformation process evolves through successive cycles, tests have to be repeated and phases completion have to be validated in order to complete the phase.”*

#### **4.5 Case Four**

The government organisation in the Case Four was established in 1972 by the Ruler of Dubai to provide fundamental services to the residents of the Emirate of Dubai. The organisation manages 4 major establishments and (20) primary centres distributed throughout the Emirate.

The percentage of e-transformation in Case Four’s general department have surpassed (95) per cent in 2008 and in the next period the organisation is looking to have full e-transformation of all its services. The e-services have been organised in three categories one for the businesses which is the licensing for different kind of remedial practices and services and they are (40) types of services in this category. (28) Services are provided for the public and clients such as being able to view personal records, medicines prescriptions and even doctor’s patients reports and x-ray result all online. The last category are 4 services which are internal or managerial services for employees within our department, like queries and employees information. In total there are 72 services of which 68 have been transformed electronically.



**Figure (4-24):** Case Four Organisation's Structure

#### 4.5.1 Stages and Sub-Stages of adopting and implementing public e-service in Case Four

In Case Four, the commencement of e-service deployment is proliferated by the services assessment stage. According to the participants, the assessment process is built upon the identification of three major aspects: the existing manual procedures, data and processes transfer feasibility and finally the identification of the intended Audience. **C4PL** explains *“The first step in developing a new service is the assessment stage or what can also be described as opportunity identification stage. This involves selecting the best program areas, generating ideas, and screening test ideas to identify the best ones to turn into a new service.”* The project administrator adds, *“The engineering process of an e-service begins in this step. The first step is*

*the creation of a strategic plan for the project before embarking on the development of the e-service.”*

**C4PL** was keen to share more details on the next stage “*A delegated team would commence the process of identification and assessment by conducting field visits to all the departments of our organisation. The team will then produce a list of all the services and its related manual procedures. The services that qualify for electronic transformation have to be studied and analysed. The procedures included are the identification of data and data flows of the manual service. This will give the developing team an idea of what is expected of them to be implemented. The last step is the identification of the audience for whom the e-service is intended.*”

The following procedure in the deployment process in Case Four is ‘producing a feasibility study and getting the administration approval’. As the stage was still within the tasks of the project manager, **C4PL** offered her insights from her own recollections. **C4PL** explains “*The next stage involves ensuring a good workable policy document. At this stage we would provide a list of suggested services and forward it to a committee which filters the services that are to be transformed according to need and the time they may require. The electronic services can also be selected based on suggestions from our clients, employees, other departments’ request or instructions from top management*”

The aim of the next step is to ‘get a detailed analysis’ based on the data collected in the previous steps. The department’s system designers, **C4SD**, notes, “*The data will be complemented with*

*further analysis using techniques like interviews, document reviews, etc. This data will then be used for the development of the e-service. Then a detailed analysis of the manual procedures is carried out, this step requires complete understanding of the service processes and procedures. Data flow diagrams are utilised for the description purposes. Finally A detailed analysis of the targeted audience is carried out. This helps me customise the service accordingly ensuring its' usability."* **C4SD** adds, *"My main task is not only to automate the flow of information but help to optimise the process reducing the redundancy and elimination of red-tape."*

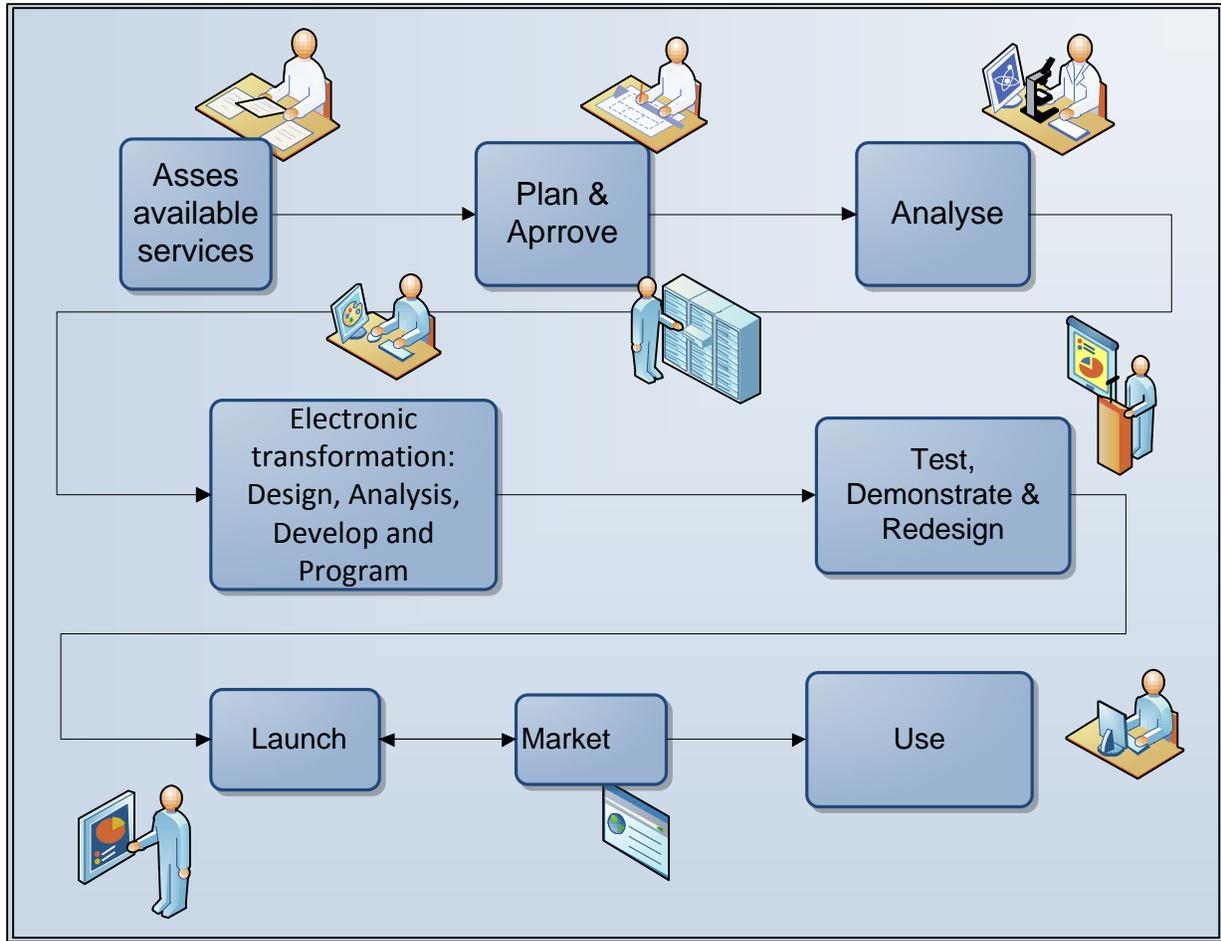
After a design is customised for the desired service, the next step is the service's 'transformation'. At this stage, designers, programmers and developers will take on their role in the transformation process. The designer utilises various, tools, techniques and modeling languages for the purpose of scheming the design of the e-service. In the organisation represented in Case Four, a single person carries out the duties of developer and programmer. **C4SP** explains, *"As a developer, my task is to devise the screens, initial outlook of the web pages, data fields, and databases according to the study that was produced earlier. Later on, the designs will have to be approved from the Head of E-services Unit. Then, as a programmer I will convert the designer's illustration and proposed ideas into programming codes and activate the web pages."*

Next comes the duty of the system testers. **C4QAO** explains, *"We test them internally by the staff of our I.T department and when we feel that the web pages are working properly we pass on the application to the department responsible for operating the e-service so they can test the functionality of their web site."*

‘Launching’ comes next as **C4PL** explains, *“When all the parties are satisfied with the service in house demonstration, we perform the Launching of the website. This will conclude the publishing of the website online, however there is still customer orientation that we have to perform sometimes aggressively to make people start using our services.”*

**C4MO** describes the ‘Marketing’ stage *“We advertise on newspapers, brochures and internet. Invite clients to website launching venues for demonstration and training on usage. Sometimes we will hire private companies to market our services. We have to make sure the people are using and responding to our e-services, once this happens you can then actually say the service is finalised.”*

The Final stage is the ‘actual use’ of the e-service by the targeted customers. **C4PL** notes, *“Finally we launch the service through our portal. We keep on marketing the service for the first few months. We will be very attentive to the customer’s feedback, the number of transactions carried and any functions’ abnormalities. If all of these facets go well, we can let go of this project and start a new one.”*



**Figure (4-25):** Case Four Activities during e-services transformation process

In conclusion to the interview with the project leader, **C4PL** offers her visualisation of the transformation process in her organisation, *“The implementation the entire process should be viewed as dynamic, not static. The goals, objectives, timelines and measures of success should be revisited following each of these implementation phases. In addition, in a similar manner to the performance review process at the individual level, the business and strategic plans also should be subjected to a regular review schedule.”* She affirms, *“Hence, the entire process should be viewed as dynamic, not static.”*

#### 4.5.2 Drivers and Enablers in Case Four

Several participants comment on the importance on the right strategies to facilitate the e-services deployment process. Several informant indicated that their 'organisational leader vision, commitment and personal traits' were behind their successful transformation operations. **C4PL** states, *"Our general organisation leader has laid down a strategy to ensure the provision of sustainable commitment of resources and expertise in our organisation. His vision provided us with the objectives we are aspiring to achieve but I need to say it is also his character and personality that make us like him. He is very approachable and smart."*

The system designer, **C4SD**, had a similar opinion. He notes, *"Our organisation's leader plays a great part in motivating us; he constantly pays visits to our departments and shares his opinion and suggestion on specific projects we are working on. I guess you could say he is very experienced."* He adds, *"He engages in conversations about the project we are carrying out and he will always provide us with directions towards what his expectations from the service will be. He will often provide suggestions on the website design and looks, and will offer encouraging words which helps keeps us motivated. He will also remember to come back to check on the progress or to suggest new ideas."*

**C4QAO** highlights some lessons learned from website and e-service evaluation practice; he indicates *"The development of a Performance Measurement System is iterative as the measurements are repeated and revisited regularly. The first major review of Performance Measurements created as a part of our Planning and Approval stage, we will be trying to highlight the benefits of the proposed services through several group meetings until one is*

*selected. The programming and design and testing is also a repetitive assessment procedure. Our focus here will be the functionality criteria's of the site. Upon launching the services the site will keep being updated based on our employees' remarks and our customer's feedback."*

According to the project manager **C4PL**, *"More than 30 evaluation criteria have been developed for evaluating the quality of online services such as awareness, usage of services, and user's satisfaction"* She also provides other indicator for measuring the quality of websites (e.g. content, usability, common look-and-feel. Finally she denotes, *"The operation efficiency is measured by looking at cost savings and added value for the services for both our government organisation and our clients."*

As for **C4EC**, he believes that 'Adopting local and international implementation strategies' was a significant policy in dispatching e-services swiftly. He notes *'implementing restructured management frameworks and methodologies to support e-services development and websites quality and usability.'* He explains, *"Management Frameworks are utilised throughout our Strategy and Planning, Development and Support. The objective is to be able to select, develop and support high quality services to serve the public."*

**C4MO** points out that Public awareness campaigns and training sessions for both the internal and external customers are likewise provided by his organisation to ensure high usage of the electronic services offered by the department. *"Creating awareness about government e-services is done by conducting after – launch meetings with major clients and workshops with operators and users to educate them on the usage of the service. Improving the computer literacy rates*

*among the targeted population is another solution however not within our direct control but we managed to partner with private sector to bring the digital products at low prices to our clients.”*

**C4PL** discusses her department’s efforts in ‘raising public’s awareness of eServices’. She explains, *“Our department has preformed several community outreach activities to raise the awareness and adoption of eServices such as involve our customers in competitions, promotions, online marketing, marketing through other government departments, market awareness survey and rewarding the users of eServices.”* She provides an example, *“Our organisation rewarded the most frequent user of electronic transactions, the most frequent user of ePay service, as well as other groups of users from different fields.”*

#### **4.5.3 Barriers towards adoption of public e-service in Case Four**

Participants in Case Four describe a number of issues and challenges they encountered during the adoption and implementation of e-services. According to **C4PL** her department is confronted with the need to reach a target customer usage rate for their e-Services to be considered as ‘fully functional’ by the Dubai E-government Office. Hence, her major issue was to create enough ‘Customer Awareness’ to attract the desired number of clients. She explains *“My department did not face major technical problems regarding the electronic transformation but we were highly concerned with how to convince the public to use the available online services. In line with this, the department decided to find ways to further minimise the number of over-the-counter transactions as well as to take advantage of every promotional event and exhibits for opportunities to campaign for the e-Services increased usage.”*

Many participants have expressed their concern over ‘developing e-services with incorporating user’s feedback’. This issue also refers to not providing features on government websites to acquire users’ feedback about the portal and its content. Examples include online forms and e-mail. **C4PL** believes that, *“In the websites we initially built, we neglected using any tools that would provide for some interaction between our organisation and consumers. These tools not only turned out to be helpful to build relationships with our customers but also provide us with cost saving solutions. Today, I can’t imagine a successful e-service without the consultation with the major clients and users; before during and after building the e-service.”*

**C4MO** shares some information about the era of government e-services implementation during what he labeled it as the ‘gold rush’ era. He notes, *“While some government departments were busy racing to launch e-services with a time frame of an initiative completed every 10 days, these government departments faced several challenges regarding the quality of their eServices.”* He provides an example, *“some departments made exaggerated claims about their eServices but their services were of little value to customers.”*

**C4SD** shares a similar view, *“Initially, the product development was performed without involving customers. However, when some customers were invited to critique the service, (our agency) realised that the services they have produced are nowhere close to the expectations of the customer.”*

Several Participants have indicated that ‘Lack of proper IT infrastructure, Technology and Integration with other departments’ have hampered the prospect of many services’ implementation. According to **C4EC** *“many services are still not fully accessible to the Internet*

*users because the department shares the processing of these services with other external departments that have still not developed their electronic portals. The problem centres on government departments that lack fully developed electronic infrastructure which makes them incapable of integrating their services with the more developed departments.”*

**C4PL** comments on the same issue, *“Despite existing cooperation between government departments in order to succeed in implementing joint e-services, old infrastructure stands as a barrier for full electronic integration. The e-service project is devised of a wide scope of technological rudiments including network, desktop specifications, application software, and application server specifications.”*

**C4PL** also discusses the difficulties she encounters in recruiting personnel with the appropriate IT qualifications and skills. She notes, *"Qualification needed to carry out the tasks of a programmer, designer or an analyst necessitates a great deal of training. People with special skills also require a creative atmosphere and an above average salary due to their unique skills. Therefore; the private sector provides a more attractive environment to employ qualified graduates."*

#### **4.5.4 Summary**

Three major phases comprise the transformation process in Case Four: Planning, Transforming and Launching. Several remarks are noted from the activities of Case Four, Illustrated in Figure (4-25) in the conclusion of section (4.5.1) above.

First, the initiation stage of transformation process in Case Four is similar to cases One and Three. The stage is described as the planning phase of the project. The process of the planning

phase requires several activities such as project management and assessment, feasibility studies, requirement analyses, planning, evaluation and maintenance plans. The methodology for the implementation of this stage foresees an iterative approach to the development since it requires feedback between the various development steps.

Second, the process implementation phase of development: requirement, design, code implementation, integration validation, installation, and operation and maintenance activities have complex relationships with each other's and with the planning phase. For example, in the interface between requirement and design phases, some design elements may implement more than one requirement, while other requirements may need several design elements for a successful implementation. This indicates the necessity of adopting an adaptable and dynamic implementation process approach based on iterative process or spiral life cycle models.

#### **4.6 Chapter Summary**

This chapter is a part of a 3 step methodology of data reduction, data display and data conclusion and verification using Miles and Herberman (1994) principles of analysing qualitative research. The researcher was able to describe four different e-service process stages and sub stages, as well as identifying a number of facilitators and barriers for each case. Such procedure was essential for the development of an e-government adoption model for the Dubai civil agencies and providing answers for the research questions. The next chapter provides cross case analyses, summarises the field project research, provides a discussion of the results, and presents the e-government adoption model.

## **CHAPTER 5 RESULTS OF CROSSCASE ANALYSIS**

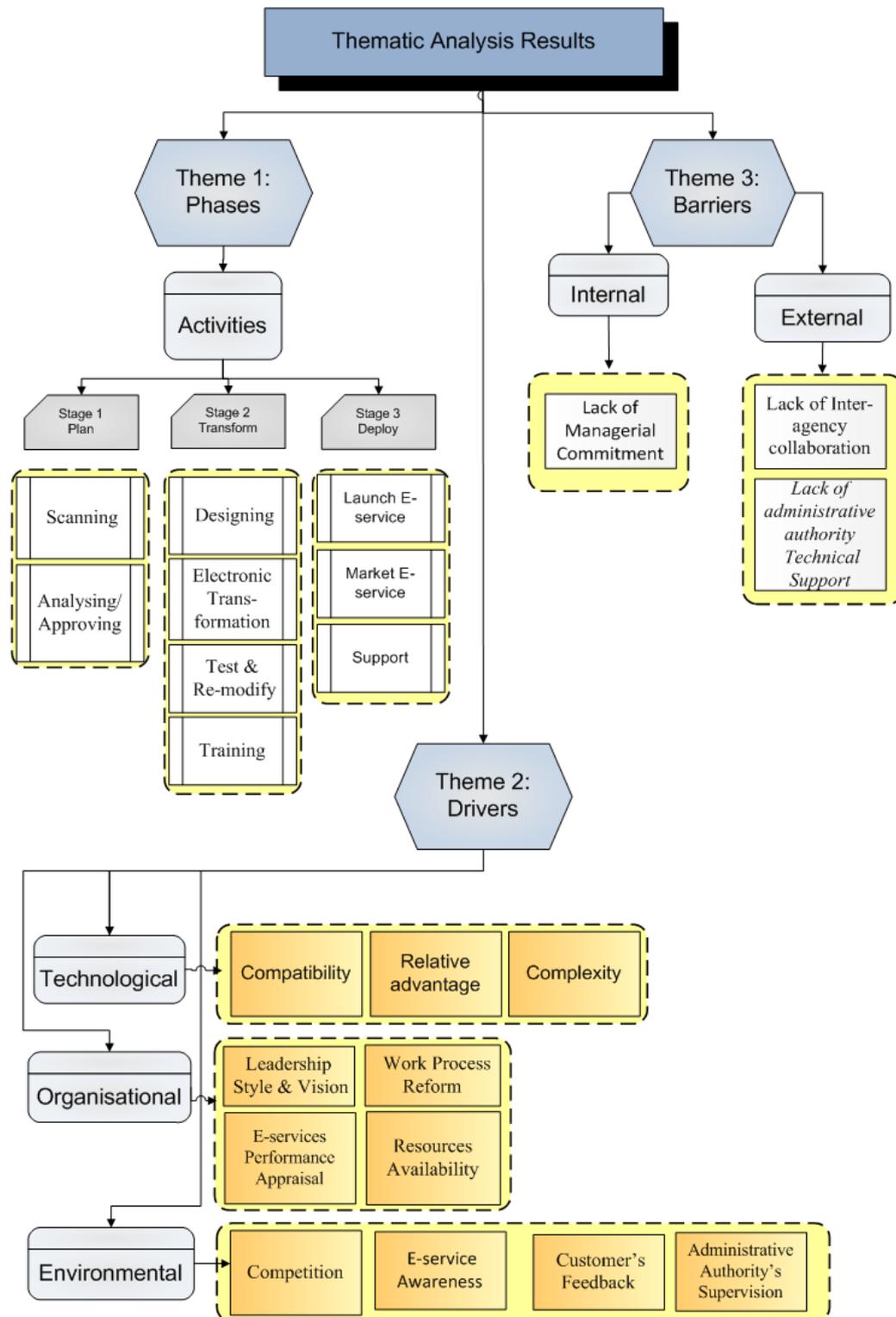
### **5.1 Introduction**

The primary research question presented in Chapters (1) and (3) identifies the study's fundamental intent to: gain a better understanding surrounding the activities and discovering significant factors related to delivering electronically enabled government services in Dubai public organisations.

That examination was executed through the construction of the four case studies presented in Chapter (4). The researcher's intention was to present the findings in comprehensive portraits of each case in Chapter (4) then identify and substantiate common themes across all four cases in Chapter (5). In the next chapter (i.e. Chapter 6), the author will compare the study's thematic analysis results with the frameworks, theories, and conceptual writings of the literature and presents the research findings.

Using the principles of thematic analysis, often referred to also as template analysis (Crabtree and Miller, 1999; King, 2004; Miles and Huberman, 1994), the researcher was able to identify common cross-case themes that reflect the adoption and implementation processes and related influential attributes. The analysis process began by using constant comparative method. Once the member checks have been completed, the interviews' transcripts were examined for emergent cross-case themes with the aid of observational field notes and reflective remarks that was taken during the interviews. The potential themes were coded, and all coded themes developed from interviews' transcripts using ATLAS.ti, a qualitative research analysis software tool. (*refer to Appendix C*).

Using sorting and filtering tools within the qualitative research analysis software and manual coding when necessary, the emergent themes were narrowed to the dominant themes presented in figure (5.1) below. The rationale for conducting the proposed emergent theme analysis was to ensure that no *a priori* themes were identified to lend additional credibility and accuracy to the emergent themes. This analysis chapter will eventually lead to a good base for the drawing of conclusions in the upcoming chapter.



**Figure (5-1):** Results of Thematic Analysis

Data represented by the themes in figure (5.1) above reveal three categories: (t1) Activities, (t2) Drivers, and (t3) Barriers. These themes are substantiated by participants' perceptions of how those themes related to their experience with e-services deployment. Careful and repeated data analysis reveals subthemes that are presented to delineate the three themes. While it is likely that repeated analysis would yield the emergence of further themes or the refinement of those presented, the researcher feels as though these themes reflect the breadth of the data accurately and with appropriate detail to address the study's research questions.

### 5.2.1 Theme 1: Activities of e-services' development process

Direct responses to protocol items regarding the participants' activities in adopting and implementing e-services and responses to other questions that pose references or inferences to e-services transformation process permit the rationale for the theme of *activities*. Data reveal three major activities that were commonly shared across the four organisations. Those stages are categorised as: planning, designing and deployment.

#### Theme 1A: Team Formation/ Scanning

Several participants indicated that the e-service's transformation process commences with "*scanning the surrounding environment*" in search for potential services with "*pre-specified criteria*" that could provide sought out benefits for their relative organisations. Participants note that such a procedure is carried out through the designation of an e-transformation team headed by a project leader.

**C1PL** comments shed some light on the tasks her department undergoes in the scanning stage. "*Our work on e-government projects begins with site visits to the different departments to scan for potential services and gain more understanding about the service's execution process.*"

The designated team will arrive at a list of customer-centric services after their site visits. Other participants have indicated that e-services in their organisations could be also initiated through the “*organisation’s E-champions*”, “*a customer’s or user’s suggestion*”, “*internal staff meetings and brainstorming sessions or to satisfy as department’s need for the service*”.

### Theme 1B: Analysing/ Approving

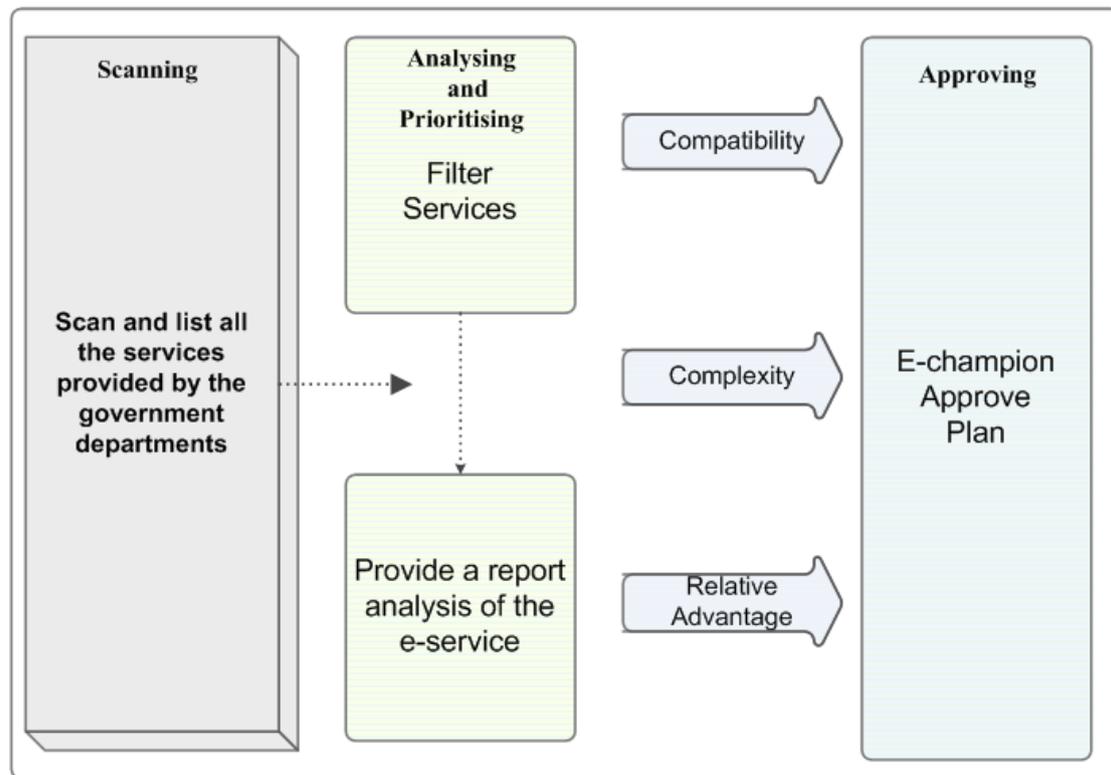
The second activity entails analysing the identified online services. A general consensus among interviewees indicates that deeper consideration of the potential e-service takes place during analysis. During which the departments undergo a process involving: preparing for work plans, functional specification, anticipating implementation cost estimates, and schedules for the various deliverables.

C1PL notes, “*A committee or work group will be formed from within our department with a goal of gaining executive understanding and commitment before undertaking a project. Risks, benefits and costs are evaluated to determine priorities and resource commitment.*”

The first major stage concludes with the organisation’s e-champion approval of the e-services’ necessary plan and implementation documents. Participants reveal that some specific criteria can influence the e-champions’ decisions on favouring a specific service for transformation. According to C3EC, he notes “*Our transformable services must have a considerable value of return, it is like an investment.*”

C1EC feels that, “*The department does not want to spend effort and resources for a service that will not be used, and conversely we encourage projects that would seem to have high transactions or valuable information for our clients.*” C4EC thinks the priority for providing service electronically should be “*based on the needs of a certain department*”

C2EC thought that the services should *have “Features that provide tangible benefits to customers”*. Figure (5-2): Provides an overview of the activities at the first stage ‘planning’. The potential services are listed after site visits and filtered depending on the sought out criteria, the e-services work plan is then submitted to the e-champion for approval.



**Figure (5-2):** Overview of the Scanning and Analysis activities in the cases under study.

### Phase 2: Transformation

All of participants’ comments reveal that their respective e-services’ departments embark on e-services’ transformation at the next stage, when they *“acquire and allocate resources*

*needed to make the transition.*” At this stage the e-services departments’ understudy aim to bring the innovation to life, and enable its use and assimilation.

#### Theme 1C: Team Formation/

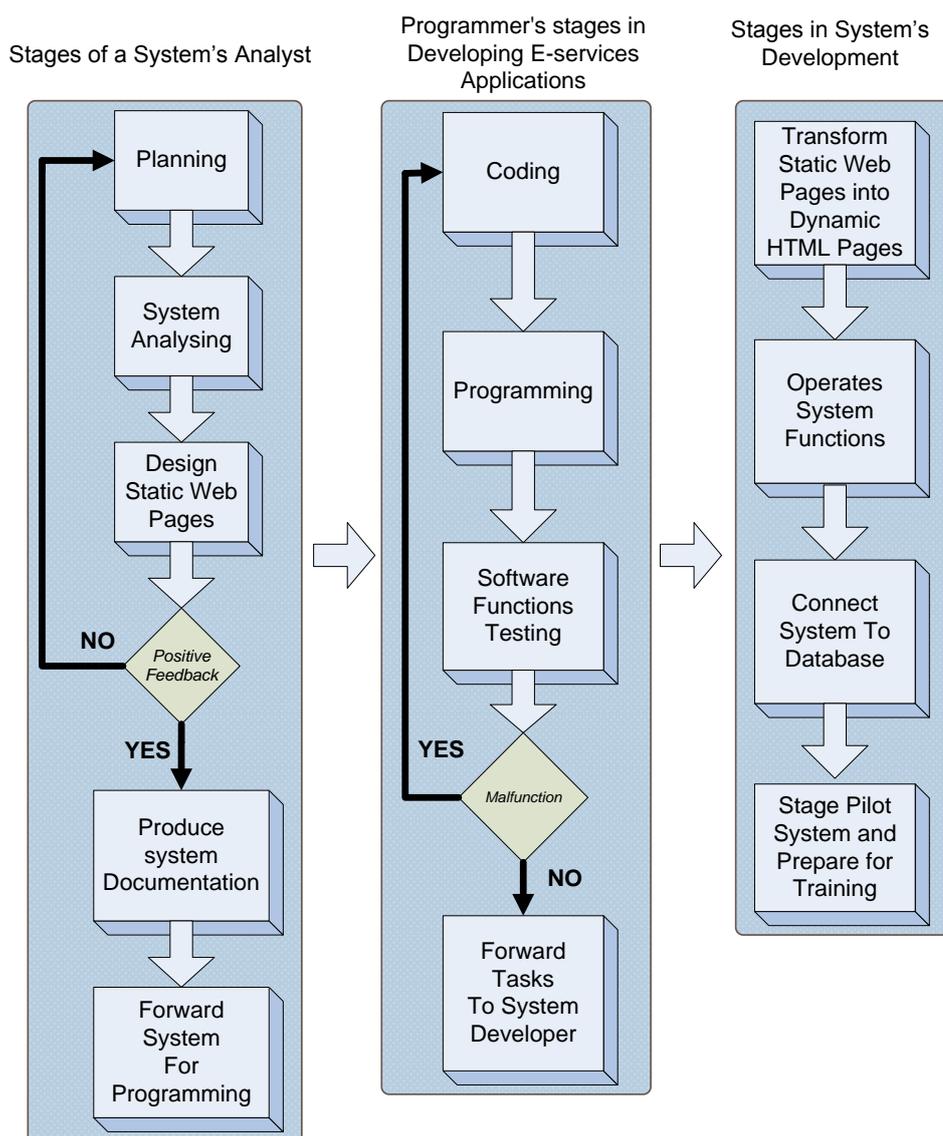
##### (Implementation)

The e-services’ overture require a team to complete features, components and other elements described in the specifications of the proposed e-service during the planning stage. As the e-service team leader, **C1PL** explains that *“E-services head of department calls for a meeting to set up the e-services implementation team. Each team member will be delegated with their roles in the implementation process.”* According to her the designated team is focused on: *“writing and developing system’s applications, provide the appropriate infrastructure, training and documentation.”* (refer to Appendix D- E-government Employees Roles and Responsibilities)

#### Theme 1D: E-services’ Transformation:

##### Analyse, Design and Develop

Participants’ data reveal the organisations embark next on the design and programming stage, a complete structure plan for the e-service application is defined in detail in this stage. Department analysts describe designing static screens and process automation. Programmers describe writing and developing the application codes as system developers discuss realising the design and preparing for tests. In, figure (5-3), the researcher depicts the processes of analysing, designing and developing e-services as revealed by the participant’s understudy. These processes are dependent on each other. Developing activity is dependent on Programming which is dependent on System’s Analysis. Any changes will ultimately affect the other activities.



**Figure (5-3):** Analyse, Program and Develop stages in e-services implementation

#### Theme 1E: Test & Re-modify

Participants' describe the next activity as "*testing*". At this stage, the webpage is activated and put on a server for testing purposes. The department that has issued a demand for the service will internally test the systems for any missing functionalities.

**C1SD** explains at this stage, his e-services departments' activities are focused on "*preparing the system for deployment*". **C3ST** notes, "*We will often test the requirements in focus*

*groups to ensure they meet users' needs and expectations from the e-service, and often, new or different requirements are uncovered in talking to users.*" Evidence from this stage also point out that testing activities are iterative. Participants reveal that *"the e-services are redesigned in those trails to accommodate successful usage experiences."* **C4QAO** notes that this activity is imperative, *"since there are often a number of barriers to adoption of a new e-service."*

#### Theme 1F: Training

Cases commonly reported that training commences after the testing stage. **C2PL** believes that training *"plays as a vital role"* in *"raising e-service awareness among the system's users."* Participants reported training the system's users to ensure they can operate the website with ease. **C4PL** believes that, *"Training is necessary to help the users accept the electronic systems."*

### **Phase 3: Launching & Deployment**

#### Theme 1G: Launch E-service

**C2PL** describes the next stage is about *"deploying their e-service throughout the feasible and necessary channels, where the e-service can immediately be put to use by the clients."* Transactions and queries are electronically simulated and users leave with their impressions on the usability of the website. These elements, according to the participants, will affect the

e-services' success. At this stage, the organisations under study attempt to ensure their new services success through marketing and providing pre launch support for their e-services.

#### Theme 1H: Market E-service

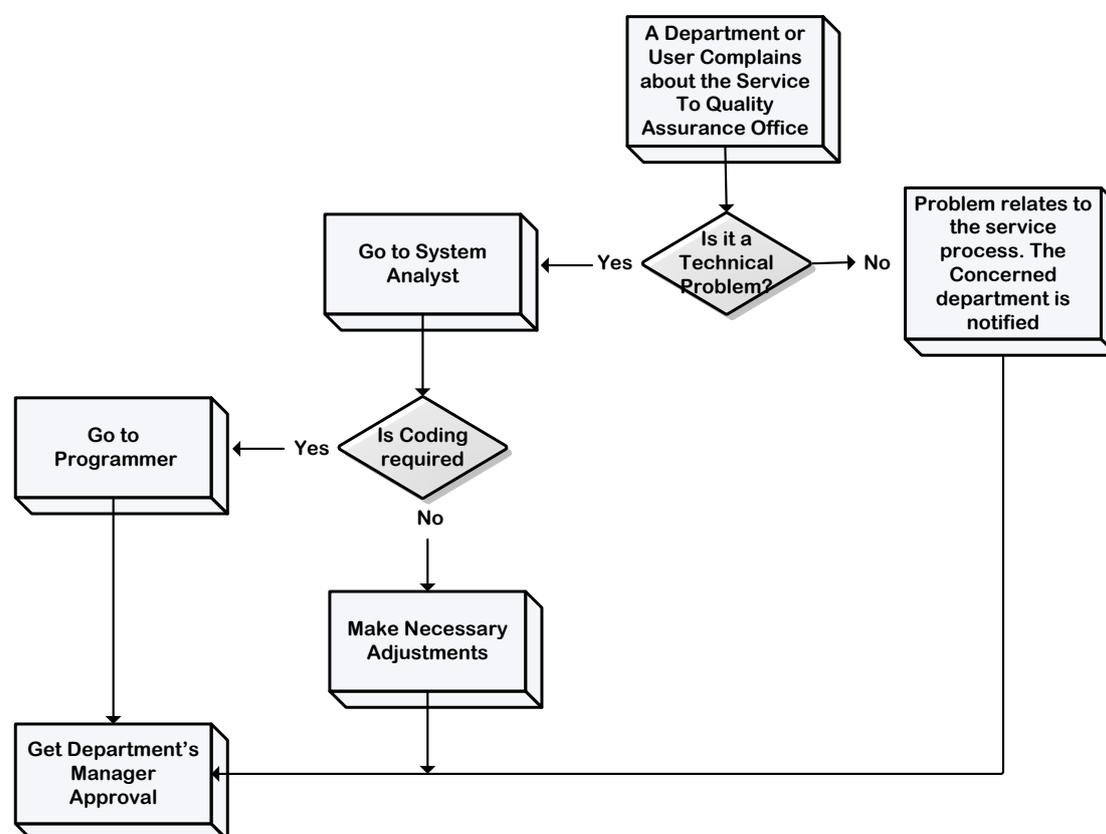
Launching a website or any alternative electronic means for delivering the organisations' e-services is not the milestone of the electronic transformation from the respondents' perspectives. According to **C1QAO**, "*Successful projects also will require good marketing to encourage citizens to make use of them.*" The organisation's E-champion, **C3EC**, believes that, "*People must be persuaded into using these services, provided, of course, that these services were designed with members of the public in mind.*"

Several programs were initiated in order to educate people about the existence and the related benefits of the organisations' e-services through "*print media*", "*exhibitions*", "*seminars*", "*radio*" and "*television*" or internally through "*group meeting and site visits*". The frequencies of these programs have grown as more and more e-services have been introduced.

#### Theme 1I: Support

The cases under study ensure sustainability by constantly developing the websites or other technological facets utilised for delivering the e-services. At this stage, the participants indicate that they provide support and sustainability through "*updating their e-services*", "*periodic maintenance*" and through "*feedback from internal and external users*". Last but not least, the cases rely on constantly monitor their e-services performances based on International Criteria. Case one and four both have a quality section responsible for such a

task. Case Two has a system's support section and Case Three has a monitoring section (Chapter 4).



**Figure (5-4):** maintenance and support process

Depicted in figure (5-4) above is the maintenance and support process as provided by marketing officer in Case Two. The data reveal that 'support' activity consists of iterative sub processes. A complaint or suggestion reaches through an e-compliant system. A quality assurance employee will then investigate the user's suggestion and deal accordingly with the task. If the problem is technical, a systems analyst will be informed to take on technical adjustments. Otherwise, in case the problem relates to e-service's process it gets transferred to the department of concern. All the other cases understudy revealed similar activities in their e-service support process.

### 5.2.2 Discussion of E-service Transformation Process

Participants reported carrying on numerous activities during their development process of manual, over the counter government services to digitally interactive services.

Three major activities deduced from the participants' discussion about e-services' development process: *planning*, *transformation* and *deployment*. In the planning stage, the e-services' department starts scanning for potential services within their organisations based on specified criteria. During e-services transformation, the service is analysed, programmed and then developed. Testing and training activities conclude this stage. The final stage in e-services' development process is e-services' deployment, the e-service is launched, marketed and then maintained and monitored.

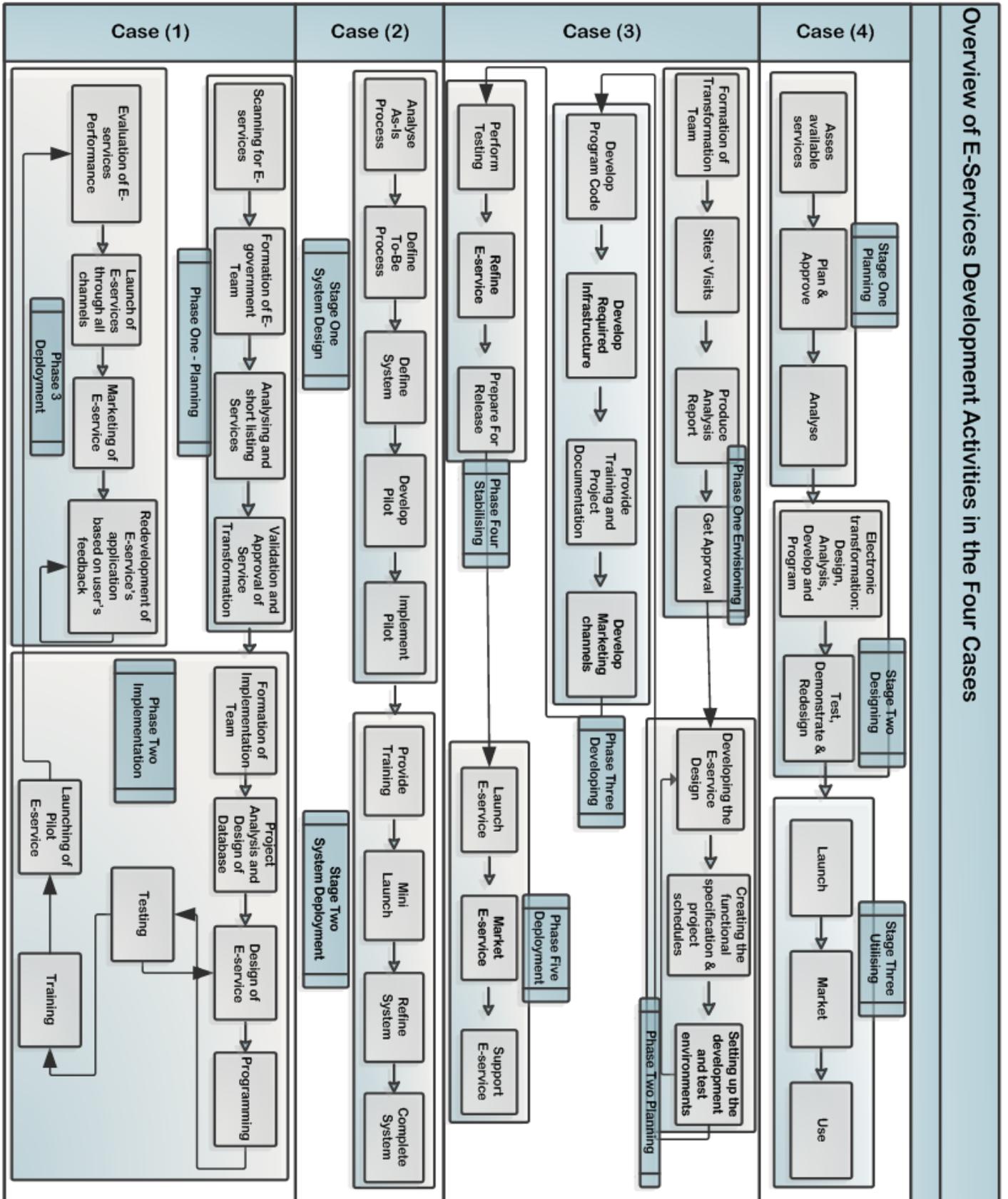


Figure (5-5): Illustration of e-services' development activities

In figure (5.5) above, the author provides an illustration of e-services' development activities as revealed by research participants. The illustrations depicts the development activities progress in an non-linear manner, the e-services development process appears to be fluid and dynamic in shape, sometimes even random in which there is no apparent sequence of stages but is characterised by feed-back and feed-forward loops.

### **5.2.3 Theme 2: Drivers toward adoption and implementation of public e-services in Dubai**

This section provides the discussion of the research findings related to the second research question: discover the technological, organisational and environmental determinants that can facilitate or obstruct e-services' deployment. The author established that the data emerging from the thematic analysis is in accordance with the contexts developed by Tornatzky and Fleischer (1990) *technological context*, *organisational context*, and *environmental context*.

#### Theme 2.T: Technological determinants

Three e-services related attributes were considered significant by the participants: e-services' *complexity*, *compatibility* and *relative advantage*.

#### Theme 2.T.1: Relative advantage

According to the study's participants, e-government initiatives posse numerous qualities that could potentially provide many benefits for their respective organisations. All the e-services related benefits were categorised under relative advantage during the thematic data structuring. According to Rogers (2003), relative advantage is "the degree to which an innovation is perceived as being better than the idea it supersedes" (Roger, 2003).

The respondents, especially the project leaders and system designers accentuate the consideration of elements and features such as *web page aesthetics* and *content*,

*customisation, customer's feedback facilities, and ease of navigation* in the organisation's e-service design.

**C1SP** perceives that e-services are distinguished by its *"services' interactivity"* and *"continuous access"*. According to him he believes, *"they enhance the quality and speed of customer services."* **C2MO** notes that e-services her organisation provides *"create competitive advantages and encourage customer interaction."*

**C3SP** also recognises that e-government initiatives will be promptly adopted if its merits include, *"reducing time and cost of providing service to the general public"* while **C2PL** believes the e-services help *"empower employees and systems' users, reduce bureaucracy and increase the efficiency and effectiveness of civil agencies."*

Some other benefits, mentioned during interviews include the *"upgrading of the agencies' computer systems"* and *"training and educating the work force"* to design and use the system.

#### Theme 2.T.2: Compatibility

The theme compatibility is categorised based on the participants' responses on how they conceive e-government initiatives and how the e-services adoption and implementation activities fits in their current work processes. Participants reveal that adoption and implementation of e-services in their organisations require both technical and organisational compatibility to be accepted by the civil agencies' employees.

**C3PL** discusses his organisation's approach towards sustaining technical compatibility. She explains, *"We continuously enhance our existing technical infrastructure to match future requirements."* **C2PL** notes that her organisation's efforts in sustaining technical compatibility are facilitated by *"monitoring the performances of services"* and *"consistency of*

*systems' operations.*” **C4SD** notes that his organisation technical compatibility through, *“establishing rigid IT infrastructure.”*

Participants commented on the compatibility of e-services transformation practices with their organisation's work culture. **C3PL** notes, *“Employees have to be informed about the merits of e-services and assured of its compatibility with their current work operations and functions.”*

Participants also emphasise the importance of identifying the employee's needs such as *“skills' development”* and *“involvement in the e-government projects from initial stages”* to ensure successful adoption of e- government initiatives.

### Theme 2.T.3: Complexity

The informants discussed two types of complexities related to e-services' adoption and implementation: *use* and *design*. **C1SD** discusses the complexities he encountered during e-services' design activities. He notes, *“this is usually dependent on a number of factors such as the number of work processes involved, service current automation degree and infrastructure's availability, number of departments involved, number of external parties involved, and the number of documents processed.”* Participants indicated that they overcome service design complexity by *“training”* and *“presence of expertise”*.

System Designer, **C1SD**, has stressed on simplifying the e-services' design and functionalities for operators and clients by, *“developing the services without any technical complications that could alienate the average user.”* **C2PL** believes that, *“e-government initiatives, which are difficult to decipher, will be met with resistance and rejection from individuals assigned to use the new technology and carry out the new procedures.”*

Participants emphasised the importance of users' involvement in projects at the initial phase to address complexity issues, concerns and viability of the project, in addition to guarantee their

full commitment and dedication towards its success. They noted that any project's success will hinge on the “*simplicity of the tasks*” and “*ease of use of technology*.”

### **Theme 2.O Organisational facilitators**

In addition to the technological determinants, participants identified organisational determinates to be equally important to the adoption and implementation of e-government initiatives in their organisations. Four common sub themes submerged from the interviews: *performance measurement, leader’s style and vision, work process reform, resources’ availability*.

#### **Theme 2.O. 1: Leader’s Support and Style**

The role of e-champion in setting e-services strategic goals, securing projects’ resources and resolving adoption and implementation setback have been mentioned by several participants. **C1EC** have commended the *Ruler of Dubai* efforts in, “*introducing the e-government concept to Dubai in 2001*” and “*proliferating its adoption among the public organisations in the Emirate*.”

**C2MO** says that is very “*positive and uplifting*” when the organisation’s leader shows “*some knowledge of specific details relating to her job tasks and processes*.” **C4SD** expresses his feelings about the style of his organisation’s leader, “*His attitude is very friendly which is very motivating*.” Many participants also noted that the middle management played a major role in the adoption of previous projects, which were designed to improve the work process. Rogers (2003) also identified that *Top Management Support* and *The level of change agent* as important factors in managerial innovation diffusion.

### Theme 2.O. 2: Work process reform

The interview data revealed that reformation and reinvention of work processes plays a significant role in accommodating participants' e-services transformation activities. Department manager in Case One, **C1EC**, notes "*we need to change the organisation's work processes to usher the employees into incorporating modernised e-services designs and operations.*"

Both Case Two and Case Three adopted international guidelines for developing and deploying their technologically driven projects based on a '*Service Development model*' and '*Microsoft's Solution Framework*' respectively. Cases One and three have developed their own internal implementation strategies; nevertheless, they are still primarily influenced by international methodologies and practices such as: ISO, Six sigma and Balanced Score Card.

### Theme 2.O.3: E-services Performance Appraisal

Participants have also indicated that in order for e-services' deployment to be successful, there is a need to introduce several performance measurement tools to aid employees in evaluating and supporting e-services' progress. The department's quality assurance office manager, **C1QAO**, notes, "*Monitoring is essential in order to ensure that e-services are carried out as planned.*" **C2PL** suggests that monitoring has helped her department by, "*meeting overall objectives of improving service levels, increase revenues and reduce service provision costs.*"

**C2MO** notes that, "*performance appraisal techniques are borrowed from private companies' practices.*" She adds, "*It is important to think like a business and to leverage lessons learnt by other Government establishments.*"

**C4QAO** indicates that in addition to his organisation's monitoring activities, Dubai E-government Office, (DEG), monitors the e-services performance through 'GeSS' system. He explains that *Government eServices Statistics System*, "is a web-based interactive application that allows Dubai's government departments to define their services, both online and offline." He adds, "GeSS also allows categorisation of government services with respect to several well-defined criteria and provides reporting facilities to gather statistics regarding the progress of Dubai's e-government initiatives."

#### Theme 2.O.4 : Resources Availability

Participants' responses regarding availability of qualified personnel and financial resources lead to the development of sub-theme '*resources' availability*'. **C1EC** emphasises the importance of having "*in-house managerial and technical expertise who understand the technology and the organisational culture as oppose to contracting IT projects to private companies.*" **C4PL** explains that her department suffered from losing five I.T personnel to private companies and other government agencies in year, 2007. She explains that her department was almost brought to a standstill. She pointed out the all the technical projects were outsourced to private companies but nonetheless, she didn't have enough staff to collaborate with the private companies. She notes, "*The skills my department was missing could not be recruited easily by the public sector.*" She continues, "*And even if we managed to acquire and train some staff, most of their training may not equip them to program industry-strength web-enabled applications in few years.*"

Financial resources also play a significant role according to the research informants. **C3MO** thinks when it comes to initiating and developing e-services in his organisation, budget could be the biggest decider, "*it affects the number of projects we can carry, if any. It also*

*affects the quality of the services' webpage, its accompanied services and functionality. C2MO believes that budget is important at the launching stage, "Budget is vital for marketing e-services, so the clients are aware of our service existence online and encourage their use it."*

### **Theme 2.E: Environmental influences**

In addition to technological and organisational influences, the organisations' external environment affects services' transformation behaviour in different ways. First, participants indicated that their participation in yearly governmental programs such as "The Dubai Governmental Awards" and their desire to surpass other government departments has a significant push on their transformation efforts. Also, participants have demonstrated that they believe that their successful effort are recognised by their customer's e-services usage rate and related usage figures, hence they are strong advocates of increasing *users awareness*. Finally, the participants believe that having a central entity to supervise their governmental departments' e-transformation and deployment efforts, such as Dubai E-government office, is an essential determinate in their adoption and implementation journey.

#### **Theme 2.E.1: Competition**

Several participants from all the cases indicated that their desire to compete in annual government awards have been positively affecting their performance in adopting and implementing e-services. **C1PL** notes, "*Public organisations are awarded annually for distinguished efforts in annually held ceremonies, we compete among public organisations level and individually.*" She explains, such competitions "*manages to tap into the employees' energy, creativity and productivity by rewarding them for their accomplishment through the provision of incentives.*"

**C3PL** concurs that, *“other government organisations’ efforts in providing various and innovative solutions through their online services affect our desire to implement our applications much faster and more eminently.”*

#### Theme 2.E.2: E-services Awareness and Usage

The e-government administrative authority in Dubai, (DEG), has set *services’ usage levels* at fifty per cent as a primary indicator to e-services’ successful deployment. According to the marketing officers interviewed, the organisations have executed extensive marketing strategies and facilitated many customers’ feedback channels and demonstrated efforts in trying to understand the customers’ needs in an effort to achieve the sought after usage rate.

Third of all participants, (8) out of (24), suggested that increasing customers and users’ awareness is the main facilitator in achieving the desired usage rate. The organisations under study had separate marketing departments, (Chapter 4), as part of their efforts in increasing customers and employee’s awareness and to encourage e-services users’ acceptance of their e-services.

**C4MO** notes that increasing users’ awareness can be attained through *“conducting after – launch meetings with major clients, organising workshops with operators and users to educate them on the new e-services’ usage and features.”* **C3MO** suggests that increasing users awareness can be achieved through, *“advertisement through mass media, conducting conferences, seminars and marketing the e-services during exhibitions.”*

#### Theme 2.E.3: Customer’s Feedback

Participants have indicated that ‘Feedback’ is another essential determinant throughout their transformation activities of government services. **C2PL** notes, *“At the beginning stage of the service’s provision, we will conduct a consultation round to get feedback from citizens or*

*internal departments on our e-services.” She adds, “The public needs to be also directly involved in the development of service’s provision.”*

**C1EC** notes that, *“Our department was not aware of the importance of utilising customer’s feedback in the start of their e-services development activities”*. He adds, *“We came after a couple of years of e-services implementation practices to learn a very important lesson. We now understand the importance of user’s feedback.”* He offers to share some of his learnt lessons, *“The financial cost, time and efforts that went into redesigning and development could have been easily avoided.”*

The Quality Assurance Officer in Case One, (**C1QAO**) indicates that other individuals’ feedback such as *“department’s staff and e-service operators”* He describes them as, *“imperative”* and *“serve accordingly throughout the project’s life cycle.”*

#### Theme 2.E.4: Central Administrative Authority’s Supervision

Many participants described that the existence of a centralised government entity to administer the governmental departments’ provision of e-services as ‘essential’. Participants indicated that Dubai e-Government Office (DEG) was established as an administrative authority to formulate Dubai’s e-government strategy and monitor its implementation by defining strategic performance targets and measuring the overall e-services’ performance indicators.

**C4EC** following statement provided some examples of the e-service’s performance indicators benchmarked by DEG , *“DEG requests various e-services statistical data such as the total number of services provided by each public department, e-enablement ratio, number of visitors, service’s usage rate, payment transactions and costs savings records.”*

He notes that, “*some of the statistical data is regularly available in some of DEG own publication e4all magazine and the DEG’s website.*”

#### **2.2.4 Summary of e-services, drivers**

A number of analytic techniques suggested by Miles & Huberman (1994) were used to cross-analyse the data. The most basic way of cross-analysing the data from several cases is with the unordered descriptive meta-matrix. Figure (5-6) bellow assembles data from several cases in an efficient, manageable format providing ‘inclusion’ of all the relevant information. Secondly, the table tabulates the frequency of events and as such draws rapid attention to the dominant issues, keeping the researcher analytically honest while protecting against bias. Figure (5-6) below provides an example descriptive meta-matrix that was used extensively in the research.

	C1EC	C1PL	C1SD	C1SA	C1SP	C1QAO	C2EC	C2PL	C2SA	C2DO	C2ITC	C2MO	C3EC	C3PL	C3SA	C3SP	C3ST	C3MO	C4EC	C4PL	C4SD	C4SP	C4MO	C4QAO	
<b>Technological Determinates</b>																									
Compatibility		✓				✓					✓			✓					✓	✓					
Relative advantage	✓		✓	✓		✓					✓			✓					✓						
Complexity	✓	✓	✓			✓		✓							✓					✓		✓	✓	✓	
<b>Organisational Determinates</b>																									
Leadership Style & Vision	✓	✓			✓		✓						✓	✓						✓	✓	✓			
Reform of Work Processes	✓	✓				✓		✓						✓							✓		✓	✓	✓
E-services Performance Appraisal	✓	✓				✓		✓				✓	✓	✓					✓		✓			✓	✓
Resources Availability	✓	✓	✓	✓			✓	✓					✓		✓	✓	✓	✓	✓	✓				✓	✓
<b>Environmental/ External Determinates</b>																									
Competition		✓				✓	✓							✓							✓	✓	✓	✓	
Increasing E-services Awareness	✓	✓				✓		✓		✓		✓	✓	✓					✓	✓	✓			✓	✓
Advocating Customer's Feedback	✓	✓	✓			✓				✓				✓						✓		✓			
Central Administrative Authority's Supervision	✓	✓				✓		✓	✓			✓	✓	✓					✓		✓				✓

**Figure (5-6):** E-services transformation process drivers

The researcher identified three technological facilitators (*Compatibility, Complexity and Relative advantage*), four organisational drivers (*Leader's Style and Vision, Work Process Reform, E-services Performance Appraisal, Resources Availability*) and four environmental determinants (*Competition, E-services Awareness, Customers' Feedback, Administrative Authority's Supervision*), as the essential drivers for the their adoption and implement of e-

services transformation processes. of an e-government adoption model for Dubai public organisations.

Themes were formed as a comprehensive view of the pattern emerging in data, the frequency and reoccurrence of data helped determined which data to be initially selected and hence initial themes were created. A theme should also have captured something important about the data in relation to the research questions and represented some level of patterned response or meaning within the data set. After the themes were initially decided upon by the author an preliminary set of patterns have emerged, the author obtained feedback from the informants about them. This was done sometimes as the interview was taking place or by asking the informants to give feedback from the transcribed conversations later through emails or field visits depending on accessibility. In the former, the interviewer used the informants' feedback to establish the next questions in the interview. In the latter, the interviewer transcribed the interview or the session, and asked the informants to provide feedback that is then incorporated in the theme analysis.

The next step was to build a valid argument for choosing each themes. This was done by reading the related literature. By referring back to the literature, the interviewer gained information that allowed him to make inferences from the interviews. The comparison of themes identified in this chapter with literature is displayed in Chapter (6). Once the themes have been collected and the literature has been studied, the researcher was ready to formulate theme statements to develop propositions and build a an e-services development model (see Chapter 6). When the literature was interwoven with the findings, the story that the interviewer constructed is one that stood with significance (see Chapter 4 and 5). A developed story line helped the reader to comprehend the process, understanding, and determinates related to the e-services development process.

In general, the importance of a theme was not necessarily dependent on quantifiable measures – but in terms of whether it captures something important in relation to the overall research questions. Accordingly, themes that were not relevant to the story line or research questions were discarded.

### **5.2.5 Theme 3: Barriers toward adoption and implementation of public e-services in Dubai**

In total, three barriers were identified by the participants as significant from their e-services development endeavors. The author categorised the barriers into Internal and External barriers sub-themes. '*Lack of Managerial Commitment*' was the sole identified internal barrier. Participants identified two barriers categorised as external barriers in this research, '*Lack of administrative authority's Technical Support*' and '*Lack of Inter-agency collaboration*'.

#### Theme 3.I.1: Lack of Managerial Commitment

The '*lack of managerial commitment*' seems to concern many participants. Several interviewees mentioned negative experiences with superiors' commitment during the e-services' transformation process. System programmer, **C3SP** notes, "*Management policies need to be constant.*" He continues, "*Often our department managers would keep changing their mind about projects' features which might cause delays or uncalled for expenses.*" **C2MO** comments about a similar experience, "*If that commitment is not demonstrated clearly, it is unlikely that the employees who are required to carry out activity will take the task seriously.*" **C1QAO** notes that, "*long-term commitment is crucial to drive changes.*"

## External Barriers

### Theme 3.E.1: Lack of Inter-agency collaboration

Inter-agency collaboration is a significant barrier to the adoption of e-government initiatives activities in Dubai public originations as indicated by research's participants. Electronic government initiatives differ from previously implemented IT projects. Implementation of previous IT projects in Dubai public organisations did not require inter-agency collaboration. Some e-government initiatives however, require government agencies to work together and collaborate with one another to facilitate the delivery of commonly shared multitasks services, which are provided to citizens and businesses.

Many participants attribute the absence of interagency collaboration to the civil service law, which does not offer guidelines pertaining to cross-agency coordination and cooperation. Therefore, the agencies are not obligated to participate in information sharing practices. Alternatively, **C2PL** believes that, "*legislation alone will not lead to collaboration between the agencies.*" The manager added, "*some agencies feel that collaboration will result in loss of prestige, power, independence and importance.*"

Quality department officer believes that the main obstacle hindering inter-agency collaboration is technological. **C1QAO** notes that, "*many of our services are still not fully accessible to our Internet users because the department shares the processing of these services with other external departments that have still not developed their electronic portals.*" **C4SD** also thinks that, "*government departments that lack fully developed electronic infrastructure make them incapable of integrating their services with the more technologically advanced departments.*"

**C3EC** believes that, *“the culture of information sharing does not exist in Dubai’s public organisations.”* He suggests that, *“great effort by the organisation’s management will be required to address this problem.”* **C1PL** proposes some solutions to encourage inter-agency collaboration. She notes, *“We have to remove the fear factor associated with collaboration and establish a culture within the agencies that appreciates and promotes the concept of collaboration and information sharing.”* She continues, *“this can be done through an intensive awareness program within the civil agencies.”*

#### Theme 3.E.2: Lack of Administrative Authority’s Technical Support

Although participants have indicated that the existence of a single administrative authority supervising their e-services transformation procedures served as a driver in their adoption and implementation efforts, they also shared some concerns regarding the DEG office capability in supplying the required technologies for their commonly shared services. **C2DO** shares his own experience *“In the case of our e-SMS system and the e-Pay services provided to us by the Dubai E-government office, we were having difficulties due to high volume of transactions which resulted in delaying public announcements to the public as well as the execution of the payments.* He further points out that *“this was evident in the volume of complaints the department received due to delayed and inefficient services.*

Despite the cost saving and modernised services that the administrative authority in Dubai provides to public organisations through synergetic tools such as: web portal, payment engines, application development suites, customer relationship management applications, an adequate IT infrastructure still represents the key barrier for some of the highly dynamic

services. Participants view a lack of supportive technical infrastructure as a significant barrier to the development of the government organisations' capabilities to make available online services and transactions. They also agree that unreliable IT infrastructure in public sector organisations will degrade e-government performance. C3PL notes. “DEG must adjust its strategy and approach for rolling out new portals for additional departments. It is DEG’s focus to ensure that the architecture and infrastructure are evolved to meet our growth needs.”

	C1EC	C1PL	C1SD	C1SA	C1SP	C1QAO	C2EC	C2PL	C2SA	C2DO	C2ITC	C2MO	C3EC	C3PL	C3SA	C3SP	C3ST	C3MO	C4EC	C4PL	C4SD	C4SP	C4MO	C4QAO	
	Internal Barriers																								
Lack of Managerial Commitment						✓						✓		✓			✓	✓			✓				✓
	External Barriers																								
Lack of Inter-agency collaboration	✓	✓			✓			✓	✓		✓				✓					✓	✓				
Lack of administrative authority Technology Support	✓	✓			✓			✓		✓				✓		✓		✓							✓

**Figure (5-7): Overall E-services transformation Barriers**

Lack of inter-agency collaboration and lack of administrative authority’s technical support was found to be the most dominate barriers shared among the research participants as illustrated in figure (5-7) above. The external barriers seem to be related to the public organisations culture and technological support in Dubai. Participants reported legal, technical, and fear of losing power as the main reasons for not integrating with other agencies. Lack of technical support is due to technology’s availability and (DEG)

organisations' capacity in supporting Dubai's entire public organisations transformation efforts.

### 5.2.6 Chapter Discussion

This chapter analysed the data collected from face-to-face interviews and documents. At the outset, data was coded and categorised by employing constant comparative method (Glaser & Strauss, 1967). The researcher was able to conduct a thematic analysis of each case study and identify common, cross-case themes that reflect the primary and the supporting research questions.

The constant comparative method is a process in which any newly collected data was compared with previous data that was collected from the interviews with the cases. Data was constantly compared throughout the research study by means of coding (*see* Appendix B). This was a continuous ongoing procedure, because themes were initially formed, enhanced, confirmed, or even discounted as a result of any new data that emerges from the study. ATLAS.ti, a qualitative analysis software, was used to organise the data from interviews and identify the emergent and reoccurring coded texts (*see* Appendix B). The coded data was formed from sections of texts that the author have transcribed from interviews, some codes were also a result of excerpts from documents or images. All the data was similarly coded through ATLAS.ti using similar label and categories that were first generated from the initial conceptual framework and interview questions to ensure the consistency of coding.

As the author worked through the data, the number of codes were expanded as more topics and themes were identified. If the theme identified from the data did not suitably fit the codes that were already identified, then the author had to create a new code to involve the new theme for analysis purposes.

From the assigned codes to the interviews data and texts the author was able to use Atlas.ti to assign value depending on the frequency of reoccurrence of the code. Codes were then grouped into themes fittingly. The significance of the themes identified during the cross-case analysis was reflected through two general criteria: First, each theme in some fashion represents the scope of the study outlined in the research questions, and second, the themes are represented across all four cases. The researcher decided that the only themes that were represented in all four cases held adequate significance to be identified as cross-case themes. Thus, each theme presented here emerged within at least one interview in each of the four cases.

The purpose of this study was to provide an in-depth discussion on the activities and shed some light on the facilitators and challenges faced by Dubai's e-services' development employees throughout their *planning, designing and deployment* of the e-government initiatives and to offer insights into how government agencies technologically enabled services could be managed more effectively. *The empirical data outlined in the previous chapter will now compared to the theories presented in the conceptual framework.* , provides a discussion of the results, and presents the e-services development model.

## CHAPTER 6 DISCUSSION AND CONCLUSIONS

### 6.1 Introduction

In this final chapter, the central contributions of this thesis are discussed and summarised. Initially, the key aspects concerning the problem area and the purpose of the study are highlighted. Following this, the chapter elaborates on the outcome from the empirical research. Next, this chapter offers a discussion of the findings and their relationships to the literature and finally the chapter presents the implications, recommendations, and conclusions regarding the study.

This qualitative study investigated the perceptions of four public e-services' departments personnel regarding e-services' development process (*see* Appendix C) through stratified and reputational sampling techniques to determine what activities and factors manipulated the diffusion of e-services within Dubai's public organisations. In the two preceding chapters, the results of the study were presented through four qualitative case studies and a cross-case thematic analysis. The researcher's intention was to present the findings in comprehensive portraits of each case in Chapter (4) then identify and substantiate common themes across all four cases in Chapter (5).

The researcher intended that the study would lay the groundwork for investigations into other e-services development endeavours. Therefore, the researcher states a number of implications from this study as a series of working hypotheses that may be explored in subsequent research. These working hypotheses constitute an answer to the study's third research question (RQ3): "*What working hypotheses are warranted on the basis of e-services' development endeavours in*

*Dubai?*” The hypotheses reflect a synthesis of the data presented in Chapter (4), the cross-case thematic analysis presented in Chapter (5), and the further elaboration of e-services development offered in this chapter. The hypotheses also reflect the understanding reached by the researcher through this study. The final section provides suggestions for future research and outlines the shortcomings and limitations of the research.

As an exploratory case study, the researcher did not intend to produce generalisations covering all e-services development endeavours in Dubai’s public organisations. Instead, a primary goal was to develop a holistic understanding of the process of e-services development through case study replications. The conclusions in this chapter reflect the experience of public sector employees with e-services development in their respective organisations.

The aim of this chapter is to present the findings from the analysis of collected data. The findings will be presented consistent with the methodological considerations presented in the previous chapter and the research questions proposed in the study. This study had two primary goals, three study objectives, and three associated research questions (see Table 6-1, below).

General Research question: How are e-government initiatives developed within Dubai's public organisations?	
Study Questions	RQ1: What are the activities and processes of adoption and implementation of e-government initiatives in Dubai?
	RQ2: What are the technological, organisational and environmental determinants that can facilitate or obstruct the adoption and implementation of e-government initiatives in Dubai's public organisation?
	RQ3: What working hypotheses are warranted based on Dubai's e-services development experiences to guide future research?
Study Goals	G1: Document the Development process of e-services and discover related attributes
	G2: Develop a holistic understanding of e-Services Development process
Study Objectives	O1: Identify and describe the activities within e-services development process and discover the important factors that enabled or constrained its Development..
	O2: Revise and refine the preliminary conceptual model guided by Rogers (2003) Organisation Adoption process and Torotazky and Fleischer (1990) Technological, Organisational and Environmental framework to reflect e-government initiatives' adoption and implementation in Dubai.
	O3: Develop working hypotheses from e-government Initiative's deployment to Guide further research in the exploration of other governmental technological innovation deployment efforts in the area

**Table (6-1):** Study's Goals, Objectives and Research questions

## 6.2 Findings

Described here are critical issues that lend credence to the parallels drawn between the findings and the relevant literature. They also provide rationales for the contributions to the existing knowledge that the researcher proposes. Here, the study's three significant findings are presented in response to the research questions guiding the study, and the following discussion depicts a synthesis of the relationship between the findings and the relevant literature.

E-services development process in Dubai's public organisations has been a result of complex interactions among several different people (i.e. employees, policy makers, users and operators), organisations (i.e. public and private), technical and managerial knowledge, and other factors. The interaction was dynamic in the sense that the goals of the development, the people involved, and the forces that affected e-services development changed over time. Development comprised multiple stages, each with a key set of activities, entities, processes, and forces. The multistage, dynamic and iterative character of the e-services development process is reflected in the first study finding:

*E-services development process can be represented as a continuous development with three distinct stages/activities: planning, transformation and deployment. These stages encompass several activities that are dynamic and iterative in nature.*

E-services development process is influenced by a number of Drivers and Inhibitors. Eleven facilitators and three barriers were identified during the course of the field study to have a significant influence on the e-services' development process. Drawing upon the empirical evidence combined with the literature review, it is within the author's contention that that the TOE developed by Tornatzky and Fleischer's (1990) is an appropriate theoretical foundation for exploring determinates related to e-services development.

*E-services development process in Dubai is influenced by a number of technological, organisational and environmental determinates that are akin to dominate technology adoption frameworks.*

A range of organisational, innovational and environmental factors was indicated as being responsible for influencing the development process of e-services. However, certain factors had been indicated as being more significant than others. These include relative advantage, compatibility, complexity, leader's style and vision, work process reform, e-services performance appraisal, resources' availability, competitive pressure, e-services awareness, customer's feedback and administrative authority's supervision. In contrast, lack of managerial commitment, lack of administrative authority's technical support and lack of inter-agency collaboration were identified as the main barriers influencing the development process of e-services.

The Organisation Adoption model that guided this study was useful to the extent that it supported an integrated view of the complex interaction of entities and forces during e-services development. The third finding of the study, however, reflects the limitations of the preliminary conceptual model presented in Chapter (2):

*Rogers' (2003) Organisation Adoption model does not sufficiently nor accurately represent and describe the evolution of e-services. Modifications and extensions are needed to reflect the development process of e-services' in Dubai public organisations.*

The remainder of this chapter addresses these three key findings. In addition, the discussions on each of the activities of e-services' development include additional findings pertinent to a specific stage. Chapter (6) considers the implications of the findings reported here for the conceptual model and researcher's understands of dynamic, complex processes such as the development of e-services. Chapter (6) also presents a selected set of working hypotheses that reflect a synthesis of the information presented in Chapters (4) and (5), and the findings in this chapter.

### **6.2.1 Study's Findings and Theoretical Contribution**

Described here are critical issues that lend credence to the parallels drawn between the findings and the relevant literature. They also provide rationales for the contributions to the existing knowledge that the researcher proposes. Here, the study's three significant findings are presented in response to the research questions guiding the study, and the following discussion depicts a synthesis of the relationship between the findings and the relevant literature. The last section discusses the refinement of the proposed model from Chapter (2) based on the findings from research participants' experiences.

#### **6.2.1.1 E-services Transformation Process within Dubai E-services Departments**

The following discussion highlights relationships between the cross-case thematic analysis results and the frameworks, theories, and conceptual writings of the pertinent literature.

It has been well established in relevant literature that organisations considering the adoption and implementation of innovations go through the 'innovation-decision process' (e.g. Zaltman et al.1973; Rogers, 2003). The findings presented in Chapters (4) and (5) indicate that the e-services development process in Dubai undergoes three distinct stages before the actual utilisation and realisations of sought out benefits. These stages are identified as: **planning**, **transformation** and **deployment** stages, which encompass several systematic activities beginning from scanning for potential services, services' evaluation and approval, project analysis and development , training and testing to finally e-service's launching, marketing and support. These stages were labelled according to the recurrent patterns in participants' conversations in relation to their description of the e-services' development activities (c.f. figure 6.1, below).

#### 6.2.1.1.1 Stage One: Planning, Scanning and Analysis

Based on the empirical findings, this study proposes that e-services' are instigated with 'scanning' and 'analysing' activities. During e-service's planning stage, a designated e-service transformation team starts scanning for potential services within their respective public organisations based on specified criteria. The team will analyse the possibilities and requirements for e-services transformation and attain resources and approval before implementation.

**C IPL** describes how the development process of e-services are instigated, she explains that "*we start the whole process by visiting the relevant departments in order to get familiar with the processes they carry out and to enable our team to identify the services that seems most appropriate to transform into e-services according to pre-set criteria such as expected costs and*

*benefits. We publish our field visit's report, which includes our recommendations to the general department's manager, who in turn would take the decision whether or not to carry on with the transformation's process. His decision is usually based on the type of service, if it was transactional or informative, the number of projects and available staff and budget that is currently available and most important would be the demand for the service from public."*

Similar thoughts can be found in Rogers' Diffusion of innovations (2003), he suggests that 'initiation' has two activities 'agenda setting' and 'matching' (Rogers, 2003). 'Agenda setting' refers to the identification of a general problem within an organisation that may prompt an innovation. During the matching stage, a conceptual matching between the new idea and the organisational problem occurs in order to assess how well they fit. The likelihood of the innovation solving the problem is tested in practice by envisaging the benefits and possible problems this innovation might encounter when implemented (Rogers, 2003). Löfstedt (2007b) in her study of e-services' development in (24) Swedish municipalities concurs that e-services projects are instigating with planning and analysis. She found that e-services are developed similar to system projects development and are managed through common project management methods and techniques using cost and benefit analyses and bench-marking to study the e-services proposals before implementation (Löfstedt, 2007b). CIEC shares his experience in managing this stage of the project *"Close monitoring of the implementation and in particular, adherence to the stipulated time frames by both the e-services implementation team and me (E-champion) is essential. I Use a project management system for monitoring the various activities of the staff and project aspects as is it highly accommodating."*

The empirical findings of this study also points out that at the conclusion of this instigation/planning stage, the decision makers (i.e. e-champions) will commit to the

implementation of the latent e-service in principle. In contrast, if the e-service is found to be in disparity from the sought out criteria, the e-service will be rejected and the process terminated. Notably, according to Rogers' (2003) classification; the Dubai public organisations' innovation-decision processes are labelled as 'authority innovation decisions' where decisions are made by some relatively few individuals in systems who possess certain status or positions (Rogers, 2003). Rogers (2003), proposes that through mandates or obligations, organisational leaders exert pressure on individuals to recognise the advantage of an innovation and embrace the need to change (Rogers, 2003).

Such implications have found substantiated support in this study through the participant's comments about e-champion's role throughout the e-service's development process. Approximately (40) per cent of respondents (c.f. Chapter 5) commented the importance of an organisation general manager or the government e-champion's support in adopting e-Services in their agency. **C2SA**, system analyst in Case (2), points out that *"one of the important factor in our e-services implementation success is due to our organisation's general manager strategy and his closeness to the employees. I mean his approach is face to face; he does show and express concern and interest as well as try to provide suggestions which I find very positive and uplifting. He follows up the executing of the e-services personally and it is impressive when he shows that he has knowledge of specific details in our work process. His attitude is also very friendly which is very motivating."* **C2MO** expresses his disappointment with the lack of e-champion support, he notes that *"many initiatives that I have worked on, in the start of my career have failed in early stages of the implementation process because of the lack of support from supervisors."* He believes that *"the issue that poses a considerable risk in this situation is when*

*the project leader is not sufficiently visible to the staff.” Continuing the discussion in that respect, he further clarifies “If that commitment is not demonstrated clearly, it is unlikely that the employees who are required to carry out change will take the project seriously.”*

E-services literature also supports the importance of e-champion roles in the e-service’s development process. Hossan et al. (2011) investigated the e-champion roles in e-services adoption in local Australian Councils and found out that (50) per cent of the respondents interviewed believed in the importance of Chief Executive Officer support in adopting e-Services in their Council. Soo et al., (2009) found that champions played a vital role in convincing others to accept electronically enabled health innovations in Canadian Hospitals.

#### **6.2.1.1.2 Stage Two: Transformation, Designing, Programming, Testing and Training**

Having received e-champion’s approval to continue the services’ development process, empirical data indicate that organisations embark on molding the potential service’s provision to be carried through electronically. C3SA, system analyst, explains the activities during this stage, *“Upon getting the approval, my direct manager would conduct an internal meeting to re-assess the availability of resources such as employees and equipment and the period required for every project so we can match our resources with the required objectives and we also set the deadlines, assign people with their tasks and lay down our deployment schemes.”*

The team commences the ‘transformation’ stage by analysing and re-engineering the services manual provision procedures, followed by the designing of the services’ static screens, programming the codes to operate the application’s desired functions and then developing a dynamic functional prototype. The e-service’s prototype is then simulated in a testing

environment in order to eliminate programming or designing errors. System's users training commence next in order to prepare for systems' assimilation within the organisation. Commonly, four distinctive activities were revealed based upon field research data in the four organisation's transformation stage. They were labeled thematically as: 'implementation team formation', 'electronic transformation', 'test and modify' and finally 'training'. With respect to literature understandings,

The empirical data indicate some similarities with findings of this study and software development models in relevant literature. For instance, this study's findings are concurrent with Goldkuhl and Röstlinger (2010) research conclusions on the assessment of public e-services and e-government systems in Sweden. Goldkuhl and Röstlinger (2010) suggest that since an e-service is rarely a stand-alone system, it is usually part of an existing website which communicates with other IT-systems. Hence, the e-service IS-architecture is important basis of an e-service design (Goldkuhl and Röstlinger, 2010). Eldai et al., (2008) proposes that the transformation process of e-services go through similar phases as web based applications. They devised an eight step process beginning with the following: Analysis, Development, Test, Integrate and Release , Deploy, Quality Assurance, Advertise and Evaluate (Eldai et al., 2008). Like any other I.T. system. Case Two database officer, **C2DO**, describes the processes his organisation undergoes in its e-services electronic transformation endeavors. He remarks, "*E-services are like any other I.T. project I worked on, we dedicate a server, design a website and program and application and you are ready to go*". He explains his opinion, "*The successful implementation of e-government initiative depends on the underlying ICT infrastructure comprising of secure servers, routers, firewalls, internet connectivity etc.*"

Figure (5.3) , Analyse, Program and Develop in chapter (5) illustrates clearly the details depicted from the conversations with this study participants on the transformation process of e-services projects. Such revelations from the study participants are similarly software development life cycle models described by Nautiyal et al, (2012) study of software development models (Nautiyal et al, 2012). They describe different models in their study sharing coming themes such as Designing, Developing and Testing of the system during its transformation process (Nautiyal et al, 2012).

Rogers' (2003) describes this stage as 'implementation' encompassing three sub-stages 'redefining/restructuring', 'clarifying' and 'routinising' constituting all of the events, actions, and decisions involved in putting the innovation into use (Rogers, 2003). According to him, at this stage the innovation is first modified to fit the need of the organisation; then the relationship between the organisation and the innovation is clearly defined; and finally it is integrated into the routines of the organisation (Rogers, 2003).

Comparing Rogers' (2003) description of the activities during the implementation stage to this study's findings, it can be deduced from the participants' interviews analysis that innovation's (i.e. e-service) 'redefining/restructuring' is done during the transformation activity of e-service's development process. More similarity to Roger's (2003) (POI) model, can be found in the participant's description of the e-service transformation process, (i.e. e-services are analysed, programmed, developed and then tested), to better fit need of the organisation. Moreover, Roger's description of the 'clarifying' stage can be correlated to the field research's participants description about the training of the prospective users and system operators.

Notably, another ‘clarifying’ activity takes place at a later stage of the e-services development process. Participants indicate that they undergo e-service’s marketing activity which is ‘clarifying’ the innovation’s relationship with the external clients. Although, this finding might show some signs of dissimilarity with Roger’s model but Rogers did indicate that he does not consider his model to be fixed. According to him the process may occasionally backtrack or skip one or more stages although he suggests “Later stages ... cannot be undertaken until earlier stages have been settled, either explicitly or implicitly” (Rogers, 2003). This comment also seems viable to the study’s findings, this stage concludes after the training take place. Notably, the e-services development only reaches ‘routinisation’ stage during the ‘deployment’ activity.

#### **6.2.1.1.3 Stage Three: Deployment, Launch, Market and Support**

Finally, during the ‘deployment’ stage, the e-services in Dubai public organisations are launched, marketed and then maintained and monitored to ensure their proper functionality and use. The literature on launching innovations deals with the culmination of the innovation process (e.g. Cooper and Zmud,1990; Wolfe, 1994; Goldkuhl and Persson, 2006). The main activity at this stage tends to centre on post-launch analyses of the success or effectiveness of the process that brought about the innovation and/or evaluations of the contribution of the innovation to organisational performance. Infrequently issues with regard to the co-ordination and implementation of the launch get coverage and this stage. Also, literature on new product development (NPD) process propose post launch activities similar to this study participants’ descriptions. Scholars in the field of (NPD) suggest that marketing , implementing a control plan and finally monitoring and re-modifying the product as required are the most recognised post launch activities of a new product development (e.g. Crawford 1997; Benedetto, 1999).

Dubai e-Government Office (DEG) hurled several post launch initiatives to ensure usage level of the e-services were met. The (DEG) launched training programmes for citizens and government employees such as: e-Citizen, e-Employee, e-Learn, and e-Manager. Furthermore, it mandated a policy of 'redeployment not replacement' by reallocating employees to new positions rather than replacing them with computers and electronic systems.

The organisation under study in Case Two launched an 'Online Week' initiative. **C2PL** explains that *"the aim of 'Online Week' is to encourage users to use (his organisation's) online services and to show case the headway made by (his organisation) in its endeavours on e-services provision"*. According to **C2PL**, *"(94) per cent of services are now available online, with all services set to be moved online by the end of 2007"*. Case Two website provides access to some (520) services, including engineering, central laboratory services, food import and export and surveying. Around (3,500,000) online transactions were carried out during the first three weeks of 'Online Week'.

Moreover, similar to post launch activities of the new product development (NPD) process described above, the progress of Dubai public organisations' in e-services' transformation and provision is monitored by the Dubai e-Government Office (DEG), government department's Directors and e-government related staff, and the Dubai's Executive Office which is overseen by Dubai's own Ruler his Highness Sheikh Mohammad Bin Rashed Al-Maktoom. Meanwhile, Dubai e-Government Office (DEG) has identified two implementation controls of quality standards to be adhered by government departments when designing their web sites. The standards identified by (DEG) are generally related to the usability, common look and feel, content and users feedback on governments' web sites.

Similarly, Kunstelj and Vintar (2004) conducted a critical analysis of e-government practices worldwide and in their findings they point out that monitoring, evaluation and benchmarking are part of e-government initiatives sustainability process and further development (Kunstelj and Vintar, 2004). The Dubai School of Government (DSG) conducted a study on e-services in the Arab world and concluded that official statistics, Ad hoc surveys and benchmarking instruments tools were the most common tools used to measure and evaluate e-government services progress in the Arab countries survived. (DSG, 2007).

In contrast, Roger's (2003) indicates that the organisation's innovation implementation process is concluded when the innovation is finally integrated into the routines of the organisation and loses its novelty. Notably, research participants have indicated that e-services development process is an on-going process. At the final activity, which is e-services 'support' the participants reported to undergo periodic evaluations, feedback and maintenance procedures to keep the usage level at the required rate. For example, **C2SA** reported that *"around 146 systems have been fully automated and integrated with the electronic systems of other government departments. The systems are periodically evaluated as supervised both by internal and external consultants to maintain the efficient work flow of the system and provide satisfying customer services."* Such a process is recursive and iterative as can be perceived in figure (6-1), below.

Rogers (2003) and Gopalakrishnan and Damanpour (1997) suggested that technology adoption process can only be considered a success to the extent that technology is accepted and integrated into the organisation and when the targeted individual adopters demonstrate commitment by continuing to use the technology over a period of time. Similarly, according to e-services scholars, an e-service is considered a success when it reaches its intended usage level (c.f. Saha, 2008; Angelopoulos and Papadopoulos, 2009; Chatterjee, 2010). Such a benchmark is mandated

by the Dubai E-government Office (DEG) necessitating Dubai public organisations to transform (100) per cent of the services' provision activities electronically and to reach a (50) per cent usage rate of the renovated services. Studies on e-services usage level by the potential external users of government services have used Davis' (1989) Technology Acceptance Model (TAM) to assess the likeliness of e-service adoption by government customers and came to the conclusion that low levels of perceived risk, higher levels of ease of use's and inflated subjective norms have positive effects on perceived usefulness and adoption intention and usage of potential e-services (e.g. Featherman and Fuller, 2003; Chatterjee, 2010; Al-Ghaith et al., 2010).

In conclusion, the findings related to the first research question; (RQ1): "What are the activities encompassing the adoption and implementation of e-government initiatives in Dubai?", Rogers' (2003) model provided an appropriate framework to embrace the activities surrounding e-services' development although the model itself has been the subject of some criticism (e.g. Van de Ven and Andrew, 1991 Fichman, 2000; Gallivan, 2001; Lundblad, 2003). The research findings indicate that while much of Rogers (2003) Organisation's Innovation Process (OIP) model is still applicable to provide an overall understanding of the activities throughout the development processes of e-services, modifications and extensions are needed because the theory was found to be too linear and too compact to explain the periodic recycling into previous stages and the cumulative effects of multidimensional factors (i.e. e-champion's role throughout the development process).

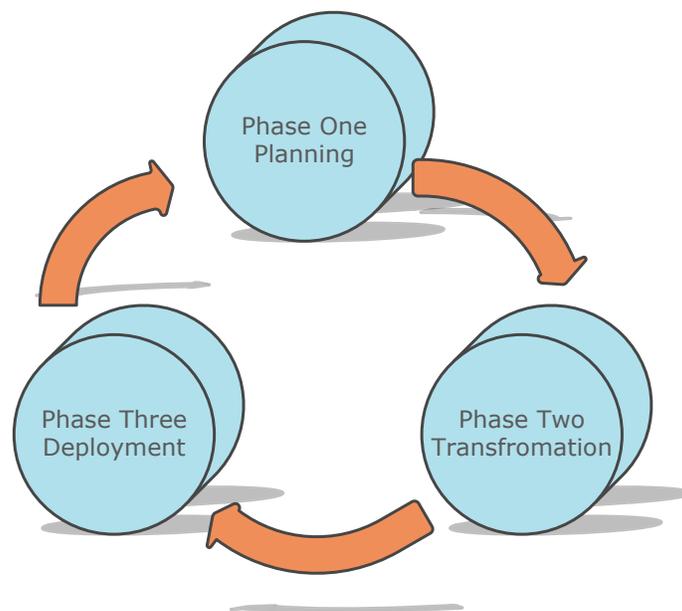
Both E-services and Innovation scholars indicated that Rogers' (OIP) model is in need of modifications in order to provide a more holistic understanding of the e-services' adoption and implementation processes. (e.g. Sherry et al, 2000; Gallivan; 2001; Surry and Ely, 2002; Lingard, 2007; Pudjianto and Hangjung, 2009; Chong et al., 2009). Notably, participants in this

study have also described additional activities and sub stages (e.g. post implementation re-modification and monitoring) that were not revealed in the description of the Roger's (OIP) model. However, Roger's description of activities were more generic and it could be argued that Roger's five major organisation's innovation process stages can accommodate for the sub stages described by participants in this study. Such implications are not challenged in this study because the author does adhere to the fact that the data described by the participants are very similar to Roger's description of the activities in his (OIP) model. However, the main difference in this study findings from Roger's (OIP) model is that E-services implementation is an going process. Such findings are to influence this study's outcome of devising an e-service's development model for Dubai public organisations. Hence, the author is prone to the fact that this study's evolution of adoption and implementation activities should be of resemblance to the linear progression of Roger's (OIP) model. A note that has already been established by previous innovation scholars (e.g. Van de Ven and Andrew, 1993; Anderson and King, 1993 ).

Notably, this study's findings indicate that unlike Roger's (2003) suggestions regarding innovation being embedded in the organisation's' activities and losing their innovative status; the novelty of e-services are not lost after their implementation because e-services are being continuously developed and upgraded to sustain users' demands and usage levels as well as advancement in technology. Such changes such: a new flash technology video, a creative and interactive user model, a new electronic channel of service's provision, some captivating graphic design are just some of the development that are continuously been added to an existing e-service or its website. Hence, e-services implementation is not the conclusion of the e-services development process as Roger's (OIP) model indicated. According to this study's field research data and the due to the process of revisiting the literature for this stage of the study, the author

concluded that the e-services' implementation process is more closely related to software development life cycle literature (c.f. Eldai et al., 2008; Goldkuhl and Röstlinger, 2010), and the post launch activities of e-services are more correlated with literature on new product development (NPD) process (c.f. Crawford 1997; Benedetto, 1999).

It was in the contention of the researcher that for the purpose of illustrating an accurate account of the e-services' development process, a recursive dynamic model style approach is more suitable for encapsulating the non-linearity perspectives of e-services' transformation process and to help describe a process that is fluid and dynamic in nature, sometimes even random in which there is no apparent sequence of stages but is characterised by feed-back and feed-forward loops. Hence, the Dubai development e-service's model at the close of this chapter (figure 6.1, below); was represented through a recursive model design which stands up robustly against linear models (King and Anderson, 1995), especially in understanding more complex and dynamic innovations (Schroeder et al., 1989; Van de Ven et al.; 1999; Arendsen et al., 2008).



**Figure 6-1: Summary of major E-services Development Activities in Dubai Public organisations**

### **6.2.2 Developing Propositions related to E-services Development Process**

In this section, the researcher develops a set of working propositions from the exploration and description of e-government initiatives' development process accounts offered by this study's participants. These statements, based on the study findings, are intended to propose relationships between the factors and their influences in each stage of the e-services development process, which can be further tested through quantitative studies.

In an attempt to gain a comprehensive understanding of the factors that may shape the e-services' development process; the research incorporated the (TOE) model's contexts developed by Tornatzky and Fleischer (1990) as a modification to the study's theoretical/ analytical framework. Within the technological context, that author found three e-services' attributes: compatibility, complexity and relative advantage to be imperative to e-services' development process in Dubai public organisations by the research's participants. This is consistent with Tornatzky and Klein's (1982) inference that relative advantage, compatibility and complexity have been consistently identified as critical adoption factors in technology innovation adoption literature (Tornatzky and Klein, 1982). This also consistent with e-services literature findings on citizen's intention to use e-services in Malaysia (Lean et al., 2009) and Saudi Arabia (Al-Ghaith et al, 2010). Also, relative advantage, compatibility and complexity were recognised as important influential determinates in the adoption of e-commerce applications in electronic manufacturing companies in Malaysia (Syed et al., 2008) and in e-commerce adoption in Jordanian SMEs (Alamro and Tarawneh, 2011).

The author found that the three aforementioned innovation attributes can sufficiently explicate and embody all the different characteristics mentioned by research's participants (i.e. e-service design

quality, navigability, friendliness, image, usability, look and feel, cost and return of investment) that were mentioned during the interviews (c.f. chapter 5). Tornatzky and Klein's (1982) analysis of (75) innovation publications, which examined the relationship between innovation characteristics and the adoption process, found that compatibility has a positive impact on the adoption process. Hsiu-Fen Lin (2008) established from his survey data that compatibility is one of the most influential determinants of e-business diffusion in in large Taiwanese firms. Grandon and Pearson (2004) found out in their internet survey that compatibility affected the adoption of e-commerce applications of SMEs in the United States.

A quarter, (6) out of (24), of the study's respondents identified compatibility as an important determinant for the planning activity and the analysis stage of e-services development process in Dubai's civil agencies. The data from the interviews suggests that potential e-government initiatives will be adopted by the organisation's e-champion if he or she perceived by the agencies as compatible with their work environment. According to **C1PL**, *“Adoption of e-government initiatives requires both technical and organisational compatibility to be accepted by the civil agencies' employees.”* **C4EC** noted that *“The services are chosen according to the time they would consume to be implemented and their business value. Sometime we carry out project as instructed from top management and suggestions from colleagues and another point I would say based on our need or a certain department's need.”* Hence it is proposed that:

### **P.1 Compatibility will have a positive effect on organisation's e-service development process**

Participants of this field research recognised the importance of transforming their public organisation's services electronically and believed that their agencies would realise the benefits of deploying the e-services. The benefits include reducing the time and cost of providing service

to the general public, empowering employees, reducing bureaucracy and increasing the efficiency and effectiveness of civil agencies. The research participants believed e-government initiatives will be promptly adopted if its merits can be identified and presented to the organisation's decision makers and ultimately the e-service's users. Some of the benefits mentioned during the interview with system designer, **C1SD**, include the *"upgrading of the agencies' computer systems and training and educating the work force to become more qualified and productive."* Another benefit mentioned by **C1QAO** was *"e-services aids in reducing the administrative cost in the provision of public service for both the government and consumers."* Overall, nearly the third of all participants, (7) out of (24), mentioned that the benefits sought out from the process of transforming their organisations' service delivery was one of the important determinates in the selection process of the potential e-services. Both senior managers, **C1EC** and **C1PL**, confirmed the need to improve their respective agencies' performance, which in the short and long-term, lead to customer satisfaction and enhance the government's image as a provider of essential services.

In e-services literature, Carter and Belanger (2004) and Al-Ghaith et al. (2010) both concluded in separate studies that relative advantage is one of the most significant elements of citizen adoption of e-Government initiatives. Al-Hajri (2008) found that Omani employees believe that Internet technology could enable them to offer more convenient services to their customers. Such findings are consistent with the findings of Moore and Benbasat (1991) and Davis et al. (1989) and the supporting literature on (TAM) and diffusion of innovation (Rogers, 2003). Hence it is proposed that:

**P.2 Relative advantage will have a positive effect on organisation's e-service development process**

Tornatzky and Klein (1982) found that complexity has a negative effect on the adoption process. In contrast, Davis (1989) proposes the perceived ease of use have a positive effect on the adoption of technologically based innovations. Numerous I.T. based innovation scholars have found that complexity or ease of use has a significant effect on users' intentions to use or to adopt a new technology (e.g. Al-Gahtani, 2003; Sharples et al., 2005; Parveen and Sulaiman, 2008). In the e-services context, perceived ease of use was found to affect e-service adoption significantly, reflecting the significance of the role of the ease of use variable on adoption of e-services (e.g. Featherman and Pavlou, 2003; AlAwadhi and Morris, 2009; Hossan et. al, 2011).

During the research interviews, participants stressed the complexity of the service (i.e. the number of transactions it requires to be completed, the number of internal or external department the need to be interconnected, and the technical requirements for the system to be implemented) is the major determinate on their planning, transforming and deploying their e-services. In **C2ITC**'s opinion, he believes that the two most significant traits influencing e-services successful usage and application are service 'visibility' and 'complexity'. He explains, "*Service visibility is the extent of how significantly and extensively customers could potentially feel and experience the benefits achieved from enabling the web service. We can measure such an indicator from high volume of transaction, and large customer base.*" He later adds, "*Service complexity is how easily the service could be web-enabled. This usually depends on a number of factors related to the execution of the service such as the degree of exiting automation, number of departments involved, number of external parties involved, and the number customer documents processed.*" Nearly forty per cent, (9) out of (24) participants believe that complexity has a negative effect on the development process, hence it is proposed that:

### **P.3 Complexity will have a negative effect on organisation's e-service development process**

During the study's thematic analysis, four organisational determinates were identified: **'Leader's support and vision'**, **'work process reform'**, **'e-services' performance appraisal'** and **'resources' availability'**.

Participants revealed during the interviews that their respective organisations' leaders or project champions play a significant role in promoting their Dubai government's vision for adopting e-services within their organisations, pushing the initiatives over or around approval and implementation hurdles. **C4EC** expands on the topic of the expected tasks required from the leader, he notes, *"It is up to leaders to ensure that service delivery and policy processes are open to input from citizens and businesses. Most importantly, it is up to leaders to ensure that input received from citizens and businesses is taken into account during the policy-making process. Leaders can also ensure that the process of incorporating user feedback is transparent and timely."* **C4EC** elaborates *"Leadership can also articulate a unifying theme that can propel the e-government initiative through all the necessary steps."*

Nearly forty per cent of the participants, (9) out of (24), supported the notion that in their organisations, e-government initiatives success was due to the organisation's supportive leadership role. They also found out that the presence of a champion enables change of work process in an organisation, provision of resources, facilitate mindset changes, bridging digital divide and encourage e-government applications' usage.

Participants also emphasised the role of e-champion in instigating the e-government phenomenon in 2001. **C1PL** highlights the importance of a strong political leader in reference to

the Dubai's Ruler His High Sheikh Mohammed bin Rashid Al Maktoum "*Dubai has been blessed with a visionary leader who decided to reformulate the working model of the government to build cost-effective, easy-to-access government institutions in a city that has become a model of welfare and prosperous living*"

The research participants also acknowledged the need of leader's articulation of a clear vision that is compelling enough to rally subordinates, superiors, and the agency itself, as well as other stakeholders involved in e-services development process and usage. Ryan et. al, (2012) reported after surveying 1,100 employees of a medium-sized city government employees that within governmental organisations, the existence of a champion was one of the most important facilitators in the adoption of e-services in the United States. Alshehri and Drew (2010) assert that project '*champion*' is a very important antecedent to a successful adoption and implementation of e-services in Saudi Arabia (Alshehri and Drew, 2010). Ke and Wei (2004) study of critical success factors in e-government adoption found out that top management support was a major enabling factor of e-government adoption at the infusion stage in Singapore. Hence, the following proposition is made:

#### **P.4 Leader's Support and Vision will have a positive effect on organisation's e-service development process**

In reference to the second organisational determinate, '*work process reform*', many participants acknowledged that the services' work processes are often in need of change before transforming them electronically. C4PL notes, "*Automation alone will not improve the deficient work processes.*" She adds, "*if you automate a deficient work process the result will be a deficient service.*" Hence, according to the many recurrent responses concerning the need to reform work

process before service's automation, the concept of 'work process reform' was identified as a key determinate in facilitating e-service's development process. A recurrent observation in this research is that, issues regarding electronic government initiatives development seems to be more of a management problem rather than a technical one. Scholars in the field of e-government sustain that in order to obtain successful results from e-government; changes are required in many aspects of how its administration works (e.g. Chatfield, 2009; Alshehri and Drew, 2010).

The organisations' under study demonstrated that they have formalised their e-services development activities, either by adopting and adhering to international I.T. innovations deployment methodologies such as Microsoft Solution Framework (MSF) in Case (Three). Other cases demonstrated that they have improvised from several existing international and local technological innovation development strategies such as adhering to the International Organisation for Standardisation (ISO) criteria. Participants have revealed that using international implementation methodologies have provided guidelines for developing their technological solutions by formalising their work processes and providing clear procedures, norms and formal processes for carrying out their e-services development tasks. The organisation managers and quality assurance officer of the field research have reported that highly formalised processes that create a structured environment would be useful for systems planning and information processing. In addition, written procedures and more formal environment will eliminate any ambiguities, and would facilitate e-services adoption. Hence, it is proposed that:

**P.5 Reform of work processes will have a positive effect on organisation's e-service development process**

Nearly fifty per cent of the participants, (11) out of (24), have also realised that in order to evaluate progress and benefits of their deployed e-services and meet overall objectives of improving service levels, increasing revenue and reducing cost, it is important to think like a business entities and to leverage lessons learnt by other government establishments. Hence, participants have highlighted the importance of introducing and using formal performance measures in their public organisations. Participants emphasise that such standards and benchmarks must be established to measure the relative success of these projects by using a dashboard system such as Radar or Balance Scorecard to quantify their key performance indicators (KPIs). **C3PL** reveals that *“the periodic performance measurement reports are compared to evaluate the progress and development of the e-Government initiatives within our organisation. Subsequent administrative decisions are drawn from resolutions provided. The department reviews its achievements on a quarterly basis to find out if the targets are met and to provide sound explanations to the higher management whenever the initiatives fail.”*

Fong and Meng (2009) suggest a high level analytic model to measure e-services composed of the following five criteria: (1) Web Log Analysis, (2) Web Usability Analysis, (3) Website Performance Benchmarking, (4) Web Link Validation, and (5) Performance Reporting. Dubai E-government Office monitors all local government agencies' e-services based on the following criteria: eService Accessibility; eService requirements; common Look and Feel; eService user-friendliness; eService Response Time; eService security and privacy; eService performance; Customer Service Standards; Connectivity and Reliability (Badri and Alshare, 2008) Hence, the following proposition is made:

**P.6 Using Performance Appraisal techniques will have a positive effect on organisation's e-service development process**

The final organisation determinate was the level of technical expertise and availability of financial resources in an organisation which according to the participants is a significant enabler for undertaking different levels and sizes of e-services projects. Some other resources that were mentioned by research's participants relate to the synergetic tools provided by Dubai E-government Office. Moreover, participants indicated that the existence of educational and government research institutes such as the Dubai School of E-government have a vital role in training public organisation's managers and conducting related regional studies. Interviewed departments' managers have argued that their employees are very well-trained in using information technologies which alleviates the adoption and implementation processes of e-services transformation. Participants also reported that the inability of providing resources such as personal skills, appropriate technical infrastructure and required finance will result in employees' resistance to change, resistance to use, and, the underutilisation of e-services development activities to their full capacity.

Similarly, literature on organisational innovation adoption indicate resource availability also plays a role by determining how an organisation may react to internal and external demands for an innovation and how much it can afford taking risks and paying for an innovative product or program (e.g. Mohr, 1982; Tornatzky and Fleisher, 1990; Berry and Berry, 1999; Moon and Bretschneider, 2002). Literature indicates that organisations with more resources can pay more to purchase the necessary hardware and software, hire more competent staff, and provide them with more opportunities to interact with external entities to learn new ideas and conduct internal experimentation. Several e-services scholars have indicated in their research findings that public organisations with greater access to resources have a greater capacity to sustain the

implementation of e-services by providing the necessary personnel, technological, and managerial support (e.g. Ebrahim and Irani; 2005; Arendsen et al., 2008; Hossan et al., 2011).

Nearly sixty per cent of all participants, (14) out of (24), believe that the availability of both human and financial resources are vital components of e-services development in their organisations. **C1PL** explains *“It is very vital for us to maintain the level of excellence in our organisation, given that our tasks are constantly challenged by advances in technology leading to more sophisticated services. It is the adoption and implementation of international and locally tailored strategies which contributes to the secret of our success, leading to prolific returns. Add to this the efficiency of our human resources, availability of modern equipments and contemporary technology that help us perform our job to the best standards, all of which ultimately leads to the distinction of our e-services implementation schemes.”* **C3SA**, explains the importance of assessing the availability of resources during the implementation stage of e-services development. He notes, *“Upon getting the approval, my direct manager would conduct and internal meeting to re-asses the availability of resources such as employees and equipment and the period required for every project so we can match our resources with the required objectives and we also set the deadlines, assign people with their tasks and lay down our deployment schemes.”* Hence it is proposed that:

**P.7 the availability of resources will have a positive effect on organisation’s e-service’s development process**

Four external environmental factors have evolved from the analysis of participant's conversations as important deciders in the e-service's development process such as: '*competition*' between government departments, level of '*e-services awareness*', facilitating '*customer's feedback*' mechanisms and E-government '*administrative authority support*'.

Research findings indicate that competing with other government agencies to win prestigious international and local awards have created favourable outcomes as agencies compete to show their modernisation efforts in their service's provision in order to gain a greater recognition as the leader among its peers. According to Borins (2002), external pressure from government authorities could embolden organisations to adopt pioneering ideas and products (Borins, 2002).

Conversely, some participants also report that *competition* in turn has created an unfavourable environment for the building of trust, and co-operation necessary to achieving inter-agency service delivery. **C3SP** notes that the main issue is that there is a "*Lack of integration and collaboration with other government departments.*" He further explains that, "*we don't share information online because technical integration among public departments does not exist. The government departments are in competition with each other because everyone (government departments) is anticipating be recognised and hailed as the e-transformation leader which has resulted in less of information sharing. But, perhaps it could be the next phase where the Dubai e-government will instruct the government agencies to integrate and share information online.*"

However, a third of all participants, (8) out of (24), were strong advocates of the notion that competition is a serious enabler for their e-services development efforts. **C4SP** believes that "*Competitiveness between different organisations is a positive factor, the government also encourages us by reward programs, recognition from top government leaders*". Kamal and

Themistocleous (2006) suggest that increased competition often pushes organisations to pursue innovative means to improve their efficiency and strive for a possible a competitive advantage (Kamal and Themistocleous, 2006). Al-Khoury (2011) also suggested the technological advancement and channels as well as quality measures and rankings programs that accompany e-services provision and evaluation have driven government organisations into competition among each other to be distinguished in their online services content and functionality (Al-Khoury, 2011). Hence the following proposition is made:

**P.8 Competition is a significant factor that correlates positively or negatively with organisation's endeavours in e-government development.**

Over half of the twenty four participants also revealed that 'Raising e-services' awareness' is another significant determinate that is carried mainly through the training and marketing stages of the e-services' development process. Participants have reported conducting intensive awareness campaigns and using mass media to raise the public awareness of their organisations' e-services and drive usage rate levels (i.e. service's penetration). Another objective of this approach is to gauge customer needs and adapt governance processes to better satisfy those needs. Participants also reported that a variety of channels and mechanisms are being put in place for this purpose including training e-Government users, an e-Citizen loyalty program, a specialised magazine and road shows.

**C3PL** explains that their main awareness raising strategies include: *“conducting targeted marketing campaigns to increase awareness and usage of e-services by segmenting the customers and determining the right mix of e-services for each customer segment.”*. **C2EC** notes that *“Public Awareness and Resistance is the biggest obstacle we are encountering in our e-*

*services usage. Our role is to convince users of the importance of our e-services and help them overcome their skepticism over the reliability and security of our e-services, especially when it comes to ePay (online payment). I believe that we need to intensify our marketing strategies in order to raise further awareness of the advantages of e-Transformation among our customers and end-users.”*

Asgarkhani's (2005), findings on the effectiveness of e-service in local government advocates the notion that e-services employees will be willing to develop e-government initiatives more effectively if the potential benefits are outlined and they believe that the transformation is possible (Asgarkhani, 2005). Additionally, Choudrie and Dwivedi (2005) suggests that higher levels of e-services and their potential benefits may positively influence e-services' adoption. Additionally e-services literature supports the findings that rising internal awareness can be done through internal marketing variables such as *training* and *education* (e.g. AlAwadhi and Morris, 2009; Alshehri and Drew, 2010; Al-Jaghoub et al., 2010). Hence, it is proposed that:

**P.9 Services' Awareness and Usage is a significant factor that correlates positively with organisation's endeavours in e-government development.**

The importance of including users' perceptions throughout the process of e-services development have been reported as a vital determinate in the success (i.e. high usage rate and users' satisfaction) of the e-services. Cases (Two) and (Three) conduct clients' surveys on their organisations' main websites (i.e. portals) periodically to collect suggestions that could provide ideas about potential services to transform, improvement in the design and development process of the e-service and customer's validation and satisfaction of the launched processes. According to C3PL, *“the product development team designs a pilot of the e-service functionality for testing.*

*Users are invited to review the pilot and provide feedback on the functionality through follow-up focus groups or depth interviews. This gives users a chance to see the execution of their requirements for the e-service and comment on how well it meets their needs and expectations. The look and feel, navigation, and content are included in the evaluation of the pilot. Users are able to experience the pilot on their own computers to mimic a real situation, which helps them provide feedback on how the system will affect their lives and current processes. As with the previous phases, this feedback can be helpful in communications efforts as well as design.”*

Accordingly, third of all participants, (8) out of (24) believe that customer’s feedback is an important activity that needs to be utilised throughout the e-services’ development process.

**CIQAO** adds his opinion, *“The most common form of usability testing we utilise for clients consists of one-on-one interviews with users completing specific tasks using the new e-service. This is often followed by a group discussion with participants to uncover more strategic issues. After one or more rounds of revisions to the design and functionality, the e-service is ready for launch.”*

Cases (Two) and (Four) relay generally on private companies to gather the necessary data about customers’ perceptions and the setup of e-services prototypes to engage citizens through feedback loop mechanisms early on in the course of implementation of e-government program to ensure better relevance and quality of the portal services.

Riedl et al., (2008) found out that the nature of electronic service delivery allows for various prospects in using potential users’ feedback during the project service design which were not made available before with other government innovations. They also suggest that the online nature of e-services have allowed for the interactions between users and the service to be

recorded and replayed (Riedl et al., 2008). Goldkuhl and Röstlinger (2010), conducted evaluations and participated in the design of many e-services applications in Sweden, they concluded that users' feedback is an integral part of any public e-services development process (Goldkuhl and Röstlinger, 2010). Hence due to the highlighted importance of incorporating user's ideas and perceptions about the e-services to provide a better customer-focused design, the following is proposed:

**P.10 Incorporation of Customer's Feedback is a significant factor that correlates positively with organisation's endeavours in e-services development.**

Participants have highlighted the importance of the existence of a central e-services administrative authority, (i.e. Dubai E-government Office), in overseeing and facilitating e-services development endeavours,. To better manage and monitor its e-government initiative, Dubai Government chose a unique centralised approach. While Dubai e-government centrally monitored the e-services development of various government departments, the government departments were given the freedom to creatively build their own e-services in the earlier phase of e-government initiative (Sethi and Sethi, 2009).

According to the participants, the Dubai E-government Office (DEG) has also helped government departments in meeting the initial target of (90) per cent transformation of government services electronically by 2007. According to **C1EC**, *“DEG takes coordinates between departments through proper monitoring, follow-ups, and provide technical support to government departments. I really feel DEG is an important ingredient if you want to develop e-services across all public agencies. They have provided up with the proper guidelines and played the role of consultant and government watchdog throughout the e-services transformation*

*process. They made sure the vision of his highness was implemented and provided us with enough information to be on the right track. Every government who are seeking to implement e-government initiatives needs an authoritarian agency like DEG”.*

Notably, the Dubai e-government implementation experience was carried through a hybrid approach where government departments focused on e-services development while Dubai e-government Office (DEG) focused on building and providing common complements such as an integrated online payment system for all electronic government services and an online customer support to provide online guidance to using all government e-services. This balance between centralisation of common aspects of e-services implementation and decentralisation of e-services enablement was one of the key pillars of success in Dubai e-government initiative which resulted in standardisation, best-practices sharing, cost savings, and reduced time to market (Bastaki and Geray, 2005). Hence, it is proposed that:

**P.11 Supervision of Administrative Authority’s is a significant factor that correlates positively with organisation’s endeavours in e-government development.**

Additionally, three barriers were identified by the participants as significant to their e-services development endeavours. The author categorised the barriers into Internal and External barriers’ sub-themes. ‘*Lack of Managerial Commitment*’ was the sole identified internal barrier. Participants identified two barriers categorised as external barriers in this research, ‘*Lack of administrative authority’s Technical Support*’ and ‘*Lack of Inter-agency collaboration*’.

Research participants reveal that the central administrative authority, DEG, would need to provide the government organisations in Dubai with sophisticated and modernised technological platform to enable the sharing of synergetic electronic tools such as payment transactions. The main barrier discussed by the research participants, regarding the promotion of (DEG) technological support, was the inability of the current platform to support some advanced technical functionalities associated with the provision of certain sophisticated e-services. **C3SP** notes, “ *DEG needs to provide support to government departments that lack essential technical systems in order to create a fully integrated system that can offer purely electronic services to the public. Despite existing cooperation between government departments for the success of the e-Government initiatives, old infrastructure and management style stand as barriers for full electronic integration. These barriers need to be broken down with a higher committee because our organisation cannot integrate our services with agencies that lack proper resources and competences. It will cause unwanted consequences for both parties*”.

Almost forty percent of all the participants, (9) out of (24), maintain that (DEG) must adjust its strategy and approach for rolling out new portals for additional departments. It is (DEG)’s role to ensure that the architecture and infrastructure are evolved to meet their growth needs, hence it is proposed that:

**P.12 Lack Administrative Authority’s technical support is a significant factor that correlates negatively with organisation’s endeavours in e-government development.**

Participants also indicate that the adoption of e-government initiatives necessitates collective efforts from various government agencies and functional units within each agency. However, data from the interviews revealed that interagency collaboration was uncommon. Participants suggest that the integration of all e-government projects needs to be planned at the beginning so

that development of separate e-government projects becomes an implementation issue within the general framework of a strategic e-government plan. Furthermore, Participants have suggested that the emirate of Dubai will soon be facing another dilemma of integrating e-governments from to other government bodies in different Emirates which seem to have not been planned for at all.

Participants anticipate problems to arise when the I.T. infrastructure layer will require different solutions and standards for the integration of services between the government agencies. They further suggest that there is a lack of an overarching plan to integrate e-government projects which implies that Dubai government have not thought comprehensively about the next level of e-government services, the level that requires seamless services to customers. Indeed seamless integration cannot be done after projects are implemented, and indeed whenever feasible, it comes at a very high cost. Nearly forty per cent of the participants, (9) out of (24) believe that their current e-government projects are done with little coordination let alone integration between them and other governmental departments. As a result, it is proposed that:

**P.13 Lack of Inter-agency collaboration is a significant factor that correlates negatively with organisation's endeavours in e-government development.**

Finally, the research's investigation enlightens that the lack of managerial commitment to be an internal barrier which is found to be significant in the adoption and implementation of their e-services. Thirty per cent of all participants, (7) out of (24), have revealed that some project managers may not be consistent with their opinions on the features and functions of the e-services which may result in employees' frustrations, delay in project accomplishment and change of project targets and goals.

Participants acknowledge the effectiveness of the role of management support in introducing new technology in their organisations and they also highlighted the need to change the overall behavior and management in supporting the e-services development endeavors. In a study of large innovative organisations, Quinn (1986) reports that innovation would emerge continuously, because top management would appreciate innovation and contributes actively to keep up the value system and atmosphere of the organisation in a manner that supports innovation adoption. Many researchers have also found that through the lack of top executives' support, technology cannot be successfully implemented (Beatty, 1998; Cooper and Zmud, 1990; Gagnon and Toulouse, 1996; Kwon and Zmud, 1987; Lambert, 1996; Manross and Rice, 1986). Thus, the author considers top management support as an influential factor for e-services adoption and implementation. Hence it is proposed here that:

**P.14 Lack of Managerial Commitment is a significant factor that correlates negatively with organisation's endeavours in e-government development.**

During data analysis, the cases were analysed by employing three foci: The first step was to reconstruct the processes of e-services' deployment for each case, secondly barriers and facilitators within these processes were identified and in a third step the barriers and enablers were matched accordingly to the stages of the innovation process as identified. This was done for each case and interview. Then the results of all three steps were compared across all cases and interviews to identify similarities and, if there were differences, how these differences might have to be interpreted. From these comparisons hypotheses were derived. Arriving at that type of an explanatory or predictive model, however, was not initially a goal of this study. Instead, the researcher intention was to work with the preliminary conceptual model and refine it as necessary to represent and describe e-services deployment.

Thus far, this chapter discussed the research results in relation to the field project's research questions. E-services development activities in addition to technological, organisational and technological determinants were identified and discussed. The next section of this chapter presents a pictorial representation of the research's e-government initiatives development model. The final section presents the research's limitation, implications and provides recommendations for managerial practice and future research.

### **6.2.1.3 E-services' Development Model**

The pictorial representation in figure (6.2) below presents the 9 activities and 14 determinants identified for successful implementation and adoption of e-government initiatives in Dubai's public organisations.

The implementation process model used in the case study was derived from models of diffusion of technological innovations within organisations. In the case study, it provided a suitable framework to analyse (a) the e-services' development process and (b) the chronology of the adoption and implementation events and decisions. At a minimum, the articulation of the processes and products at each stage provides an extremely useful way of conceptualising and recognising the innovation's development stages.

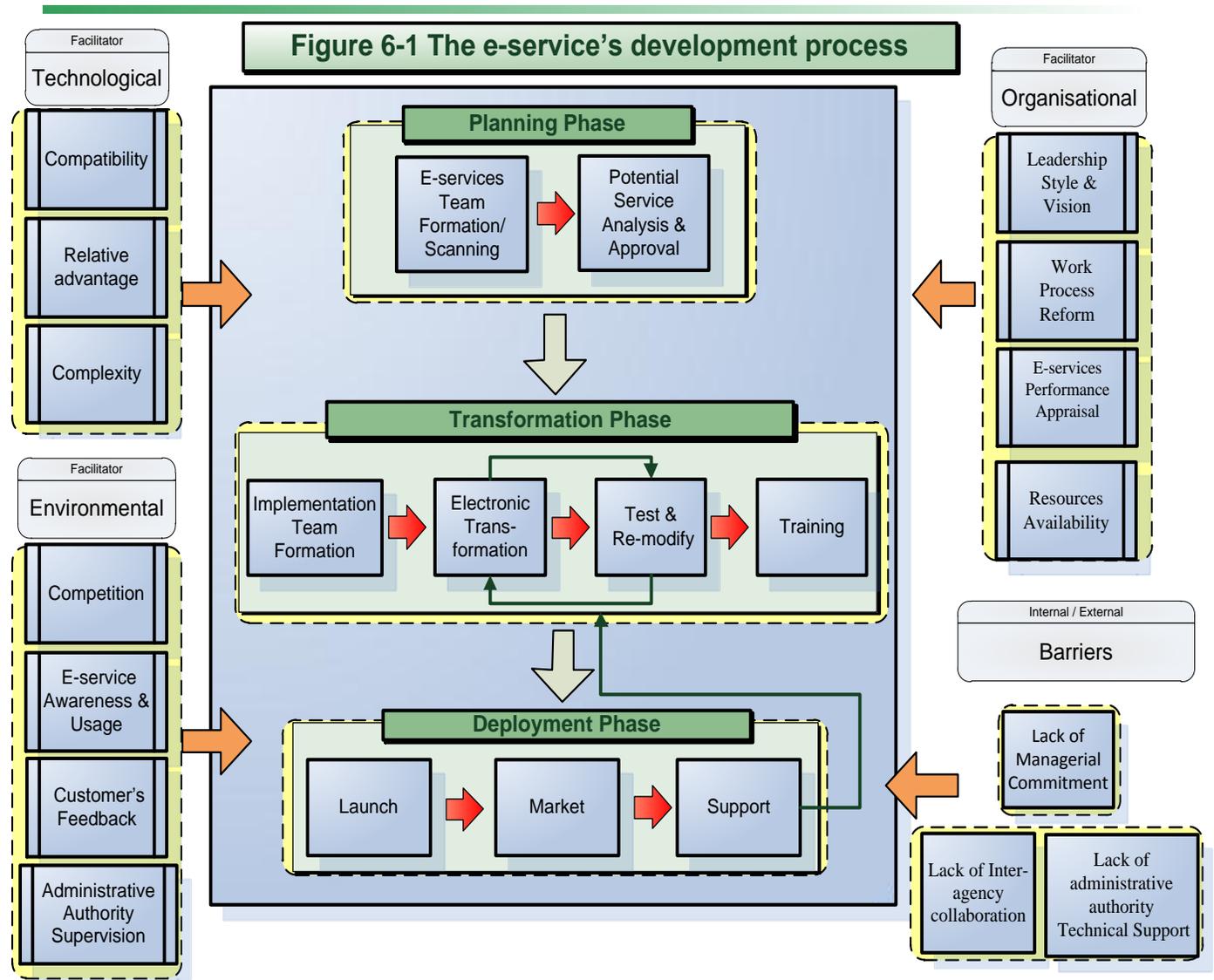
Eleven categories emerged during the categorisation process, which represent the technological, organisational and environmental determinants for developing an e-services development model for Dubai's civil agencies. Participants viewed e-government initiatives as an important milestone towards improving public services. Public organisations with a well-established I.T.

department, support of organisation's leader, qualified technical personnel and a well-developed IT infrastructure displayed a greater willingness to develop e-government initiatives. On the other hand, civil agencies, which lacked certain determinants such as management and technical support as well as the integrative capabilities with other government departments, demonstrated reluctance in adopting government initiatives which required such requirements.

Notably, Rogers (2003) Organisation's Adoption Process model, provided a suitable point of departure for the researcher's endeavour in investigating e-services' development processes and understanding the activities throughout the process. However the linear, sequential simplicity of Rogers (2003) model was not entirely sufficient to understand the complex, iterative, recursive 'nature' of e-services development process. For instance, the sequential stage model suggested clear-cut stages. In practice, some of these activities occurred in parallel (i.e. marketing and launching of e-services). The parallel nature of the stages also reflects the modular nature of the e-services development process.

In addition, the findings indicated that iteration through the stages is often required (*see* figure 6.2, below), which is not reflected in the innovations' diffusion based analytical model (Chapter 2). The nature of the process depicted in this research representing e-services' development in Dubai was of recursive nature. Recursive models stand up robustly against linear models (King, 1992), especially in understanding more complex or radical innovations (Schroeder et al., 1989). It would be wrong to assume *a priori* that innovation takes place in discrete stages even though it appears to comprise identifiable events. Notably, setbacks and mistakes were frequently encountered by the participants during the innovation process. Hence the model above represents

the development of e-service as a recursive process characterised by feed-back and feed-forward loops, which are considered to be better representations of what actually happens.



**Figure (6-2):** The E-services' development process model

In conclusion, the author adopted a non-linear perspective of innovation to depict the e-service development process that is fluid and dynamic. More recent literature suggests innovation is not the stable phenomenon that linear models imply (for example Wolfe, 1994); increasingly, the

simple, unitary progression models have been discredited because of their lack of empirical validity.

### **6.3 Recommendations for Practice**

The findings from this descriptive and exploratory research offer a rich set of insights about determinates and activities relevant to e-services' development. These insights (*see* Appendix F), constitute a conceptual blueprint that managers can use as a guidance in their e-services implementation efforts and to qualitatively assess the potential strengths and weaknesses of their e-services development activities. The findings, (i.e. developed propositions and identified determinates) can also help organisations anticipate implementation problems, develop better ways of meeting needs, solving problems, and using resources and technologies, increase the responsiveness and quality of services to the community; and to keep up with public needs and expectations. Research practical implications offers insights in managing and containing projects and operations cost pressures, increase the efficiency and quality of public services' provision.

#### **6.3.1 Implication for Practice**

Previously noted in this chapter are the researcher's three significant findings of the study. Reflecting on those and applying those in practical contexts, the researcher presents these six recommendations for best practices in adopting and implementing e-services development activities in Dubai public organisations. The following recommendations are intended to assist Dubai government agencies in their e-services adoption and implementation endeavours of e-government initiatives.

*1) Establish an independent IT department in every agency with qualified management and staff*

The research indicated that agencies with an independent IT department are more receptive to adopting IT projects (demonstrated in cases One and Two, *see* Chapter 4), in general, and e-government initiatives, in particular. On the other hand, government agencies, which have an IT department under the supervision of the administrative and finance department (demonstrated in cases Three and Four), are reluctant to participate in projects that requires innovational projects adoption and implementation. An independent IT department is responsible for hiring qualified IT professional with knowledge and expertise in various computer and telecommunication fields. In addition, IT department professionals have opportunities to interact directly with senior management and secure allocation of financial resources for IT projects and training of IT personnel and for IT projects implementation.

This research indicated that previous IT projects would not be successful without the support of the senior management and endorsement of the middle management. The data revealed that agencies with IT department under other functional departments cannot employ the qualified technical staff and do not enjoy direct interaction with senior management as this function is performed by their superiors, who have no technical background. Therefore, the IT projects and training of IT personnel do not enjoy the priorities, which are available for the independent IT departments.

## 2) *Reform work process and enable interoperability*

Many government agencies executives have begun automating their agencies' business processes through the adoption of information technology as part of an effort to reform their agencies' operations. The research revealed that encoding the bureaucratic process into the application software complicated the ability to share information. Each agency and functional department within an agency has its own databases and systems, which are not accessible to other departments. Therefore, automation is not the solution to reform the civil agencies' work process.

An important determinant of e-government adoption is to reform the agencies' manual work process prior to implementing information technology. E-government initiatives around the world call for reinventing the administrative system by reducing red tape, encouraging horizontal collaboration between departments and pushing the decision process down to the agencies' lower level.

Other important dimensions of work process reform include the elimination of duplication and overlapping of responsibilities, in addition to the encouragement of more projects to serve consumers through one-stop shop services by integrating government services to facilitate service delivery. Asgarkhani (2005) proposed that citizens to be regarded as "customers" and to redesign the government services to meet the general public's needs and requirements. This objective can be achieved by using electronic interactive tools that facilitates customers' or users' inputs (i.e. Feedback, suggestions, online assistance, etc...) (Asgarkhani ; 2005).

### 3) *Embark on e-services' awareness programs*

The research revealed that increasing user's awareness is one of the most significant determinates for successful e-services' usage and development. Internal awareness can be attained through continuous training of government employees in e-government related technologies, e.g., computers usage, programming abilities, web design and use of the Internet. Furthermore, intensive seminars and workshops proved to be very beneficial to educate government employees and the general public about the merits of the adoption of e-government initiatives.

Jaeger and Thompson (2003) assert that an e-government system would fail if the government did not take an active role in educating citizens about the value of e-government. Increasing the awareness of the e-services' external users was also attributed by the participants to the success of previous IT projects. This has been demonstrated in case (2) and case (3) through the provision of intensive seminars and workshops. The awareness efforts were launched in all levels of government agencies. Mass media (i.e. radio, television and banner displays in public places) has been utilised as a major apparatus to increase awareness among government employees and general public in all of the four cases. The organisations under study have also demonstrated using the Web in providing information about their services.

E-government transformation and seamless integration mission is a long-term process and therefore, the education system can play a major role in the adoption of e-government. According to Dubai Statistics Centre (DSC) website, seventy per cent of the Dubai's population are below 30 years old and, therefore, the e-services usage education can be included as part of

the school curriculum (DSG, 2012). This effort will consequently increase the awareness among the Dubai's population and will help increase PC penetration in local household, which will have a great impact on the adoption of e-government initiatives. Additionally, due to the fact the 85% of Dubai residents are citizens of 189 different countries (DEG Strategy, 2003) it is recommended to add multi-language platforms to every government services as well as incorporate users' cultural perspective when designing the e-services.

Dubai e-government office (DEG) conducted several community outreach activities to raise the awareness and adoption of e-services such as road shows, competitions, promotions, online marketing, marketing with government departments, market awareness survey and rewarding the users of e-services. For example, Dubai Municipality rewarded the most frequent user of electronic transactions, the most frequent user of ePay service, as well as other groups of users from different fields. In addition, promotions of newly launched e-services were also done through the monthly publication of Dubai e-government, e4all magazine, which carried a series of informative articles on e-services in layman's terms. Covering various aspects of e-governance, it familiarized readers with the core concepts of e-services, hardware & software systems used, e-learning, and private sector's participation in e-services.

#### *4) Facilitate Users Feedback and suggestions*

E-government initiatives have commonly been developed from the perspective of public organisations. For example, e-services have often been developed based on internal organisational needs rather than on the needs of the end-users (Löfstedt, 2007b)

While it has been stated in this research findings that offering citizen centric e-services that deliver value to customers (i.e., citizens) is important and has been emphasised by e-services literature (e.g. McDonald et al., 2007), not enough attention has been given to developing an understanding of citizens' needs, attitudes, and behaviours. Rather, the public organisations have tended to take an inward-looking stance, focusing on their own services or internal operations (Löfstedt, 2007b; Verdegem and Verleye, 2009).

Various researchers and practitioners have commented on the likelihood that contemporary E-Government projects may be getting rushed along the way, without governments expending adequate effort to consult the public on its expectations from E-Government. Several researchers have warned against the tendency to 'idolise' technology, and thus missing out the human element involved (e.g. Dearstyne, 2001; Li, 2003)

Additionally, there was a form of general consensus among participants of this research on the importance of users' involvement from the initial stage of developing e-government projects to simplify the adoption process. The participants suggest that users' participation can be achieved through the application of the usability testing procedures which will eliminate complexities of e-government applications and contribute to the acceptance of e-government initiatives by the

users. The usability testing procedure is "*the practice of designing products so that users can perform required use, operation, service and supportive tasks with a minimum of stress and maximum of efficiency*" (Rubin, 1994, p.10). This approach will enable e-government implementation team to base their system development on users' feedback during each transformation/ implementation phase of the project. At the final phase of the development process, users' feedback and suggestions can be used as part of the 'support' activity to provide continues development of the e-service and ensure its continuous usability. Elgarah and Courtney (2002) propose the implementation of an open dialogue system wherein all citizens will have a forum to voice their opinions about any and all public matters of import to them. The U.S. Federal Government's General Services Administration reports (GSA 2000, page 3), "*Citizens' expectations will have an overwhelming effect on the success of electronic government. For example, if a survey or other method found that the majority of the citizens only wanted to interact with the government for certain types of transactions, governments could focus limited resources in those areas.*"

#### 5) Provide Performance Appraisal Methods

Participants acknowledge monitoring e-services performances as a vital part of developing and supporting e-services. Cases (One), (Two) and (Three) reported utilising a framework for e-services assessment prior to initiation, as well as a framework for evaluating efficiencies once the project is completed. The evaluation methods help identify: 1) the processes that need to be improved or replaced, 2) the project's full financial costs and requirements 3) Clearly defined project "success" indicators and if possible linked to the broader goals of the organisation and the national strategy. Both implementers and evaluators must agree on the definition of success.

To the extent possible, e-government indicators should be designed to reflect programme goals. For an evaluation to be useful, results need to be available to decision makers at the right time. When information on longer-term outcomes is not available in the requisite timeframe, alternative indicators should be used. Evaluation procedures should be ‘realistic and focused on specific issues of value’. All e-government evaluation will inevitably be a compromise between rigorous evaluation on the one hand and practical realities on the other.

The evaluation process should be ‘unbiased and independent’, so that it can be used as a basis for revising e-government initiatives. It should also be non-threatening to participants. It should be general enough to apply to more than one agency, initiative or programme. E-government evaluations should be based on a mixture of qualitative and quantitative indicators. Qualitative indicators that are useful are feedback, suggestions and complaints. While quantitative measures can be related to any of the technological, organisational or environmental determinates identified in this research such as e-services relative advantage or complexity.

Quantitative indicators have been reported as useful because they are more readily comparable and can be used to demonstrate concrete benefits from e-services deployment. However, quantitative indicators were not always suited for all aspects of e-services development and support. As evaluation efforts in the four cases understudy become more advanced, there was a greater reliance on qualitative measures to improve the provision of e-services.

Participants reported that the appraisal process should take into account both direct and indirect costs and benefits. While indicators should be based on stated targets, they should also be flexible enough to take into account unexpected outcomes or be adapted for a later point in time. Finally, e-services should be repeatedly evaluated over time and throughout all the development process stages.

#### **6.4 Limitations**

While the results of this research provided a useful and helpful understanding of e-government adoption in Dubai's government agencies, there were several limitations that were identified by this research. First, the scope of this research was limited to Dubai's civil agencies. Interviews were conducted with twenty four individuals from four government agencies; therefore, the requirements of other branches of the government (e.g. transportation and defence agencies), businesses and ordinary citizens are beyond the scope of this research and can be further examined to ensure the research's applicability. Second, the researcher limited this research to identifying the technological, organisational and environmental determinants for developing e-government initiatives in the Dubai's civil service agencies; therefore, further studies are needed to determine the relationships between the technological, organisational and environmental determinants. Third, although, other countries can use some aspects of this research, this research addressed the requirements of Dubai's civil agencies and cannot be applied to other countries without further research. Finally, the country's culture is an important factor in the adoption of information technology projects; therefore, further research is needed to examine whether Dubai's culture will have an impact on the adoption of e-government initiatives. Other limitations were identified in relation to:

### **6.4.1 Participants**

The author had restricted access to the organisations under study and a limited time frame for the research, the researcher was able to conduct twenty four interviews, one and half to two hour long interviews. During several interviews, participants had to leave for short periods to attend to urgent matters, thus often distracting them from concentrating on the interview itself.

In addition, as participants were recruited through stratified and reputational sampling techniques and personal contacts, not all levels and departments of the organisation could be accessed. Thus, findings may be subject to participant bias.

### **6.4.2 Case study**

A case study approach encourages the use of multiple sources of data. However due to the confidential nature of documentation regarding public organisations, only few documents could be obtained. Similarly, the researcher was unable to attend and observe any group or organisational meetings in any of the cases due to the interviewees' concerns about confidentiality and disturbance. Therefore, only general observations about workplace environment and general interaction could be made.

### **6.4.3 Data analysis**

Given the qualitative nature of the data, the study would have benefited from a second coder to verify concept classifications. However, due to the limited access given to the researcher by government agencies, this was not possible. Therefore, findings may be limited validity for this reason.

#### **6.4.4 Generalisability**

The findings are recognised to have limited generalisability given that they were derived from the study of four organisations – public e-services deployment departments. They are also limited to the time of study as the researcher elected to one-time data collection technique rather than a longitudinal study, due to time restrictions. As the study focused only on technological innovation, further research would be needed to determine whether these findings can be generalised to other forms of innovations development in public organisations. Similarly, given the vast amount of literature, the research had to restrict the research to the study of Rogers (2003) Organisation Adoption Process model, with some reference to Tornatzky and Fleischer (1990). Therefore, the applicability of the findings in this regard is also restricted.

#### **6.5 Recommendations for Further Research**

The research conducted in this thesis has led to some useful results and conclusions on adopting and implementing technological innovations in public organisations; however it has also uncovered many areas that need additional study.

Further research could investigate other technological innovations models, service development models or Innovation Process frameworks. It may be that other models offer alternative interpretations that may be of value to theory and to the organisations understudy. E-services are with government innovations of public services delivery, traditional models of innovation such as Rogers (2003) provided a good conceptualisation for the concept of e-services' development, however Rogers (2003) (OIP) model does not provide a holistic picture for the determinates related to the e-services development. It was critical for this study to conduct an extensive literature review (i.e. over 100 pages of literature review and over sixty pages of references).

On the other hand, Tornatzky and Fleischer (1990) (TOE) provided a suitable encapsulation of all the related determinates relevant to the e-services development process in Dubai public organisations (c.f. Chapter 5 and figure 6.2 above). However the study conceptual framework in chapter 2 failed to encapsulate the feedback loop and spiral or process pattern of activities that have evolved from this research findings. (c.f. Chapter 4 and figure 6.1; 6.2 above)

Hence, it is recommended that further research should be extended to include software development models; spiral, waterfall and process model of new service development. However it has to be remarked here that e-services is not only software. It is a mixed of technical and managerial innovation and hence a model will have to be developed based on the two concepts.

Furthermore the author also recommends using more participants, organisations or to extend the pool of participants over a larger geographical region. This would offer more rigorous findings and explore whether these findings can be generalised more broadly.

Further research is needed to investigate the proposed E-services development Model validity and applicability through quantities studies. Quantitative research, in the form of survey, can then be carried out to assess the model's validity and provide further insights into the relationships among the factors. A good understanding of the inhibitors and facilitators will be useful to relevant authorities and government agencies for drawing guidelines on how to encourage and motivate widespread adoption of e-services in Dubai. This would strengthen findings and contribute to a more complete understanding of e-government initiatives adoption and implementation processes in general.

Finally, the researcher concurs with Meyer's (2004) recommendations that mixed methods studies in innovation diffusion are substantial. In innovation diffusion contexts, employing quantitative methods in order to capture all individuals' input is important, and coupling that with qualitative methods (*e.g.*, interviews, observations, and artifact analyses) helps to present the most comprehensive findings. Reporting comprehensive findings is significant to all empirical studies, especially when those findings are considered in larger scaled decisions, and findings such as those would provide robust results for consideration in e-services' adoption and implementation decisions.

## 6.6 Conclusion

This chapter presented summary of the research findings. The research provides several recommendations to help Dubai's agencies to prepare for the adoption and implementation of e-government initiatives. Additionally, this research proposes suggestions for future research and hypotheses that can help explore and test its findings. In this study, environmental, organisational, and innovation-related drivers influencing the development in E-services in Dubai have been discussed.

This thesis explored the process of e-services development as technological innovation; using a hybrid model comprising of: 1) Tornatzky and Fleischer (1990) TOE framework and 2) Roger's (2003) Organisational Adoption Process model to frame the study. Four case studies were undertaken and used to gather in-depth details about e-government initiatives. The four cases in Dubai were required to transform a hundred per cent of manually transacted government services electronically by the end of year 2009. Cases (Three) and (Two) have both reportedly reached

ninety nine percent. Case (One) has reached a transformation rate of ninety seven per cent, while case (Four) has reported reaching a ninety five per cent transformation rate of all their government services by the end of the research data collection period in April, 2009. However, the transformation rate was not the only measure of success for e-services development set by Dubai E-government Office (DEG). Electronic Usage or E-usage rate of e-services has also been set at fifty per cent usage rate. The purpose of setting a usage rate was to encourage more than services automation in Dubai public organisations but a whole work process reform. This study was carried out with the aim of providing some assistance to government organisations' in their e-services development efforts through providing insights on e-services development experience from four leading public organisations in Dubai.

It is within the researcher's contention that e-government is not an end by itself, rather it is a process for accomplishing change in the way government agencies conduct its day-to-day business. The change is incremental and long-term but can be attained through continuous evaluation of the work process and acquiring technologies that can be used to reform tasks and functions of the agency. Hence, the researcher proposes an e-services development model to assist e-services practitioners (i.e. government employees) in Dubai and United Arab Emirates in gaining more understanding.

The researcher anticipates that this research and its findings may have an important impact on efficiency and success of future e-service projects in Dubai public organisations by providing a unified methodological approach to e-service development and transformation. As a result, the researcher developed an e-services development model as he believes that e-service development

requires a completely documented and repeatable methodological approach to ensure the most efficient and reliable transformation of e-government services. It is essential to note that adoption of e-government is not a simple linear process. But it is a dynamic, complex and iterative process compiled of many sub processes and activities that are inter-connected to each other through feedback loops. From reviewing different literature streams, the best models that seem to fit the nature and characteristics of e-services development process are the spiral and waterfall models represented in Chapter (2) (c.f. Johnson et al., 2000; Heeks, 2006; Eldai et al. 2008). Validating the proposed implementation framework by developing an integrated e-government service delivery system can provide a proof of concept for all our theoretical findings in this study.

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APPENDIX A  
INTERVIEW PROTOCOL  
*(English Version)*

***Draft Letter to Interview Participants***

Dear Sir / Madam,

Thank you for taking the time to participate in this research. The interviews are part of my field research project. I am a doctoral candidate at the University of East Anglia in Norwich city of England, completing my philosophy doctorate degree in business management studies. My research objective is to describe stages and identify technological, organisational and environmental determinants to develop an e-government initiatives (e-services) development model to assist Dubai government agencies implement e-government initiatives.

*Instruction and Confidentiality*

These questions are submitted to you before the interview meeting to read through them and obtain appropriate and relevant information. There are no right or wrong answers. What matters is your personal opinion. Please prepare to answer the questions as accurately as possible. Your answers will be confidential. Your name is not required and no one will be able to identify your individual response.

**Could I ask you please to complete the attached Consent Form prior to our interview.**  
Thank you in anticipation of your involvement  
Yours sincerely,

Mr. Ammar M Rashed

## **Consent Form for Interview Participants**

### **CERTIFICATION BY PARTICIPANT**

I, certify that I am at least 18 years old and that I am voluntarily giving my consent to provide information for the above described study entitled: *Describing the stages and Identifying the attributes for developing an e-government initiatives development model*, being conducted at University of East Anglia, Norwich, United Kingdom by: Mr. Ammar M Rashed.

I certify that the objectives of the experiment, together with any risks to me associated with the procedures listed hereunder to be carried out in the project, have been fully explained to me and that I freely consent to participate in this project.

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

### **Procedures:**

Semi- structured interview conducted by Mr. Ammar M Rashed. The interview will be taped or notes taken according to the participant's preference in order to record information accurately. The information gathered will be kept confidential along with the identity of the participant. Serious measures will be taken to insure the anonymity and confidentiality of the participant and the information collected. The participant will be offered notes at the end of interview to verify the data given by him/her.

I have been informed that the information I provide will be kept confidential.

Signed: .....

Witness other than the experimenter:

.....

**Date:** .....

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Any queries about your participation in this project may be directed to the researcher (Name: Mr. Ammar M Rashed, ph. +97150 6546226). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, University Research Ethics Committee Members ,University of East Anglia Norwich NR4 7TJ UK Telephone: (+44) (0) 1603 456161 Fax: (+44) (0) 1603 458553

**Part I-General information (All Participants)**

- 1) What is the highest level of education you have attained?
    - a) Below high school
    - b) High school diploma
    - c) Two year diploma
    - d) Undergraduate degree
    - e) Master's degree
    - f) Doctoral degree
  
  - 2) What is your gender?
    - a) Male
    - b) Female
  
  - 3) What is your age group?
    - a) Under 25 years
    - b) Between 25-35 years
    - c) Between 36-45 years
    - d) Between 46-55 years
    - e) Over 50 years
  
  - 4) What is your current job level?
    - a) Senior Management
    - b) CIO/ IT Manager
    - c) Functional department manager
    - d) Technical staff (system analyst! programmer/ system manager etc.)
    - e) Administrative staff
    - f) Other ( specify) -----
  
  - 5) How many years have you worked in this organisation?
  
  
  - 6) Do you have Internet access at work?
  
  
  
  - 7) Do you use computer in the organisation's day-to-day activities?
  
  
  
  - 8) Do you use the Internet in the organisation's day-to-day activities?
-

9) How long has your local government had a web site?

1. Less than 1 year
2. 1 year
3. 2 years
4. 3 years
5. 4 years
6. 5 + years

10) Can you identify the categories of individuals who are responsible for carrying out related activities of e-government initiatives in your organisation?

1. Organisation's manager
2. IT department's manager
3. IT operators / implementers
4. Other departments managers
5. Library
6. External government office member
7. Clerk
8. A Private sector e-government development office
9. External Consultant/Contractor
10. Other (*please specify*) \_\_\_\_\_

11) How many people work in the department responsible for deploying e-government initiatives?

1. 1-5 people
2. 6-10 people
3. 11-20 people
4. More than 20 people

## Interview questions related the adoption and implementation of E-government Projects

### Part one - Questions Related to the role of The Employee in e-government Deployment

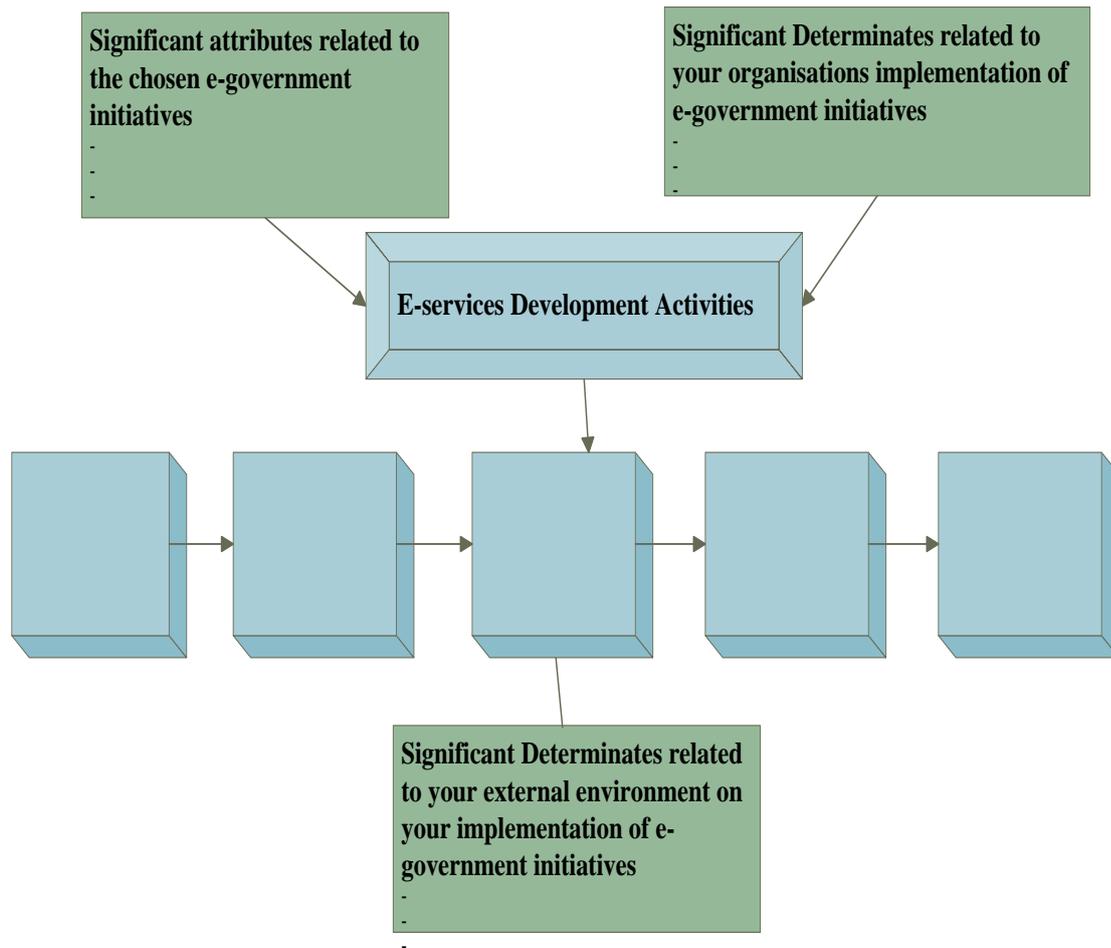
<input type="checkbox"/>	It would be useful if we could start our conversation in this meeting by shedding some light on your personal experience in deploying e-government projects.
<input type="checkbox"/>	Are you able to tell me what is the nature of your job, what is your role and contribution towards the accomplishment of these projects. What exactly do you do?
<input type="checkbox"/>	Is it possible to tell me who is the staff in your administration or department that is responsible for carrying out e-government projects? I mean I would like you to tell me who initiates the idea and who are the people implementing it? What are their role and their job titles?

### Part two- Question Related to the describing the stages, steps, strategies, plans regarding the deployment of e-government projects

<input type="checkbox"/>	From your own personal experience of implementing a number of e-government services, can you describe the important stages that such a project undergoes from you own point of view?
<input type="checkbox"/>	So how would you describe the steps that e-government staff must undertake when they come upon the decision of choosing one of the e-government projects? Is there a certain strategy or criteria that your organisation follows in choosing their projects?
<input type="checkbox"/>	After the decision to choose a certain e-government project is completed, can you describe from your personal experience what happens next?
<input type="checkbox"/>	Can you tell me what happens next until we reach the step where you establish the website of your service? How would you describe the final step in the transformation of the e-government service?
<input type="checkbox"/>	How do you come upon the decision that the e-government service has been transformed successfully? Are there any indicators to the success of the project?
<input type="checkbox"/>	From your personal experience what strategies have you undergone to be able to go through these steps? What is your personal opinion on the effectiveness of these steps?

<b>PART THREE- EXPLORING FACTORS, FACILITATORS, CHALLENGES AND BARRIERS</b>		
<input type="checkbox"/>	<b>From your personal experience with e-government applications, can you describe to me how you would choose a certain e-government project?</b>	
<input type="checkbox"/>	<b>In return, can you think of any reasons that would inhibit your decision from undergoing a certain e-government project?</b>	
<input type="checkbox"/>	<b>❖ What do consider to be the main challenges that the you face or your organisations faces?</b>	
<input type="checkbox"/>	<b>❖ In the implementation of the various initiatives under the e-government strategy, What did you feel were some of the critical success factors ?</b>	
<input type="checkbox"/>	<b>❖ What, if any, action during implementation would have prevented/reduced these problems?</b>	
<input type="checkbox"/>	<b>❖ If you could summerise your experience with e-government, What are the lessons learned from adopting and implementing e-government strategies?</b> <b>❖</b>	
<input type="checkbox"/>	<b>❖ Is their anything more that you would like to add?</b>	

- Note : at the end of the interview the researcher will ask the interviewee to comment on the illustration below and verify the representation of his or her answers to the above questions

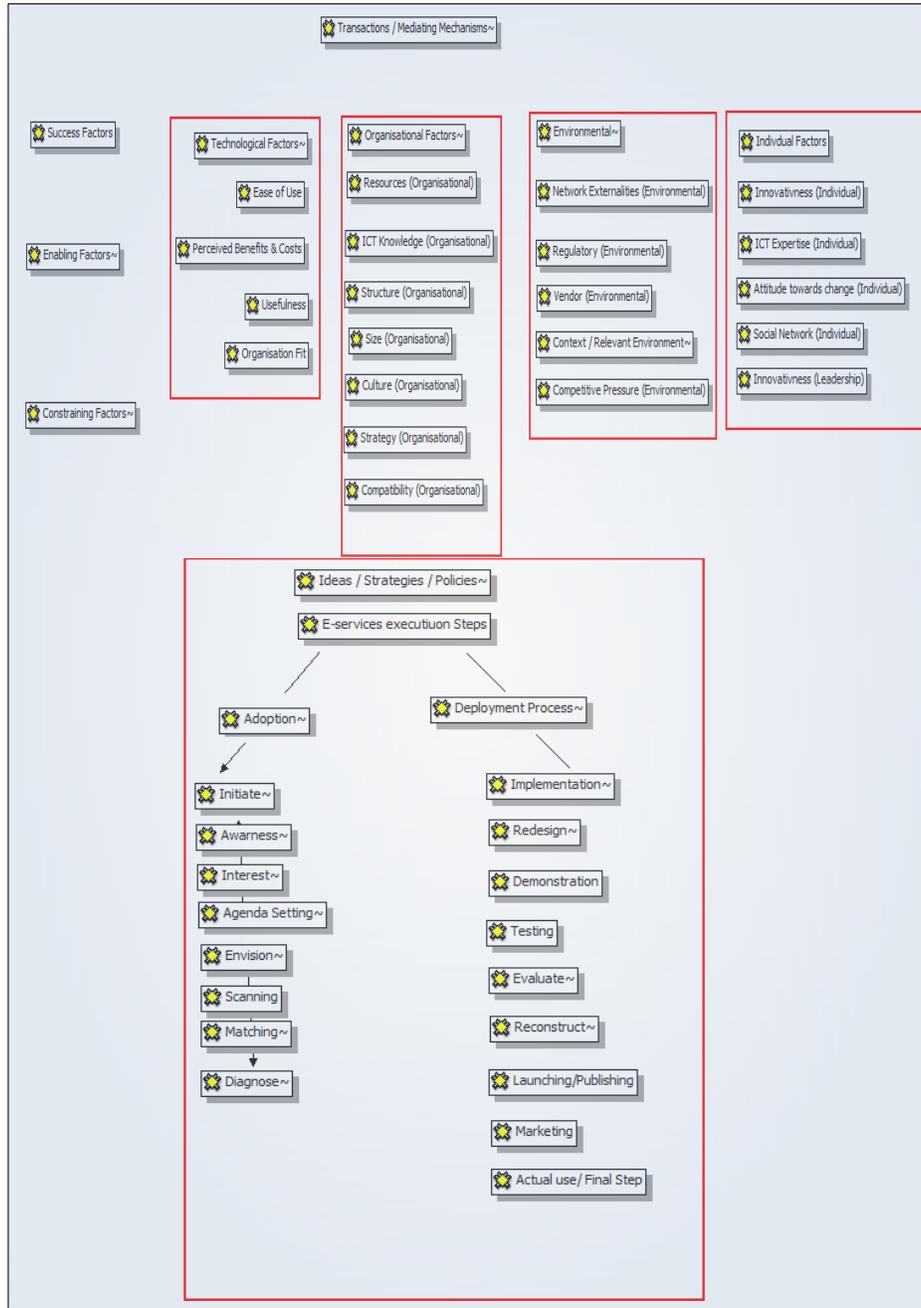


**Interview Closing:** Thank you for participating in this interview and research project. Would you please take some time to review the interviewer’s notes on your answers and comment on them.

***End of Interview***

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APPENDIX B  
 Screen Shots of Sorting Emergent  
 Themes Using Qualitative analytical  
 software as a tool (Atlas.ti)

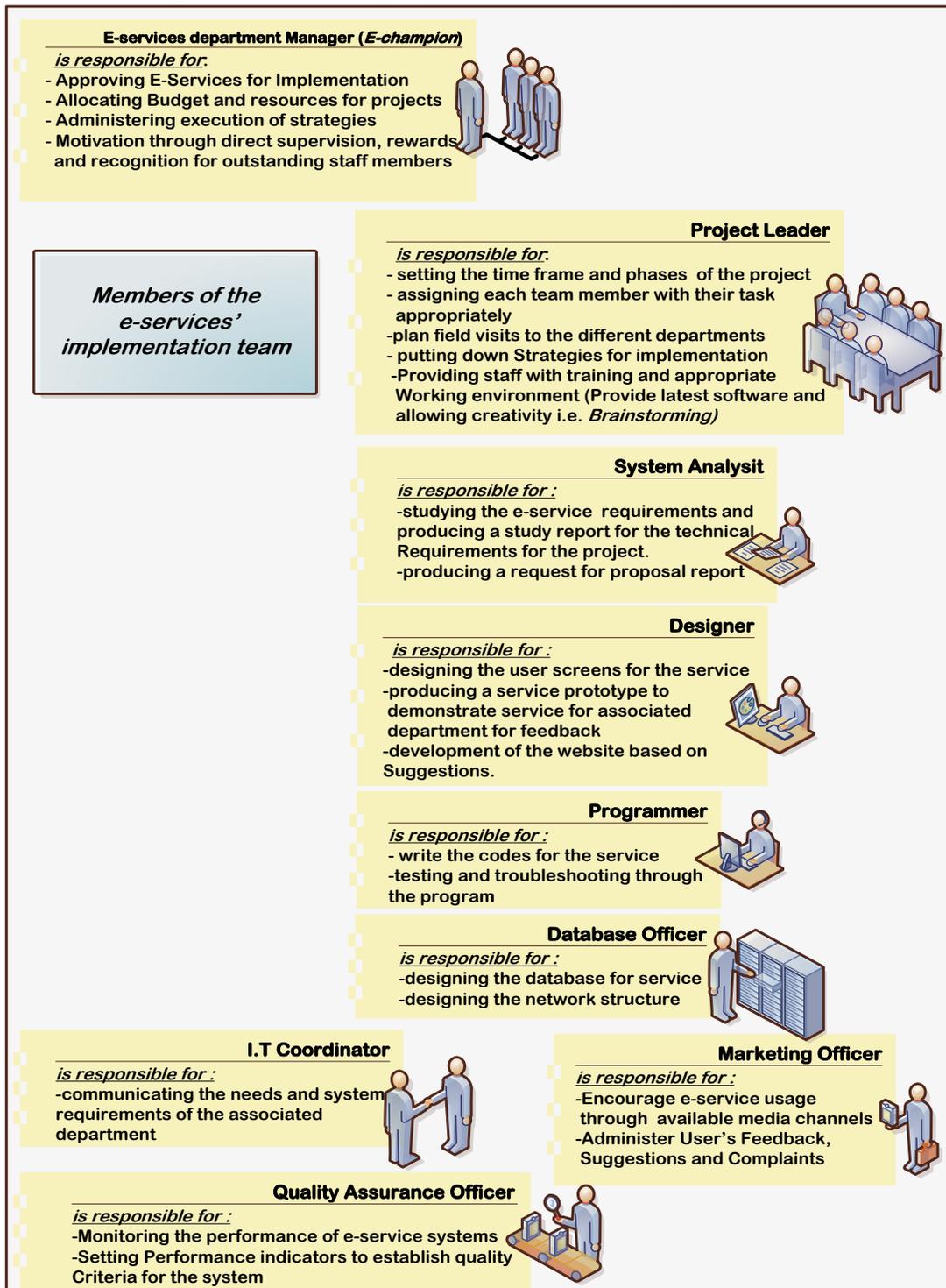


**Figure B-1: Sorting identified Emergent themes**



## Appendix C

### E-government Employees Roles and Responsibilities



Source: Author , Field Data Summary of 4 Cases

## Appendix D

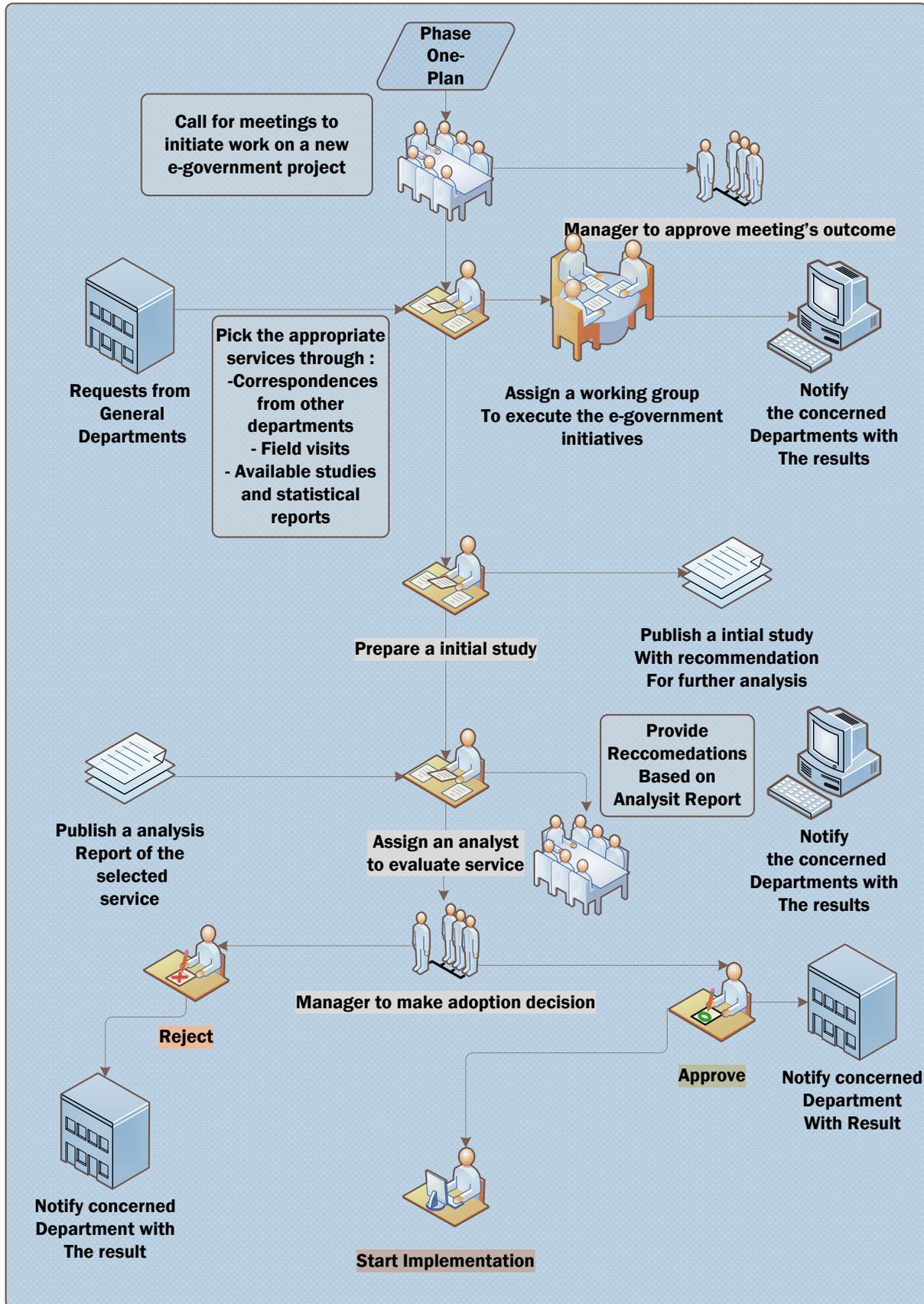
### Descriptions and Blueprint for E-Services Development Process in Dubai Public Organisations

#### Stage One: Planning

During planning, participants scan their related environment using specified set of functional or technical requirements to ensure reaping the sought out benefits from implementing the e-service. The participants reach a list of potential services after the scanning activity, the potential services are benchmarked and the most eligible services will be analysed more thoroughly. An e-services analysis report is the conclusion of the planning stage which is approved by the organisation's e-manager.

In the entire cases understudy, this stage was characterised by continuous scrutiny of the surrounding departments for innovative ideas that could solve the e-services departments clients' or end-users' needs. Innovation adoption was driven by a desire to differentiate their services from competitors. Another motivation was the desire to build long term relationships with customers and clients by responding to specific needs. Potential e-service innovations have also been chosen based on a certain department's demand or an idea through a brain storming session or a client suggestion. Finally, innovations were chosen because of their relative advantage, complexity or compatibility to the adopting organisation.

The decision point is the final part of the planning phase of e-services development process. From Rogers' model, this decision period is considered to be a discrete demarcation between two phases, the initiation and implementation period. However, it can be argued that the decision to support or reject an innovation can be taken at any stage of the process if unacceptable drawbacks are encountered. Van-de-Ven *et al.* (1999) argue that, whatever the efforts made to initiate new ideas, these efforts can be unexpectedly derailed by internal or external factors affecting the organisation during the initiation period. The e-champions understudy have also indicated similar adoption behaviour to the ones in literature, the e-champion is the decision maker and innovator in the departments understudy and approval of e-services' adoption is the milestone for the first stage in e-services development process. Similar to the literature discussions, the e-champion have revealed that the decision to support or reject an innovation can be taken at any stage of the process.



## **Stage Two: Transformation**

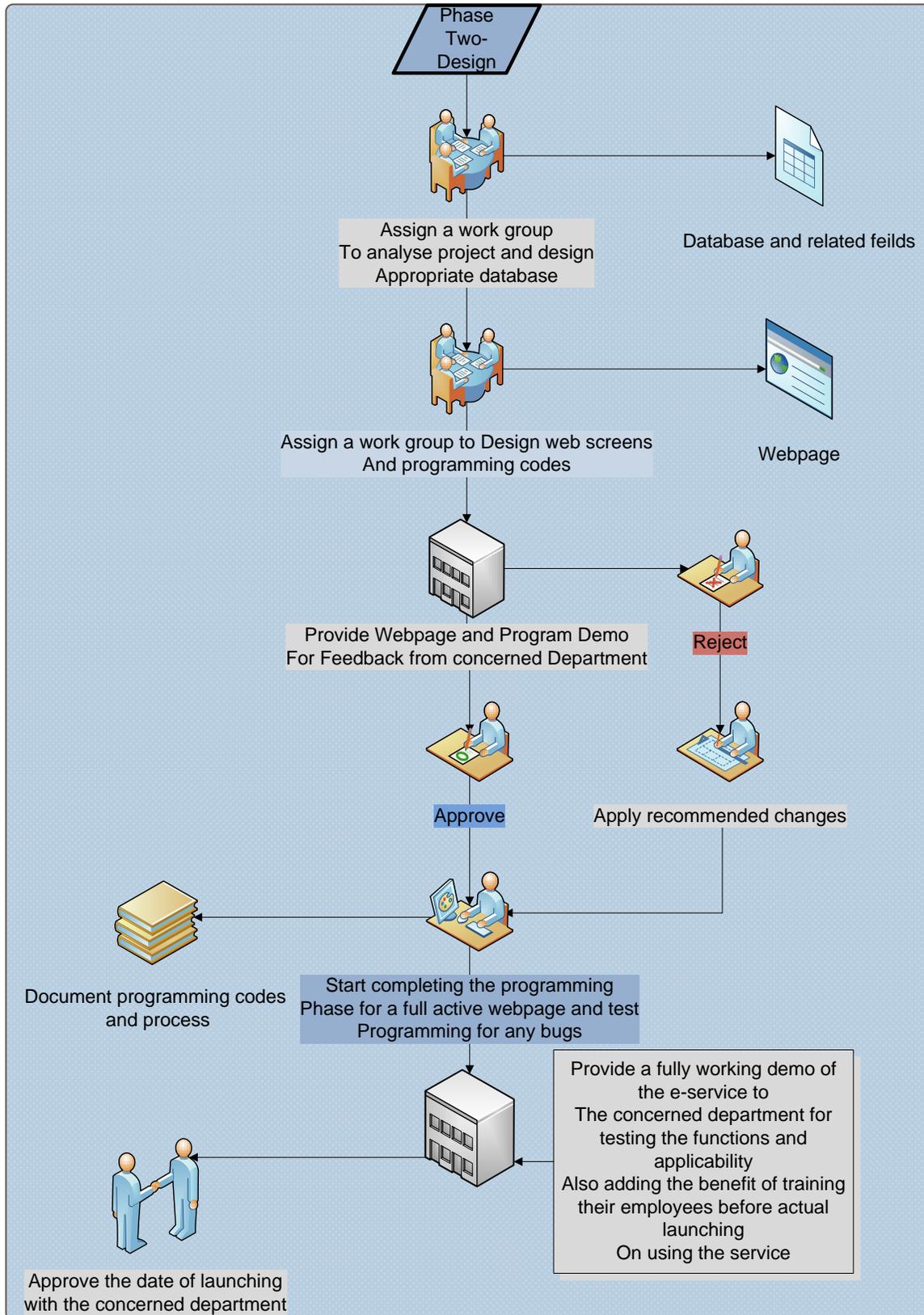
The second stage of e-services development in Dubai public agencies is the '*transformation*' of manually transacted services throughout electronic means. Writing the application's program and acquiring the necessary hardware to operate the e-service is the first activity of the e-service transformation team. Other activities such as: staff and user training, feedback sessions and other informing methods were also reportedly used in this stage in an attempt to further improve the innovation and prepare it for launching in the next stage with minimum risk or error. The physical realisation and simulation of the e-services is the final product of this stage.

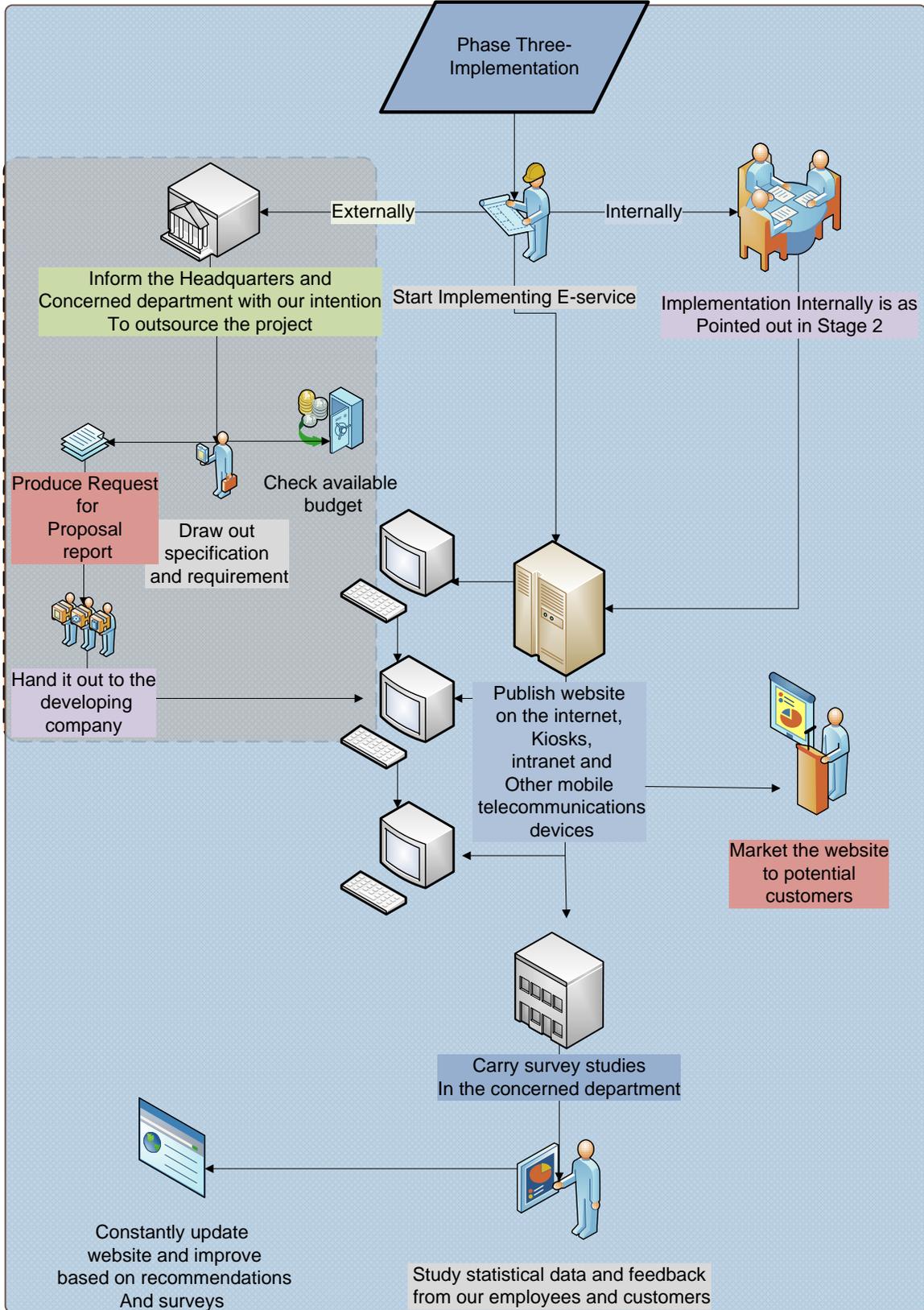
Cases which have experienced shortage of employee skills or financial resources at any given time throughout their e-services development experiences since 2001 have reportedly outsourced this stage to private companies

## **Stage Three: Deployment**

The final stage of e-services development is 'deployment'. All the cases reported undertaking three major activities during the deployment of e-services in Dubai: 'publishing', 'marketing' and 'supporting and monitoring' their e-service to ensure the successfulness of their diffusion to their targeted clients. According to the research participants, the success of the e-services can be evaluated at this point through many performance indicators: including the degree of 'sustainability', 'transformation rate' and 'Usage rate'.

The final activity of the deployment stage is supporting the e-services to ensure the site is updated regularly and have no functionality or user experience problems that may hinder or obstruct its use.





## Appendix G: Overview of Participant’s definition of E-services

Perspective	E-services Definition	Participants
Providing added value services to customers and partners	The use of Information and Communication Technologies (ICTs), and particularly the Internet, as tools to deliver better and faster services to citizens, employees, business partners, other agencies and other government entities.	C1EC , C1SP ,C2EC,C2SA, C3EC, C4SP,C4MO
Reforming public sector	The use of ICTs to improve the efficiency, effectiveness, transparency and accountability of our level of services.	C1SA ,C2PL, C3PL,C2ITC, C3MO, C4SD,C4QAO
Change Management	The use of ICT in public administrations combined with organisational change and new skills in order to improve our services and transform the way we work.	C2MO , C3SP,C3ST ,C4PL
Satisfying Political and Economical Demand	Using all available latest technologies to provide services to all citizens to be able to cope with the city’s economical and infrastructural rapid development.	C1PL, C1SD, C2DO
Technology	Utilising Wireless technology, the Internet, Intranet and the World-Wide Web for delivering government information and services to citizens.	C1QAO, C3SA,C4EC

*In summation the following definition was derived from participants’ own narration:*

“The use of Information and Communication Technologies (ICTs) and particularly the utilisation of the Internet to deliver more efficient, effective, transparent and accountable services to citizens, employees, business partners, other agencies and other government entities.”

The definition formulated above is in quasi with Dubai eGovernment office definition of e-services as “the use of Information and Communication Technology (ICT) to provide government services to citizens, residents and visitors (G2C), to businesses (G2B), to other government entities (G2G) and to government employees (G2E); using multiple channels, in line with its vision of easing the lives of people and businesses interacting with the Government. “(DEG Strategy, 2003)