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COLLEGE OF BUSINESS AND LAW

Business Information Systems

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**Towards successful e-government initiatives: exploring the
adaptation strategies of public sector middle managers**

*Thesis submitted for the degree of
Doctor of Philosophy in Business Information Systems*

Supervisors: Prof. Frederic Adam and Dr. Audrey Grace

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DECLARATION

The author hereby declares that, except where duly acknowledged, this thesis is entirely his own work and has not been submitted for any degree in the National University of Ireland, or any other University.

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ABSTRACT

Over the last two decades, research on the adoption and technology acceptance of new information systems by users has provided very valuable insights. Most of this research has focused on the impact on citizens in a bid to measure improvements in the quality and speed of the services provided. However, there is still a lack of understanding of internal users' reactions to new information systems and, in particular, new e-government practices. In light of this deficit, this research draws on the coping model of user adaption “CMUA” (Beaudry & Pinsonneault, 2005) to make a qualitative examination of the adaptation strategies of middle managers in public bodies when new e-government initiatives are implemented in their workplace, focusing particularly on Saudi Arabia. The public bodies considered in this research are: (i) the Commercial Register Office of the Ministry of Commerce and Industry; (ii) the Department of Corporate Services, also in the Ministry of Commerce and Industry; (iii) the Recruitment Department of the Ministry of Labour; and (iv) the Passport Department of the General Directorate of Passports.

Nineteen semi-structured interviews were conducted in the four public bodies referred to above to collect the data for this research. Each of the interview was analysed separately (individual level). Within-case analysis was then conducted to analyse each case study separately (at the group level). After that, cross-case analysis was conducted to analyse all the cases together (organisations level). The analysis of the case studies reveals that there is a strong relationship between the adaptation strategies followed and the success or otherwise of the adoption of the new systems in all four cases. In each case, several new elements were identified.

This study contributes to theory and practice. It contributes to theory by taking the framework (i.e., the CMUA) well beyond the scope for which it was designed. The framework was originally designed to examine users' adaptation strategies (at the individual level). This study applied the framework to evaluate the impact of adaptation strategies on the success of new systems recently implemented in the public sector, particularly e-government initiatives, by analysing at the group level. This study also contributes to theory by analysing the situation prior to the primary assessment stage of the framework, allowing us now to understand factors that might affect that initial assessment furthermore. This study contributes to theory by expanding the original

CMUA framework, particularly in the outcomes column (i.e., the new outcome: *seeking more enhancement*,).

From practice perspective, this study contributes to practice by offering five lessons to public organisations and top management that are intended to help increase the level of success of newly implemented e-government systems. First lesson is that top management and organisations should choose middle managers who have modern education and have experience of dealing with IT tools to increase the positive outcomes of the implementation of a new electronic system. The second lesson is that organisations should think seriously about designing fully automated systems that do not require interventions from the employees this will increase the possibility of initially assessing a new system positively, which will, ultimately, impact positively on the implementation outcomes. The third lesson is that organisations must mitigate against the reduction of power which some of the middle managers may experience with new IS implementations. This was a significant reason that let them escaped from the new electronic systems and didn't want to engage positively. The fourth lesson is that providing demonstration versions of new electronic systems was found so helpful to reap the most benefit that the new systems could offer. Finally, top management and organisations should encourage the exchange of knowledge between employees about how to use new electronic systems and the benefits these systems provide. Overall, this research is proposed to help top management and public organisations to support internal system users, particularly middle managers in the public sector, in order to avoid undesirable behaviours and hence manage these internal users more effectively.

Overall, the researcher believes that studying internal users' adaptation strategies when they face a new IT event is beneficial because these strategies influence the extent to which benefits arise from new electronic services provided by governments.

LIST OF ABBREVIATIONS

ABSHER	Online passport system used in the Passport Department in Saudi Arabia
CMUA	Coping model of user adaptation
CRO	Commercial Register Office
DCS	Department of Corporate Services
ERP	Enterprise resource planning
G2B	Government to business
G2C	Government to citizens
G2E	Government to employees
G2G	Government to government
ICT	Information and communications technology
IDT	Innovation Diffusion Theory
IS	Information systems
IT	Information technology
MUSANED	Online work visa service used by the Recruitment Department in Saudi Arabia
NIC	National Information Centre in Saudi Arabia
OECD	Organisation for Economic Cooperation and Development
RD	Recruitment Department
PD	Passport Department
SADAD	National online payment system in Saudi Arabia
TAM	Technology Acceptance Model
TDB	Decomposed Theory of Planned Behaviour
TTF	Task–Technology Fit Theory
UN	United Nations
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER ONE: INTRODUCTION

1.1. Introduction

This chapter presents the research explored in this study. It starts with the rationale for this study (section 1.2.). Then the research objective and the research questions formulated to examine gaps identified in the literature is presented in section 1.3. The next section (1.4) outlines the design of the study and a publication based on this research is presented in section 1.5.

1.2. Rationale behind and importance of the study

The demand for knowledge regarding e-government has increased. There has been increasing interest in the topic of e-government over the past decade, and this attention has been growing at an enormous rate and on a daily basis. Numerous studies, academic papers, seminars and conferences have stressed the need to study e-government further from different perspectives, in different contexts, using different methodologies (cf. Aichholzer, 2004; Akesson et al., 2008; Angelopoulos et al., 2010; Dadashzadeh, 2010; Pina et al., 2010; Joseph, 2013).

Moreover, rapid development in information and communications technology (ICT) has encouraged the public sector to think seriously about implementing e-government (Ho, 2002). This will lead to a radical changes inside organisations, such as new policies, processes, structures and the introduction of new IT applications that employees in the organisation must use (Sykes et al., 2014). This means that the way in which internal stakeholders perform their jobs will change completely. E-government as a system is complex and requires radically more IT changes than have previously been experienced in the public sector (Irani et al., 2009). Employees often find such organisational change and using new information systems to be extremely challenging (Sykes et al., 2014).

The importance of this study lies in helping those at the top management level in public sector departments proactively manage IT-induced changes even before an IT event occurs. It also provides a framework that can help understand the mechanism of internal user adaptation and better predict users' reactions. This study is intended to help top managers to encourage internal system users, particularly middle managers, in order to avoid negative behaviours and hence manage these middle managers more efficiently. This study would be helpful for the Saudi Arabia government who announced new reform program for the whole country called Visions 2030. One of the goals of Vision 2030 is to offer high standard electronic government services meet the needs of the people who live in its land and that includes Saudi and non-Saudi citizens. This requires a radical changes in the public sector caused by the information technology and reengineering the processes. Studying the adaptation strategies of the Saudi public employees when they face such radical changes, would provide a good tools for top management to predict the early resistance and provide the right aid for these employees which increases the level of success of the new technology implementation.

There has been much discussion in academia about e-government implementation, its external users (e.g., citizens and businesses), technology, and acceptance and success factors. Behind all the discussion, however, there are everyday workers whose daily routines have changed. How do they react to the new technology? Do they see the new technology as a threat or an opportunity? How do they adapt themselves when it comes to using it? These issues do not seem to have been addressed scientifically in academia, particularly in the context of e-government. As a phenomenon, e-government needs more detailed analysis in terms of its theoretical underpinnings, in order to explore the responses and adaptation strategies on the part of middle managers during the implementation of new systems and increase the likelihood of success.

1.3. Objective and research questions

Given the lack of previous literature addressing the phenomenon of the adaptation strategies of middle managers when they face new information technology (IT) recently implemented in their workplace within the public sector setting, the objective of this research is:

To explore the adaptation strategies of public sector middle managers faced with an IT event and the impact of these strategies on the success of information systems (IS) implementation in the public sector.

In order to achieve the research study objective, research questions were formulated to address the following:

- *To understand how public sector middle managers adapt to new IS projects that are implemented in their organisations, using the coping model of user adaptation (CMUA) as an analytical lens.*
- *To study how these adaptation strategies impact on the success of new IS implementations.*
- *To explore how the CMUA framework can be enhanced in light of its application to middle managers in the public sector facing a new IT event.*

The knowledge gap identified in chapter two led to the formation of the above research study objective, which was aimed at theorising how the adaptation strategies of middle managers faced with a new IT event influence their outcomes and the success of the implementation of the new system overall. This led to the formation of the three research questions stated above.

1.4. Presentation of the research

This research study is composed of six chapters, including this introductory chapter. The content of the six chapters is summarised below.

Chapter two presents a review of the e-government literature. It starts with an overview of e-government and a definition of it. This is followed by a review of the literature on the advantages of e-government initiatives and demonstrates how it is important for government to implement and adopt e-government systems. The roles that ICT plays in the public sector and in e-government initiatives are then presented to show the changes it can make to public departments. The chapter then examines the challenges and difficulties that e-government implementation faces, together with the human factors that deserve to be studied further. After that, the chapter presents a set of human factors that might affect e-initiative implementation in the public sector. The importance of the external and internal stakeholders of e-government implementation are then determined, ending with the significant roles that middle managers can play when it comes to successful e-government implementation. Finally, the chapter presents a conclusion and an overview of the model used in this study, and explains why this model in particular, rather than other IS theories, is presented.

Chapter three outlines and justifies the research methodology adopted in this study. Having identified a gap in chapter two, the research objective is defined and three research questions formulated. To investigate the phenomenon in depth, the researcher used a qualitative research approach. The case study method is deemed to be appropriate when exploring areas in which the existing knowledge is limited. Then, the sampling strategies are presented, to show how the four case studies conducted in this research were chosen and why. Following this, the data collection and qualitative analysis techniques used in this research are presented. Figure 1 below illustrates the methodology adopted.

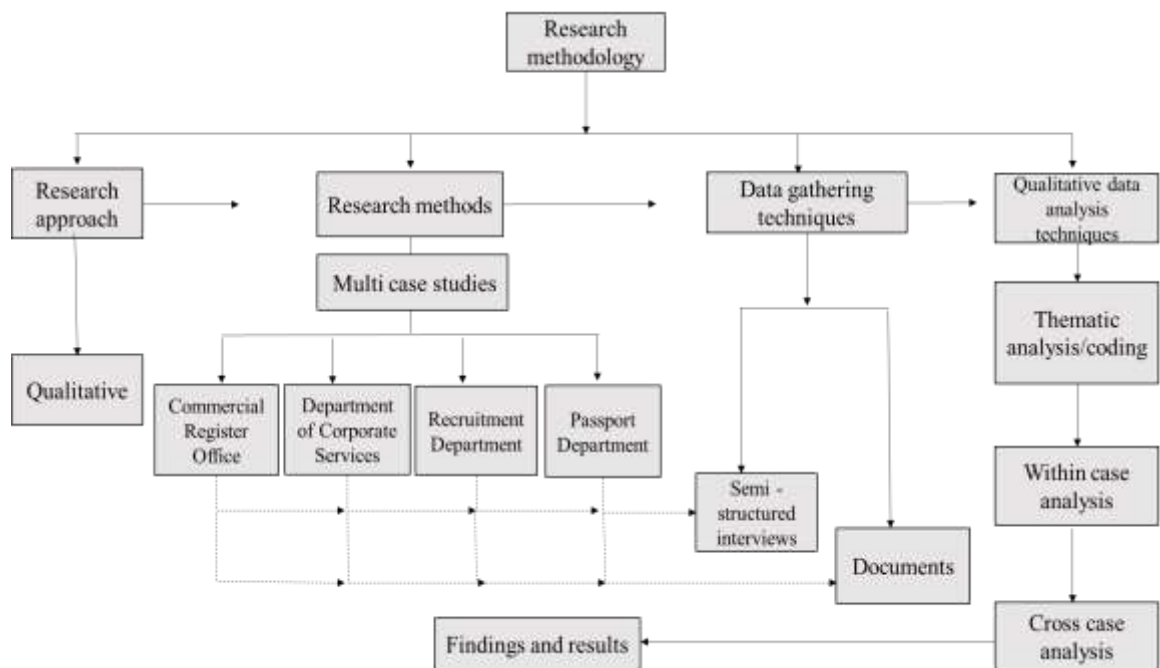


Figure 1: Research methodology

Chapter four presents a rich description of the initial data for each of the middle managers who participated in this research study for each of the case studies conducted. The name of the public departments and the number of interviews conducted in each case are as follows:

- Commercial Register Office: six middle managers interviewed.
- Department of Corporate Services: three middle managers interviewed.
- Recruitment Department: five middle managers interviewed.
- Passport Department: five middle managers interviewed.

The chapter also presents the findings from the data analysed from each interview.

Chapter five presents a within-case analysis of the four cases referred to above. The within-case analysis reveals that there are different reasons for middle managers exhibiting a certain adaptation strategy when faced with a new IT event. The reasons are different from one adaptation strategy to another. The data reveal a number of findings

from each case study analysed. The within-case analysis for each case study is followed by a conclusion for each case.

Chapter six presents the discussion and conclusion of the study. It first draws on cross-case analysis to answer the three research questions. Research question one covered how the middle managers who participated adapted to a new IT event associated with an e-government initiative. Research question two covered how the adaptation strategies for the public sector middle managers affected the overall IS project (i.e., their e-government initiatives). Research question three covered what enhancements could be made to the CMUA framework. The chapter also presents the overall conclusions of the research study and details its contributions to research. A number of contributions to practice are also suggested in this chapter. The chapter then describes the limitations of the study in parallel with opportunities for future research.

1.5. Publication based on this research

BINSAIF, N., FREDERIC, A. and GRACE, A., 2016, August. Towards successful e-government initiatives: Exploring the adaptation strategies of public sector middle managers. In *Electronic Government and Electronic Participation: Joint Proceedings of Ongoing Research, PhD Papers, Posters and Workshops of IFIP EGOV and EPart 2016* (Vol. 23, p. 163). IOS Press.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

The goal of this chapter is to review and analyse prior studies in the literature regarding e-government initiative implementation and how public administrators affect the outcome of such implementation. The literature review covers issues related to e-government implementation in order to meet the research objective and answer the research questions. The review concentrates on analysing e-government implementation from an IS perspective.

Section 2.2 discusses various e-government definitions to understand how these initiatives have been defined and described in the literature. The section includes an overview of the e-government initiatives concept. The advantages of implementing e-government initiatives are presented in section 2.3. Section 2.4 presents the relationship between e-government and ICT. It covers a definition of ICT, the functions delivered through it, the infrastructure needed to ensure the success of e-government initiatives, and the changes that ICT brings. Categorisation of the barriers to e-government initiatives is discussed and investigated in section 2.5. The chapter continues in section 2.6 with an analysis of the literature pertaining to human factors that affect the implementation of e-government initiatives. This section reveals that human factors cannot be neglected if IS initiatives are to be implemented successfully. More analysis of the literature pertaining to the human factor reveals the lack of studies relating to the adaptation and coping strategies of system users in the context of e-government. Building on this finding, a determination of the key stakeholders of e-government initiatives is discussed in section 2.7. Based on the findings in the literature, section 2.8 identifies the study gap and the opportunity for theoretical development. This section also presents an outline and justification of the chosen research model.

Each of the sections in the literature review starts with a brief summary to point the reader to the key argument.

2.2. E-government definition and overview

This section provides an overview of a number of definitions in order to understand how e-government has been defined and explained as a phenomenon. It discusses some of the definitions of e-government given in the literature, from the perspectives of both scholars and practitioners, to show common elements of the definitions presented in this section and the different viewpoints that underpin them. The section concludes with the definition adopted for the purpose of this study. In particular, the review covers the following main elements that form part of the e-government concept in terms of the stakeholders involved: the functionality of e-government initiatives and the advantages of implementing e-government. This exercise is necessary given the multiplicity of existing definitions and the variations they entail, as evidenced in Tables 1 and 2 in section 2.2.2.

2.2.1. E-government overview

In the last decade, scholars have given much attention to the new terminology of e-government and how governments deliver services (Moon, 2002; West, 2004), as well as the quality of the public services delivered (Gil-García and Pardo, 2005). This focus can be explained by the tremendous developments in ICT, which have given the public sector new and more efficient ways of delivering good-quality services to citizens and other stakeholders. The concept of e-government encompasses four aspects:

- (i) ***e-citizens***, which refers to the connection of citizens in order to engage them and increase democracy and to *improve* public sector services;
- (ii) ***e-administration***, which refers to the enhancement of government processes;

- (iii) *e-society*, which concentrates on increasing interactions with different stakeholders to improve cooperation with businesses and communities, building government partnerships and building society; and
- (iv) *e-services*, to provide services to stakeholders through the Internet (Heeks, 1999).

According to Irani et al. (2005), “information systems lie at the genesis of e-government infrastructures” (p. 65). E-government can, therefore, be classified as a national information systems project. It can also be argued that the idea of e-government is similar to that of other IS projects in the public sector, such as an enterprise resource planning (ERP) system. Both types of system aim to provide efficient and effective services, as well as automating work processes. However, there are some differences between them. For example, e-government is considered to be a national project, serving all stakeholders within a country, while other IS public sector projects serve a limited number of stakeholders in being considered as projects linked to internal organisation.

Swanson (1994) defines information system innovation “as an organisation’s application of IT to make its processes more efficient and effective” (p. 1072). Since one of the core advantages of implementing e-government initiatives is to transform work processes in the public sector to deliver more efficient services, and based on Swanson’s (1994) definition, e-government should be considered as a form of innovative information systems project.

Thus, many scholars have introduced e-government as an IS project that offers online services efficiently for a number of stakeholders (Heeks, 2006a; Badri and Alshare, 2008; Valdés et al., 2011).

2.2.2. E-government definitions

Many different definitions of e-government can be found in the literature. Most of the definitions have identified e-government from different perspectives, such as public

administration, citizens, e-business, the provision of public services, processes and information systems and knowledge management. They also identify the benefits of e-government. Nonetheless, there is still no standard, universally accepted definition of the e-government concept (Halchin, 2004). Indeed, defining e-government is somewhat difficult because of its combination of diverse aspects and issues in the discipline of public administration and informatics. Yildiz (2007) supports this idea in his own study. Although he does not provide a particular definition of e-government, he links it to the delivery of services using ICT to create benefits for efficiency, accountability and transparency.

A number of definitions of e-government can be found in the literature and serve to illustrate the variety of small differences in defining the concept. The following review presents some definitions of e-government in order to clarify what e-government is today and what the core advantages and functions of an e-government programme would be. The e-government initiatives for this study are defined by combining two perspectives: (i) practitioners and (ii) scholars. This method enables the researcher to concentrate on all the common characteristics that scholars and practitioners have emphasised to specify and define e-government initiatives. This allows the researcher to arrive at an explicit definition for this study.

Starting with practitioners, Table 1 shows some definitions of e-government from their point of view.

Table 1: E-government definitions by practitioners

Practitioners	Definitions
World Bank (official website, 2013)	<i>“The use by government agencies of information technologies (such as Wide Area Networks - WANs, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reduction.”</i>
United Nations Division for Public Administration and Development (DPADM) (2013) (www.unpan.org)	<i>“The application of Information and Communication Technology (ICT) within and by the public sector, provides government, the citizen and business with a set of tools that can potentially transform the way in which interactions take place, services are delivered, and public administration reform and good governance goals are met.”</i>
Pacific Council on International Policy (PCIP) (2002)	<i>“The use of ICTs to promote more efficient and effective government, facilitate more accessible government services, allow greater public access to information, and make government more accountable to citizens” (p. 2).</i>

From Table 1 above, the World Bank's (2013) definition focuses mostly on delivering public services to different stakeholders by reforming the processes of the public sector using technologies. It also focuses on providing access to information to the stakeholders, enhancing government efficiency by using information technology and the World Wide Web, as well as minimising corruption. The conclusion of their definition is to use technology in the public sector for more efficient management. The definition by the United Nations (UN) DPADM (2013) describes e-government as a means to reform the public sector in order to deliver services to a number of stakeholders. This definition is

considered to come more under the management perspective than others, since it focuses on reforming and transforming public administration processes. The PCIP (2002) describes e-government as a means to increase access to government information and services, accountability and efficiency through the use of information technology. This means that the PCIP definition places more emphasis on the political perspective. In summary, the World Bank and the DPADM concentrate on the management and reforming side, while the PCIP focuses more on the political aspects.

The other angle that has been chosen is the scholars' perspective, with a focus on the IS field with the aim of reaching an explicit definition of e-government for this study. Table 2 below shows some of the definitions taken from the research.

Table 2: E-government definitions by scholars

Scholars	Definitions
Bekkers and Homburg (2007)	<i>"E-government as public organizations' use of modern ICTs, especially Internet and Web technology, to support or redefine the existing and/or future (information, communication and transaction) relations with stakeholders in their internal and external environment"</i> (p. 374).
Carter and Belanger (2005)	<i>"E-government is the use of information technology to enable and improve the efficiency with which government services are provided to citizens, employees, businesses and agencies"</i> (p. 5).
Layne and Lee (2001)	<i>"Government's use of technology, particularly web-based Internet applications to enhance the access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities"</i> (p. 123).
Gupta et al. (2008)	<i>E-government is "to integrate Information and Communication Technologies (ICT) to transform delivery of government services to their stakeholders by improving quality of services, accountability and efficiency"</i> (p. 140).

Bekkers and Homburg (2007) present e-government in terms of public agencies' use of new ICT – specifically the Internet and Web technology – to help and support current and future relations with stakeholders in their exterior or interior environment. Carter and Belanger (2005) define e-government as the use of IT to assist and improve the efficiency with which government services are delivered and/or provided to employees, citizens, other government agencies and businesses. In their definition of e-government, Layne and Lee (2001) also assert that e-government is the use of ICT, particularly the Internet, to enhance access to information and deliver services. Gupta et al.'s (2008) definition places more emphasis on technology to deliver services to the public.

It is clear from the definitions of e-government in Tables 1 and 2 that there are some characteristics that they have in common, such as:

- (i) The use of ICT to deliver services.
- (ii) Interactions between the government and different stakeholders (e.g., citizens, businesses, employees and other government departments).
- (iii) Increasing the efficiency of government.

The World Bank has the most comprehensive definition, with most of the above elements contained within it. This definition does not, however, include some of the key elements of e-government, such as accountability, which are considered the advantages of implementing this type of system. The World Bank definition also neglects employees as one of the key stakeholders of e-government. However, this definition can be taken as the primary one when compared with that provided by the PCIP (2002).

Most of the e-government definitions more generally in the literature indicate that e-government merely uses ICT to transform services offered by the government from traditional to electronic delivery. Heeks (2006a) states that understanding e-government

requires an understanding of the IT that organises data in order to produce information and services.

Another criticism of the aforementioned definitions of e-government is their failure to refer to the modification or restructuring of a process and its impact on implementing e-government on the internal and external stakeholders of e-government initiatives. Moreover, they pay little attention to the different levels of public administrators. Furthermore, many definitions of e-government in the literature do not show a complete understanding of the e-government concept. Heeks (2006a) supports this idea and mentions that the e-government concept is still not clear in some of the definitions given in the literature.

Finally, after reviewing the literature with regard to e-government definitions, the following definition of e-government is adopted for the purpose of this research:

The use of ICT by government and public administrators to provide and deliver efficient services to a number of stakeholders, including citizens, businesses, employees and public organisations, by allowing them to interact with the government through electronic channels.

The above statement covers all the important elements in the prior definitions featured in the literature concerning e-government.

The next section discusses the advantages commonly reported in e-government initiatives.

2.3. Advantages of e-government

In this section, the researcher aims to discuss each of the advantages offered by e-government, in particular those extracted from the definitions obtained from the literature review. The material in this section is presented with respect to the importance of the different categories of advantages reported by previous researchers. This section begins with a general overview of the advantages offered by e-government initiatives. It then

presents the different categories of advantages involved: interaction, transparency, accountability, efficiency and cost reduction.

2.3.1. Overview of e-government advantages

In the e-government literature, there is general consensus regarding the advantages and opportunities offered by e-government. In particular, there is widespread recognition of the implications of developing new ICT, specifically in reference to e-government initiatives that contribute to creating more social and economic opportunities for businesses, individuals, governments, employees and other stakeholders (Avgerou, 2003; Ndou, 2004). In addition, researchers have claimed that understanding the advantages of e-government on the part of government officials is likely to help in devising an appropriate approach towards the successful implementation of e-government initiatives (Weerakkody et al., 2009). Hence, the advantages of designing and implementing e-government systems are now better understood by governments (Warkentin et al., 2002) and the public sector when implementing e-government and gaining a competitive advantage (Ebrahim and Irani, 2005).

The greatest shared benefits of implementing e-government amongst different stakeholders can be found in many of the e-government definitions and in the literature in general. The benefits include accountability (PCIP, 2002; Bekkers and Homburg, 2007); efficiency (PCIP, 2002; Carter and Belanger, 2005; Bekkers and Homburg, 2007; World Bank, 2013); transparency (Ndou, 2004); interaction (Bekkers and Homburg, 2007); and cost reduction (Ndou, 2004).

Across the world, the efforts of the UN to advance e-government have been recognised. It has generally been observed that the UN plays an important role in demonstrating the advantages and importance of e-government worldwide. According to the UN DPADM (2013),

E-government can facilitate improved coordination and cooperation between government agencies, decentralized and empowered local governments, better integration and coordination of social and economic policy, streamlined government structure and business processes, and enhanced capacity for data production, information sharing and knowledge management.

West (2004) and Yanqing (2010) mention other benefits of implementing e-government initiatives to different stakeholders, such as improving operations, minimising costs, reducing the time of public services delivery and enhancing administrative procedures. Ndou (2004) is in line with West (2004) and Yanqing (2010) with regard to the advantages discussed in their studies and adds other benefits that can be enjoyed from e-government initiatives, such as:

- Efficiency gains and cost reduction
- Quality of service delivery to stakeholders
- Transparency and accountability
- Improving the quality of decision making
- Interaction with stakeholders
- Increasing the capacity of government.

Despite the advantages of e-government initiatives, they are dependent upon users' (e.g., citizens, employees and other stakeholders) desire to adopt and use such innovations (Ebrahim and Irani, 2005). The adoption of e-government is complicated, takes a lot of time and requires much effort to put information and services online (Ebrahim and Irani, 2005). It remains unclear how long it will take to gain the full advantages of implementing e-government initiatives. Moreover, the advantages that can be gained by employing e-government depend on the problems and challenges that each country faces. The barriers facing the implementation of e-government are discussed in more detail in section 2.5.

The next sections discuss in detail the common advantages to e-government initiatives that have been found in the literature.

2.3.2. Interaction

There are many types of interaction between the public sector and stakeholders that can be realised when using e-government services. For example, instead of simply looking for information, stakeholders can perform transactions, such as paying fees, renewing driving licences and property certificates, downloading forms, and paying tax. Increasing the interaction between the public sector and stakeholders is considered a goal for many countries around the world when implementing e-government initiatives. For instance, Shanghai e-government initiatives have a particular goal, which is to increase the transparency of government regulation and actions (Chen et al., 2007).

Layne and Lee (2001) in their seminal e-government maturity model, e-government initiative implementation undergoes four stages: (i) cataloguing, (ii) transaction, (iii) vertical integration, and (iv) horizontal integration. The first and second stages are related to the stakeholders' interaction with e-government services. In the first stage, stakeholders interact with the public sector by accessing a government website to look for information about the services the government provides. In the second stage, stakeholders can interact with the public sector by performing transactions online using ICT. Reddick (2005) found evidence, by conducting a survey, that e-government improved citizens' interaction with the public sector. The survey showed that citizens were more likely to prefer interacting with the public sector online than through face-to-face interaction or by post.

Badri and Alshare (2008) have also demonstrated that e-government initiatives increase the interaction between external stakeholders (for example, citizens and businesses) and internal stakeholders (such as employees or officials). They found that e-government led to a positive relationship between businesses and the public sector, as well as increasing the interaction between them. Again, it is possible to see how Kertesz (2003) agrees with

Badri and Alshare (2008), in that e-government increases the interaction between stakeholders and government by offering online information and services.

E-government offers a range of opportunities for stakeholders to interact with each other, particularly when the technology and the system tools are easy to use. Gupta et al. (2008) agreed on this point in a study on the adoption of ICT in the public sector. They found that when public employees are comfortable with dealing with e-government applications (ease of use), their use has a positive effect, leading to increased interaction with technology in providing services to external stakeholders. Thus, investigating government staff perceptions of e-government appears to be critical in understanding why initiatives may or may not deliver the expected benefits.

The next section discusses transparency as one of the advantages of e-government initiatives.

2.3.3. Transparency

According to Bertot et al. (2010), transparency in the public sector refers to openness and the sharing of information with other stakeholders. One of the advantages of implementing e-government initiatives is transparency. Recently, several governments around the world have worked to increase the transparency and openness of their services by implementing e-government initiatives that allow other stakeholders to access information. For example, the US Customs and Immigration Service permits immigrants to track their applications and allows citizens who seek passports to track the progress of their passport applications. This feature enables a wide range of public service users to check on the progress of their services to ensure efficiency and be provided with reasonable time frames for processing (Bertot et al., 2010).

ICT has widely been described as a tool for promoting transparency (Ndou, 2004; Chen et al., 2007). For instance, it is considered to be at the core of the prevention of corruption

by allowing citizens to communicate effectively with public employees and by giving citizens the ability to trace government actions, as well as allowing them to access information and public policies. A study by Bhatnagar (2003), for example, has shown that e-government had reduced the corruption in rural India by putting the rural property records online, which has removed the opportunities for government employees to ask for bribes.

The discussion of transparency inevitably leads to another term that has a strong relationship with it: accountability. Accountability is discussed in the next section.

2.3.4. Accountability

One of the aims and advantages of e-government initiatives is to make public sector services accountable. It is believed that when there is a demand from society for government accountability, one of the means of achieving this is to introduce e-government to transform all government actions into automated processes. According to Wong and Welch (2004), there is no universally accepted definition of accountability. However, some scholars refer to it as the answerability of the public sector to stakeholders about its actions and performance. Since e-government initiatives allow stakeholders, such as citizens, businesses and other government organisations, to access more information than paper-based government actions, it is expected that e-government will increase the level of accountability and empower stakeholders by allowing them to monitor public sector performance. Similarly, La Porte et al. (2002) assert that e-government is usually viewed as a positive channel for promoting and enhancing public sector accountability, as well as empowering citizens.

Smith (2010) surveyed 2,258 North American citizens and found that e-government increases the number of citizens who want to discuss and offer their opinions about governmental issues, which should increase accountability. The study states that “nearly one quarter (23%) of Internet users participate in the online debate around government

policies or issues, with much of this discussion occurring outside of official government channels” (Smith, 2010, p. 2). Likewise, Ndou’s (2004) earlier findings support those of Smith (2010), in that e-government initiatives allow citizens to participate effectively in decision making by expressing their ideas and suggestions in online community forums.

There is no doubt that e-government increases the level of accountability of government in society, which should raise the level of democracy, enhance the performance of the public sector and increase the efficiency of public services (Bertot et al., 2010).

The next section discusses another of the advantages of e-government initiatives: efficiency and cost reduction.

2.3.5. Efficiency and cost reduction

Efficiency is one of the advantages of e-government initiatives. According to Gil-García and Pardo (2005), the implementation of technology can offer two important advantages to the public sector: increasing operational efficiency by reducing costs and increasing productivity.

Similarly, Carter and Belanger (2005) mention that online services are advantageous for both stakeholders and the public sector. Stakeholders receive faster services, while public organisations gain cost reductions and improved efficiency. Heeks (2006a) also agrees with Carter and Belanger (2005) and Gil-García and Pardo (2005) but from a different angle. In his study, Heeks (2006a) argues that the failure of e-government initiatives will often raise the level of bureaucracy in the public sector. Hence, if the level of bureaucracy is increased, investment in ICT in the public sector will decrease as a consequence, and will lead to lower efficiency in e-services than planned.

Moreover, an empirical study conducted by Moon (2002) shows, after surveying a number of municipal governments in the US, that there were a few responses that e-government initiatives had been effective in certain areas, such as cost savings. However,

many of the responses by municipal governments agreed that e-government initiatives had offered efficiency to public sector services.

Discussing efficiency almost certainly leads to a consideration of the cost reductions that e-government initiatives provide to both the public sector and to stakeholders. E-government initiatives have caught the attention of many governments around the world. Indeed, introducing e-government initiatives as a tool for achieving cost reduction has encouraged many governments to start implementing such processes. E-government can reduce costs by streamlining and restructuring action processes. Contrary to this belief, however, a study by Kertesz (2003) states that e-government is increasing the cost of delivering services, rather than reducing it. According to Kertesz (2003), only a few countries have realised a reduction in cost because of the implementation of e-government. However, based on the literature, most scholars have a different opinion and assert that if governments want to reduce the cost of delivering services to their stakeholders, they should think seriously about implementing e-government initiatives (Moon, 2002; Ndou, 2004; Heeks, 2005; Dwivedi et al., 2012).

It is believed that the automation of services and providing them online to the public will decrease the operating costs of many government activities compared with the manual method of conducting government services with the public. For example, Al-Kibsi et al. (2001) mention in their study that processing online tax forms by the US Inland Revenue Service would reduce costs and save \$1.20 per form. Likewise, O'Neill (2009) found that, after implementing 'Landonline', which is a project launched by the New Zealand government to provide digital land information for lawyers and surveyors and process survey and title transactions remotely, the government realised that the cost of the transactions had been significantly reduced. E-government will also reduce costs for citizens and businesses by offering electronic transactions. There is no need, for example, for citizens to drive to public offices and wait in line to perform transactions; the

introduction of an e-government service will save them time and money and businesses can reduce their staff, as technology can take their place.

Thus, it has been observed in many cases of e-government implementation across the world that e-government initiatives deliver a broad range of savings to stakeholders – be they members of the public, businesses or the agencies or government departments that deliver the services. The previous sections have comprehensively illustrated the key, central role played by ICT in delivering these savings. The following section discusses this role in more detail.

2.4. ICT and e-government initiatives

The first section (2.4.1) starts with a discussion of the use and role of ICT in the public sector by showing its importance in that area, particularly the Internet. The second section (2.4.2) gives a brief summary of the history of ICT in the public sector by discussing how the emergence of the Internet led the public sector to pay more attention to e-government. This section also discusses the definition of ICT. Section 2.4.3 discusses some of the functions delivered through ICT, such as accessing information and performing transactions. In section 2.4.4, ICT infrastructures are presented as an important component of e-government solutions, bearing in mind that there is a critical human side to the deployment of any ICT infrastructure, notably in terms of technical skills and the general availability of suitable human resources. The radical changes that ICT causes inside public organisations and reengineering the processes is presented in section 2.4.5.

2.4.1. Importance of ICT in the public sector

The tremendous improvements in the private sector in using ICT and providing efficient services by saving time and cost for its customers (Cordella, 2006) have increased people's expectations of services that are delivered by government through ICT (Bekkers, 2003). Ho (2002) also supported this view and mentions that people now expect to access

public information anytime and anywhere, which has forced politicians to think seriously about using ICT in the public sector to provide information online and deliver services electronically.

Utilisation of ICT within the public sector is widely known as a key aspect of e-government initiatives (West, 2004; Yildiz, 2007). In general, e-government projects are based on the use of the Internet and modern IT development (Ho, 2002; Al-Azri et al., 2010) in order to deliver services to businesses and citizens and to allow them to interact effectively with government. ICT also links public departments and organisations with each other, in order to share and exchange information and services (Fang, 2002; Charalabidis et al., 2010; Shareef et al., 2010).

With the emergence of the Internet and the rapid development of ICT, many governments around the world have started to implement e-government initiatives in order to interact effectively with different stakeholders. In the literature, there are several scholars and practitioners who discuss the need for the Internet and the role it plays in the e-government context (Ho, 2002; OECD, 2003; Gronlund and Horan 2004; Kraemer and King, 2006). A study by the OECD (2003) has asserted that the Internet is considered the most important ICT tool that governments need to deliver services to the public. The importance of the Internet as one of the ICT tools should be borne in mind because it is considered to be a fundamental enabling component of e-government and, indeed, without the Internet there would be no e-government (Kraemer and King, 2006). Gronlund and Horan (2004) have also asserted that, with the Internet, the term ‘e-government’ started to spread around the world. According to Ho (2002), who has mentioned the importance of the Internet era for the public sector, “the Internet gradually has matured into a cost-effective and user-friendly platform for officials to communicate directly with citizens and to deliver massive quantities of information to the public” (p. 435).

2.4.2. Definition and short history of ICT in the public sector

The history of ICT in public organisations began when these institutions started to automate their work processes by implementing ICT tools (Gronlund and Horan, 2004). At the time, governments were trying to improve their operations and internal communication (Norris and Kraemer, 1996) and increase internal efficiency (Ilshammar et al., 2005) by computerising public organisations.

In a study conducted with the International City/County Management Association (ICMA), Norris and Kraemer (1996) surveyed 7,135 cities in the US and found that computers were important for enhancing internal operations, and that most of the cities were satisfied with the computerisation of their public organisations. These findings show the importance of information technologies in improving the internal operations in public organisations. Ilshammar et al. (2005) discuss how ICT in the 1960s increased efficiency in the public sector and how ICT was vital for enhancing public sector service levels in the 1990s.

Many scholars have defined the concept of ICT in the literature and what it refers to (Kim and Layne, 2001; Montagna, 2005; Altameem et al., 2006; Gupta et al., 2008; Cordella and Iannacci, 2010). For example, according to Gupta et al. (2008), ICT encompasses “technologies such as the Internet, Intranets, Extranets, ERP and other such technologies that cover the spectrum from basic infrastructure implementation to technologies that improve services and operations in an organization” (p. 140). Similarly, Kim and Layne (2001), as well as Montagna (2005), assert that e-government is linked with the use of ICT, such as computers, networks, the Internet, etc., to help the provision of e-government services and enhance interaction between government and its stakeholders, such as citizens, businesses, other government departments and employees. Studies by Altameem et al. (2006) and Cordella and Iannacci (2010) have described how ICT refers to technologies such as computers, smart phones, tablets, hardware, software and operating

systems, as well as communication channels such as the Internet, broadband, fixed phone lines, other telecommunication systems, radio and television.

After the emergence of the Internet, and once it became widely used, governments started to pay more attention to enhancing their relationships with external stakeholders and to interact more actively with them (Ho, 2003) by delivering online services (e.g., paying tax online and the renewal of driving licences and passports) and providing information (e.g., tourism materials, government laws and policies). The Internet has provided new opportunities for governments to communicate and interact with external stakeholders in ways that were not possible before. In other words, government websites are a tool that has increased the communication between governments and different stakeholders externally and internally, so this has encouraged governments to build more websites (Kumar et al., 2007). A study by Muir and Oppenheim (2002) shows the rapid increase in the number of websites. For instance, in the mid-1990s the number of websites was just 142; after that, in 2001 the number increased to 50,000. This increase in the number of websites has increased pressure on public employees to learn new skills and to deal with technologies they have not dealt with previously in order to serve other stakeholders.

In the next section, the researcher discusses the functions delivered through ICT in more detail.

2.4.3. Functions delivered through ICT

ICT/E-government initiatives aim to provide access to government information to all stakeholders (e.g., citizens, businesses, employees and other governments) anytime and anywhere using ICT, which has led to increased communication between them. The application of e-government allows all e-government stakeholders to communicate actively with a government 24/7 through several ICT tools, such as the Internet and email. For example, a study by Khalo and Hu (2010) found that an e-government application in South Africa had increased the communication between the government and its citizens

effectively. A study by Reddick (2005) also indicated that more than half of the study sample (815 Internet users) preferred to access a government website to find more information regarding what they needed, which suggests that e-government makes their lives easier than before.

One of the functions that ICT offers is performing online transactions. In a series of stages, stakeholders are able to perform transactions with the public sector once the services are available for online use, and databases are ready to support such transactions (Layne and Lee, 2001). Conducting transactions online with a government at any time saves stakeholders the effort of completing paper applications and time previously spent commuting to government offices. According to Heeks (2005), performing transactions in the US through an e-procurement system has presented a number of opportunities to reduce the level of corruption. The performing of transactions between government and other stakeholders electronically, as well as accessing information online by stakeholders through ICT applications, reduces the cost and effort for all stakeholders. ICT also plays an important role in offering opportunities for economic improvement and enabling countries to compete effectively on a global footing.

ICT initiatives cannot provide any of the functions they are supposed to without knowing employees' abilities and skills to use and adapt to new technology and the changes associated with it (e.g., new work processes) (Kwahk, 2011). According to Layne and Lee (2001), in order to implement e-government successfully and to gain functions from it, an appropriate infrastructure should be built, policy issues solved, and interoperability established.

The next section presents ICT infrastructure and the roles it plays in successful implementation in more detail.

2.4.4. ICT infrastructure and successful e-government initiatives

Previous research has shown that ICT infrastructure that enables the execution of e-government is needed for successful e-government initiatives. It is believed that investment in ICT infrastructure and using all aspects of ICT systems will effectively lead, together with other factors, to successful implementation. Many scholars agree with this notion in the context of the e-government literature. Many scholars have asserted that the main concern when implementing an e-government initiative is to have an adequate and reliable ICT infrastructure (Dada, 2006; Gil-García et al., 2009). Likewise, Altameem et al. (2006) note in their study that, for an e-government initiative to be successful, it needs an ICT infrastructure that will support and enable the transformation from paper-based work to modern electronic activities (e.g., online voting, paying tax online and renewing driving licences online). Similarly, Ebrahim and Irani (2005) explain IT infrastructure as the hardware and software that provide secure services through the Internet to citizens, employees, businesses, and other public departments. They also identify ICT infrastructure as the key to successful e-government implementation. It is logical that providing access for all stakeholders is required and a sophisticated ICT infrastructure is important to achieving this (Dada, 2006). For this reason, many governments around the world have invested heavily in ICT infrastructure to enable all stakeholders – including those with disabilities, those on low incomes, and the elderly, for instance – to interact effectively by accessing information and performing transactions online (UN, 2013).

ICT infrastructure does not comprise only telecommunications and computer equipment (Ndou, 2004), it also includes human infrastructure (Gichoya, 2005). Human infrastructure is also needed for increasing the level of success of ICT application implementation. In this regard, governments need to know public employees' ability to use new ICT applications. Gichoya (2005) indicates that human resources or human

infrastructure is one of the success factors for implementing ICT in the public sector. Therefore, the readiness of human resources to achieve successful ICT implementation in the public sector is needed and this can be achieved by providing the right training, which can be anticipated even before the implementation occurs in order to improve staff skills (Beaudry and Pinsonneault, 2005).

However, Bonham et al. (2001) and Bourn (2002) explain in their studies that the public sector sees the lack of ICT infrastructure as a major barrier impeding implementation and reducing the capabilities of government departments in providing electronic services (e-government). This is discussed further in greater detail in section 2.5.

2.4.5. Organisational change caused by ICT and reengineering the processes

To reach a successful transformation of the services in the public sector, public organisations need a radical changes in their processes, in a way that has not been used in the public sector before (Kim et al., 2007). According to Fang (2002), one of the ideas behind implementing ICT in the public sector (or e-government) is to reengineer the work process to design a digital structure that streamlines each transaction provided individually and then the whole process of the public sector generally. Hammer and Champy (1993) define Business Process Reengineering (BPR) as “the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance, such as cost, quality, service, and speed” (p. 32). A study by Aichholzer and Schmutzer (2000) shows that there are usually two issues that come with the decision to implement ICT applications in the public sector that organisations need to take into account for successful implementation: (i) the reengineering of work processes, and then (ii) coordination and collaboration among different public organisations (e.g., during ICT/e-government implementation, a public department might need more information or resources from other public departments and this can be done through cooperation). Similarly, a study by Kim et al. (2007) pointed out

that governments need to change their work processes in order to gain the most benefits from an e-government initiative.

There is no doubt that the role of ICT in restructuring government organisations has dramatically increased since the end of the 1990s. The fast development of ICT has been key to transforming the processes, operations and structure of government organisations (Nograšek and Vintar, 2014). Many academics, government officials and public managers have found that e-government initiatives in many countries have attempted to use ICT to achieve governmental reform and improve the delivery of public services to their stakeholders, leading to increased accountability, efficiency and transparency within the public sector. For instance, Gauld and Goldfinch (2006) argue that “e-government promises a radical shift in the way the public sector is organized and conducts its work, and in how the public navigates and accesses services” (p. 43). Certainly, ICT is a powerful tool that has led to a transformation in the way that governments undertake their day-to-day operations to serve and deliver services to different stakeholders (Ndou, 2004; Gupta et al., 2008). It is argued that the transformation values do not come from just implementing the information technology, they come from changing the operation way and management processes (Ross and Beath, 2002). Hammer and Champy (1993) agree on that and termed information technology as essential enabler that plays important role in business reengaging. However, Hammer (1990) argue that organisations should not just use the information technology to automate an exciting processes but to enable new one to achieve a good levels of improvement.

As mentioned earlier, e-government is a major information system project that offers online services and information to employees, businesses, citizens, and the government itself using ICT (Heeks, 2006a; Badri and Alshare, 2008; Valdés et al., 2011), and implementing e-government initiatives in public organisations introduces new IT applications that employees must use (Sykes et al., 2014). Undoubtedly, employees often

find such organisational change and the use of new information systems to be a significant challenge for them (Sykes et al., 2014). In this regard, some users might raise issues, such as their lack of knowledge of how to use computers or new software, or might feel the need to explain that they have spent many years doing a good job without any help from ICT applications (Aladwani, 2001). Aladwani (2001) also mentions that “other users may develop beliefs that their jobs will be threatened by the new system, or that they will not know how to do the job within the scope of such a system” (p. 270). Introducing ICT applications into public organisations will, therefore, raise the need for a change in process. As a result, appropriate change strategies are needed in each phase of ICT application implementation to ensure its success (Aladwani, 2001).

Changes in public organisations’ processes often lead to significant challenges that public organisations need to have the ability to overcome (Dhillon et al., 2008). Scholl (2001) has made recommendations for how to overcome such challenges and states that “This is typically done by taking detailed inventory of all business processes, ICT hardware, ICT software, ICT skills, internal organisational characteristics as well as external environmental conditions” (p. 5).

The next section presents a discussion of the key barriers to e-government initiatives.

2.5. Difficulties and barriers influencing the implementation of e-government initiatives

This section identifies and discusses the barriers that affect the implementation of e-government initiatives from the existing literature. Section 2.5.1 first argues the difficulties of implementing e-government initiatives in the public sector by presenting the barriers that cause those difficulties. Then, section 2.5.2 presents an overview of the main categories of e-government initiative barriers. Unpacking the specific challenges within the main categories of barriers to e-government is presented in section 2.5.3.

2.5.1. Difficulties in implementing e-government initiatives

As indicated in a previous section (2.3), e-government initiatives provide many benefits to society and the different stakeholders. However, despite decades of experience in the public sector, the implementation of IS (e-government) is still a challenge for many organisations (Lauterbach et al., 2014). As mentioned in the literature, there are a number of barriers that governments face when implementing e-government. These barriers exist because of the complexity of the alterations that the public sector faces during implementation. Ndou (2004) and Dwivedi et al. (2012) have agreed and asserted that the transformation of recent government work to provide services electronically in the public sector is not an easy task and requires more attention to be given to different barriers to ensure success. One of the reasons that make the implementation of e-government initiatives challenging and complex is the size of government, as well as its bureaucratic nature (Devadoss et al., 2003).

In their study of an e-government maturity model, Layne and Lee (2001) argue that each stage of e-government initiative implementation presents different barriers that may cause failure to the project implementation. Such failure is caused by barriers that governments could address and it is often a case of not having paid sufficient attention to them or of not having the ability to overcome them.

Studies on e-government implementation in developing countries, for example, report that 35% of e-government projects implemented fail, 50% partially fail and just 15% are a success (Heeks, 2003). Atkinson and Leigh (2003) similarly agree in their study that e-government is fraught with many problems caused by a number of barriers. In order to overcome the barriers, those who are in the process of implementing e-government should understand the key issues in depth so that they can choose suitable strategies for the implementation of such initiatives (Gil-García and Pardo, 2005).

The next section identifies the different categories of barrier that affect the implementation of e-government initiatives.

2.5.2. Main categories of barriers to e-government initiative implementation

During the literature review, the researcher analysed a number of studies dealing with barriers that influence the implementation of e-government and may affect the level of success (Ndou, 2004; Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Altameem et al., 2006; Weerakkody et al., 2011). Reviewing the literature in the context of e-government demonstrates that there are many ways of classifying the barriers faced (Gil-García and Pardo, 2005). Some of the studies examine the barriers to e-government initiative implementation and group them under different categories. Table 3 shows an aggregated view of previous classifications in the area of barriers to e-government implementation.

Table 3: Categories of barriers to e-government

E-government barriers: main categories	Sources
Political	Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Vassilakis et al., 2005; Altameem et al., 2006; Weerakkody et al., 2011
Technical	Ebrahim and Irani, 2005; Altameem et al., 2006
Organisational	Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Altameem et al., 2006; Weerakkody et al., 2011
Social	Gil-García and Pardo, 2005; Vassilakis et al., 2005; Weerakkody et al., 2011
Technological	Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Vassilakis et al., 2005; Weerakkody et al., 2011

As indicated in Table 3, Altameem et al. (2006) discuss several barriers and classify them into three categories: political, technical and organisational. Weerakkody et al. (2011) examine barriers to e-government initiative implementation and diffusion and divide them into four categories: political, organisational, social and technological. Gil-García and Pardo (2005) discuss a number of barriers to e-government initiative implementation and have created a framework or guide for future practitioners and researchers. They organise these barriers into the following five categories: information and data, information technology, organisational and managerial, legal and regulatory, and environmental. Ebrahim and Irani (2005) also provide an analysis of the barriers to e-government adoption in the literature using five categories: IT infrastructure, security and privacy, IT skills, organisational, and operational costs. In their study of e-government stakeholders (employees and citizens), Vassilakis et al. (2005) classify a number of sub-barriers into five main categories of barriers to e-government initiative implementation and use, as follows: legislative and administrative, which is similar to the political category in the other studies in Table 3, user culture, and technological and social barriers.

Furthermore, Ndou (2004) suggests seven different aspects in the form of ICT infrastructure, policy issues, change management, partnership and collaboration, strategy, the leadership role, and human capital development and lifelong learning. Indeed, each of the main categories in these studies includes more than one barrier. All the studies on barriers mentioned earlier have suggested different names for their main categories and have almost the same sub-barriers. It can also be noted that some scholars have classified the same barriers but under different categories.

However, many scholars have also discussed single barriers or more than one barrier that influences the implementation of e-government without grouping or categorising them under major headings (Carter and Belanger, 2005; Yao and Murphy, 2007; Belanger and Carter, 2008; Gupta et al., 2008; Teo et al., 2008; Sipior et al., 2011).

The barriers included in each main category identified above are presented in the next section in order to provide an overview of the challenges involved.

2.5.3. Unpacking the specific challenges within the main categories of barriers to e-government

The researcher has found that political issues can increase or decrease the rate of success in terms of the implementation of e-government, as well its diffusion (Altameem et al., 2006). In the context of e-government literature, some authors, such as Heeks (2003), Altameem et al. (2006), Irani et al. (2008), Weerakkody and Dhillon (2008) and Dwivedi and Goel (2013), assert that paying attention to political barriers is necessary during the implementation of e-government projects in order to ensure success. The barriers related to the political category mainly include vision, strategy, top management support, leadership, funding (Altameem et al., 2006), and legal and regulation issues (Ndou, 2004; Vassilakis et al., 2005; Weerakkody et al., 2011).

Some scholars have also identified a number of barriers and classified them under a category referred to as technological barriers. These barriers can impede the

implementation of e-government initiatives (Al-Sebie and Irani, 2005; Ebrahim and Irani, 2005; Altameem et al., 2006; Weerakkody et al., 2011). The technological category often includes barriers such as rapid changes in IT (Zhang et al., 2005), lack of sufficient hardware and software (Weerakkody et al., 2011), lack of ICT skills and poor websites (Ebrahim and Irani, 2005), ease of use and effort expectancy (Gupta et al., 2008). Indeed, technology itself will not ensure success with regard to e-government implementation. Rose and Grant (2010) agree on this point and mention in their study that successful e-government implementation needs more than just technology.

Some scholars have also identified barriers and grouped them under a large heading called technical barriers, such as: information technology infrastructure (Bonham et al., 2001; Bourn, 2002; Ebrahim and Irani, 2005; Altameem et al., 2006; Gil-García et al., 2009); privacy and security (Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Altameem et al., 2006; Almarabeh and AbuAli, 2010; Dwivedi et al., 2012); and collaboration (Ndou, 2004; Altameem et al., 2006; Scholl et al., 2012). A number of studies have asserted that it is very important for any government intending to implement an e-government initiative to ensure that it has adequate and suitable infrastructure to enable success (Ndou, 2004; Ebrahim and Irani, 2005).

The term ‘organisational barriers’ is often used by scholars as a generic expression to describe a number of non-technical barriers that will affect the outcomes of information system projects (Clegg et al., 1997). In their study, Doherty and King (1998) define an organisational issue in the context of IS “as any distinct area on the interface between a technical system and the characteristics and requirements either of the host organisation or its individual employees, which can lead to operational problems within the organisation” (p. 105).

As a result of e-government initiative implementation, public sector organisations have been required to make significant changes (inside the organisation) in their work

processes that were not necessary before (as mentioned in section 2.3.5) and these modifications raise many challenges. This issue has attracted the attention of a number of scholars, who have investigated the barriers that public organisations face internally, in order to help overcome them and enable the implementation to be successful (Ndou, 2004; Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Altameem et al., 2006). These studies have called these factors organisational barriers, which include, for example, lack of training (Ndou, 2004; Gil-García and Pardo, 2005; Altameem et al., 2006; Dwivedi et al., 2012); resistance to change (Ndou, 2004; Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Altameem et al., 2006); and lack of awareness (Altameem et al., 2006; Weerakkody et al., 2011).

E-government implementation is also influenced by a number of factors that scholars have classified under the larger heading of social barriers. These barriers are mainly related to the usage of services by all stakeholders (Alshehri and Drew, 2010). These barriers include the digital divide (Ndou, 2004; Weerakkody et al., 2011; Dwivedi et al., 2012), ICT and computer literacy (Ndou, 2004; Weerakkody et al., 2011). More details about the digital divide are given in section 2.6.9.

Reviewing the literature on the barriers that influence the implementation of e-government initiatives indicated that human issues are broadly grouped into five general headings: (i) political (Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Vassilakis et al. 2005; Altameem et al., 2006; Weerakkody et al., 2011); (ii) technological (Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Vassilakis et al., 2005; Weerakkody et al., 2011); (iii) technical (Ebrahim and Irani, 2005; Altameem et al., 2006); (iv) social (Gil-García and Pardo, 2005; Vassilakis et al., 2005; Weerakkody et al., 2011); and (v) organisational (Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Vassilakis et al., 2005; Weerakkody et al., 2011).

Concentrating on some of the categories identified above without considering the human aspects (factors) is not conducive to the implementation of a new system. As mentioned earlier, e-government requires major changes in work processes, policies, structures and employees' roles, and yet implementers still pay more attention to technical (New and Singer, 1983), technological, managerial and organisational issues (Zakaria and Yusof, 2001) than to the individuals (users) concerned. According to Zakaria and Yusof (2001), for a successful implementation, there is a need to deal with all the factors together, including the human factors (barriers). This is in line with Doherty et al. (2003) and Wood-Harper and Wood (2005), who assert in their studies that human barriers are considered important and will be increasingly critical in terms of the successful implementation of information systems in the future.

Information technology is simply a tool and differences are made by those employees who can use and understand its benefits. Leavitt and Whisler (1958) conclude their study by mentioning how important individuals are:

Perhaps the biggest step managers need to take is an internal, psychological one. In view of the fact that information technology will challenge many long-established practices and doctrines, we will need to rethink some of the attitudes and values which we have taken for granted. In particular, we may have to reappraise our traditional notions about the worth of the individual as opposed to the organization (p. 48).

The above quotation demonstrates the importance of studying the reactions, behaviour and values of the individuals (human factors in general) who will use a new system. Human factors should be taken into account during the process of implementation to increase the success level (Nedović-Budić and Godschalk, 1996). Since this study focuses only on the human factors that influence e-government initiative implementation, the researcher will avoid discussing barriers that do not relate to the purpose of the research.

The next section systematically reviews the human factors that can prevent the implementation of e-government initiatives.

2.6. Human factors influencing the success or failure of e-government initiatives

This section discusses the key human factors that have a bearing on the success or failure of the implementation of e-government initiatives. A detailed discussion of the human factors that can be associated with barriers to the implementation of e-government is also presented. Each factor is discussed individually below.

There are numerous barriers that can delay the progress of e-government initiative implementation and/or drive it to be unsuccessful. Factors that are related to human beings are considered a crucial barrier to e-government initiative implementation. For example, Foley and Alfonso (2009) state that, along with technology, paying attention to organisational barriers is important and will increase the level of success of transforming public services to being provided electronically. According to Bovey and Hede (2001), it is important for organisations to concentrate on human factors when implementing a new system to increase the level of success. In addition, a study by Dada (2006) on e-government initiative failure indicates that neglecting human factors when designing a new system leads to negative results.

The researcher examined a wide range of literature with a special concentration on barriers that influence e-government initiative implementation and could cause the failure of the implementation. For the purpose of this study, the researcher has grouped these factors under a list called 'human factors'. These human factors, along with the associated references, are shown in Table 4.

Table 4: Human factors influencing the outcome of e-government implementation

Human barriers	Barriers category	Sources
Top management support	Political and organisational	Heeks, 2003; Ke and Wei, 2004; Altameem et al., 2006; Fernandez et al., 2006; Weerakkody et al., 2009; Weerakkody et al., 2011; Dwivedi et al., 2012
Political leadership	Political	Ndou, 2004; Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Altameem et al., 2006; Weerakkody et al., 2011; Dwivedi et al., 2012; Scholl et al., 2012
Privacy, security and trust	Technical	Ndou, 2004; Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Altameem et al., 2006; Almarabeh and AbuAli, 2010; Dwivedi et al., 2012; Scholl et al., 2012
Ease of use and effort expectancy	Technological	Gil-García and Pardo, 2005; Altameem et al., 2006; Gupta et al., 2008
Training	Organisational	Norris, 1999; Ndou, 2004; Gil-García and Pardo, 2005; Altameem et al., 2006; Nurdin et al., 2011 ; Dwivedi et al., 2012
Resistance to change and organisational culture	Organisational	Ndou, 2004; Ebrahim and Irani, 2005; Gil-García and Pardo, 2005; Altameem et al., 2006; Dada, 2006; Weerakkody et al., 2008
Awareness	Organisational and social	Altameem et al., 2006; Weerakkody et al., 2011
ICT and computer literacy	Technical	Ndou, 2004; Weerakkody et al., 2011
Digital divide	Social	Ndou, 2004; Weerakkody et al., 2011; Dwivedi et al., 2012

From Table 4 above, it can be seen that some of the human factors fall into more than one of the categories that were discussed in section 2.5.2. For example, top management

support appears in two main categories: political and organisational. Moreover, awareness falls into more than one category: organisational and social.

The barriers presented in Table 4 are discussed in detail individually in the next sections.

2.6.1. Top management support

This is considered a vital factor that can have a positive impact on the implementation of e-government initiatives throughout the implementation process (Ke and Wei, 2004; Altameem et al., 2006; Fernandez and Rainey, 2006; Dwivedi et al., 2012). A study by Thong et al. (2000) states that top management support is an important factor for the successful implementation of e-government. Weerakkody et al. (2011) also maintain that top management commitment is required for the successful implementation of e-government initiatives. Heeks (2003) further finds that support from senior management can decrease the rate of failure. In addition, knowing the benefits and goals of implementing e-government on the part of top management will increase the level of success and avoid some of the failure issues (Weerakkody et al., 2009).

2.6.2. Political leadership

The support of the political leadership with regard to the implementation of e-government is needed, particularly in terms of funding, legislation and encouraging departments to cooperate with each other (Almarabeh and AbuAli, 2010). E-government initiatives are considered to be long-term projects (Weerakkody et al., 2011) that are complex (Ebrahim and Irani, 2005), and this needs very strong support and commitment from political leaders to ensure success and to support the initiatives. Dwivedi and Goel (2013), in their study of the successful implementation of e-government, indicate that the role of political leaders is very important for successful implementation. In many countries, the implementation of e-government has made slow progress due to a lack of knowledge on the part of political leaders (Dwivedi and Goel, 2013). According to Ndou (2004), in the context of e-government, political leadership is needed (i) prior to implementation in

order to diffuse awareness of the project to all stakeholders and to explain the idea of e-government; (ii) during the implementation in order to manage the transformation; and (iii) after the implementation to ensure the necessary flexibility and adaptability of the project. Ndou (2004) also mentions that a political leader who can understand the advantages and disadvantages of an e-government project is needed to motivate, influence and support the undertaking. IT applications alone do not bring about reform in the public sector unless there is political support and a desire to do so by encouraging e-government initiatives (Kreamer and King, 2006).

2.6.3. Privacy, security and trust

Privacy, security and trust are all considered critical issues in terms of the implementation of e-government, whether in developed or developing countries. Ebrahim and Irani (2005) consider security to be a key element in the successful implementation of IS in the public sector. Altameem et al. (2006) support this notion, and state that a lack of attention to security will result in unauthorised access to the personal information of the service users, which will lead to a loss of trust in the service provided and e-government failure. Conversely, building trust in the service will lead to e-government success.

Layne and Lee (2001) state that security involves ensuring privacy and confidentiality with regard to data and computer security. Lack of security and privacy could lead to implementation failure if users feel that their use of the system is not fully secured, because users input their personal information to complete transactions through the system (Almarabeh and AbuAli, 2010).

Gaining trust is often considered to be a key factor for the successful implementation of e-government. After surveying 214 e-government website users, Teo et al. (2009) indicate that citizens' trust is a factor that can lead to the successful implementation of e-government initiatives because it affects users' (citizens') behaviour and perceptions positively. The researchers also mention that trust is important for the success of any e-

government initiative attempt. This is in line with Carter and Belanger (2005) and Belanger and Carter (2008), whose findings indicate that trust is a significant indicator of user intention to use e-government services. This suggests that trust is significant in terms of the successful implementation of an e-government system.

As discussed earlier in this section, privacy, security and trust are vital human factors for the successful implementation of e-government, but this comes from the side of citizens and other external stakeholder. However, these factors are not fundamental when applied to the public employees who perform the services.

2.6.4. Ease of use and effort expectancy

Ease of use and effort expectancy are both human barriers that relate to how users make use of a system. According to Venkatesh et al. (2003), effort expectancy refers to the degree of ease associated with the use of a system. Davis (1989) defines ease of use as “the degree to which a person believes that using a particular system would be free of effort” (p. 320). According to Davis (1989), ease of use as a factor is considered important for raising the likelihood of the successful implementation of an information system. Many scholars have used the Technology Acceptance Model (TAM) (Davis, 1989) in the context of e-government (Warkentin et al., 2002; Carter and Belanger, 2005; Yao and Murphy, 2007; Sipior et al., 2011). Warkentin et al. (2002) found that both barriers should be taken into consideration for successful e-government implementation. Carter and Belanger (2005), Yao and Murphy (2007) and Sipior et al. (2011) support this view, and found ease of use to be an important factor in terms of increasing the usage of a system on the part of users, leading to successful implementation. Carter and Belanger (2004), as mentioned before, have discussed the importance of increasing the use of e-government, which will lead to increased efficiency of public employees. Moreover, Gupta et al. (2008) show in their findings that effort expectancy has a significant positive

impact on the intention to use ICT and emphasise that more attention to these barriers will increase the level of success.

2.6.5. Training

Suitable training is needed to ensure that all end users of a system have the required skills and knowledge to operate it successfully (Clegg et al., 1997). Ndou (2004) and Anthopoulos et al. (2007) have also noted that a major challenge to the implementation of e-government initiatives is the lack of ICT skills on the part of staff within the public sector. Moreover, public organisations should bear in mind the need for training to address rapid technological development and provide their staff with adequate instruction. This would allow public sector staff to meet the changes that are associated with e-government with the minimum of difficulty (Weerakkody and Choudrie, 2005). Such training would also allow them to cope with change and adapt themselves positively to it (Beaudry and Pinsonneault, 2005; Elie-Dit-Cosaque and Straub, 2011). Finally, Ebrahim and Irani (2005), Gil-García and Pardo (2005) and Altameem et al. (2006) argue the key role that these barriers play, and are of the view that appropriate training for staff is a vital factor in the successful implementation of e-government. Inadequate training provided to public employees will lead them to resist the changes in work processes that are associated with e-government (Norris, 1999). Weerakkody et al. (2011) indicate that offering appropriate training to employees, as well as explaining the benefits they will gain as a result of the implementation of e-government, will lead organisations to overcome their employees' resistance to change. Training level somehow seems related to resistance to change, which is presented in the next section.

2.6.6. Resistance to change and organisational culture

Technology is considered very important in terms of the implementation of e-government initiatives. People, as an aspect of any system, however, are also important for e-government. Markus (1983) defines resistance to IT as “behaviors intended to prevent the

implementation or use of a system or to prevent system designers from achieving their objectives (p. 433). Heeks (2006a) states that the public sector should pay more attention to human-related barriers, such as skills, behaviour and knowledge. In a case study in India, Ndou (2004) found that employee resistance to change was causing problems with regard to the implementation of e-government because employees were afraid that they would be replaced or, in other words, would lose their jobs. This factor is associated with other barriers. Overall, many scholars have found that employees could view a new system as a threat, and would tend to resist and refuse to use it, which causes delays in the project duration, underutilisation of the new IS, and the budget being exceeded (Beaudry and Pinsonneault, 2005; Kim et al., 2007; Elie-Dit-Cosaque and Straub, 2011). Some barriers are related to resistance to change but, if the implementers were to pay more attention to them, they could avoid employee resistance to change caused by the new IT associated with a new system. For example, top management support of e-government initiative implementation can minimise the resistance to change on the part of staff (Altameem et al., 2006).

Culture can lead and encourage employees to achieve their objectives in an organisation. Public sector organisations, as well as employees, need to deal effectively with the new culture that will be brought by e-government initiatives to achieve successful implementation (Ebrahim and Irani, 2005). It is essential when introducing a new system or information technology to consider the culture of the users (e.g., public employees) to maximise the benefit of its use. Therefore, for successful implementation, the design of the technology should meet the purposes of the users by understanding their values, behaviour and culture (Zakaria and Yusof, 2001).

2.6.7. Awareness

Awareness is considered an important factor for the implementation of e-government initiatives (Altameem et al., 2006). One aspect of e-government is providing the meaning

of e-government initiatives to the stakeholders, in order for them to realise the opportunities they provide (Altameem et al., 2006). It is noted in the literature that the successful implementation of e-government is contingent upon marketing it to society, and an increase in the awareness of stakeholders (Almarabeh and AbuAli, 2010). Given this context, it is important to involve the appropriate stakeholders and increase the level of awareness of new e-government initiatives among them through promotional campaigns. For instance, advertising e-government in the media and organising workshops, events, seminars and conferences will help explain the benefits and opportunities that e-government can bring to society, and encourage the stakeholders (e.g., citizens, public employees and businesses) to be more involved and participate effectively (Ndou, 2004; Weerakkody and Choudrie, 2005). Similarly, Hossan et al. (2006) argue that spreading awareness of e-government initiatives among public employees is considered a crucial success factor of e-government implementation. In their study, they find that more than two-thirds of government employees did not have a clear idea of the benefits of e-government. However, after a brief information session about e-government and what benefits it can bring, most of the employees subsequently had a positive attitude towards it. This indicates the importance of increasing the knowledge of e-government and its benefits. Greater employee awareness of policies (e.g., in relation to users' privacy) brought about by electronic applications is also needed (Udo, 2001).

2.6.8. ICT and computer literacy

The importance of ICT has dramatically increased and is considered to involve tools that are fundamental in modern life. Given this context, computer literacy is needed for the successful implementation of e-government initiatives. A lack of computer-trained staff is one of the major barriers facing e-government initiatives (Ndou, 2004). It is noted in the literature that many scholars have argued that computer literacy is necessary to gain benefits from e-government initiatives (Gil-García and Pardo, 2005; Alshehri and Drew,

2010). Furthermore, Ke and Wei (2004) reinforce the idea that accessing the Internet and good education programmes will improve computer literacy, which will be reflected positively in the use of e-government. Providing the right training and education to e-government stakeholders seems to be the right way for governments to overcome any lack of computer literacy, which should increase the opportunity for successful implementation.

2.6.9. Digital divide

Almarabeh and AbuAli (2010) argue that the digital divide is the gap between the people who can and have access to the Internet and those who do not have the same opportunity, whether due to gender or income level. An OECD (2001) study has given a broad meaning to the digital divide and defines it as “the gap between individuals, households, businesses and geographical areas at different socio-economic levels with regard to both their opportunities to access information and communication technology and to their use of Internet for a variety of activities” (p. 5). This definition shows that a digital divide does not just arise from a lack of access to the Internet; it can also be due to a user’s inability to use the technology. Arendt (2008) agrees that lack of access is not the only reason for the digital divide that organisations face; it is also due to lack of education, knowledge and ability to use technology on the part of the employees within the organisation. There are many types of digital divide and not having access to technology because of the absence of computers and the Internet is just one of four types, albeit the most common (Van Dijk and Hacker, 2003). The other three types of digital divide, according to Van Dijk (1999, cited in Van Dijk and Hacker, 2003), are as follows:

- Lack of elementary digital experience caused by lack of interest, computer anxiety, and unattractiveness of the new technology (“mental access”);
- Lack of digital skills caused by insufficient user-friendliness and inadequate education or social support (“skills access”);
- Lack of significant usage opportunities (“usage access”) (p. 316).

Scholars in the literature indicate that bridging the digital divide is one of the success factors of e-government initiative implementation (Ndou, 2004; Dwivedi et al., 2012).

The human barriers that influence the implementation of e-government initiatives are still under investigation and more studies are needed to assess their effects from different angles. E-government is a major IS project and recognising internal groups and understanding their roles, relations, needs and interests are important when implementing e-government, to avoid the risk of implementation process conflict (Rowley, 2011) and to ensure successful implementation of e-government initiatives. It is fundamental to this research to discuss the key stakeholders to determine which have the greatest effect on the implementation of e-government initiatives.

In the next section, the researcher continues to review the literature in order to identify the key stakeholders of public organisations.

2.7. E-government initiative stakeholders

This section discusses e-government initiative stakeholders. It begins (section 2.7.1) by discussing the potential stakeholders of e-government initiatives. Two groups of stakeholders can readily be identified: (i) external stakeholders and (ii) internal stakeholders. A discussion of external stakeholders is provided in section 2.7.2. The researcher also shows that, although external stakeholders are important, they are beyond the scope of this study. The role and importance of internal stakeholders are presented in section 2.7.3. An argument about a particular type of employee (middle managers) is presented in section 2.7.4.

2.7.1. Potential stakeholders of e-government initiatives

Many scholars and practitioners, as noted in section 2.2, agree that an e-government initiative is the use of electronic channels to enhance the public services that governments should deliver to all their citizens, businesses, employees and other government

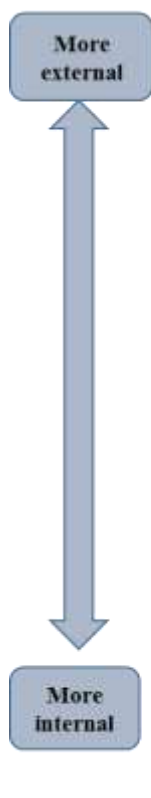
departments (Carter and Belanger, 2005; Teo et al., 2008; Gupta et al., 2008; World Bank, 2013). The significance of the role of stakeholders in an organisation's continuing efficiency and success has been acknowledged for decades (e.g., Freeman 1984; Wimmer and Traunmuller, 2000; Angelopoulos et al., 2010). For empirical purposes, following Freeman (1984), the notion of stakeholders has been understood as "any group or individual who can affect or is affected by the achievement of the organisation's objective" (p. 25).

Angelopoulos et al. (2010) argue that the use of ICT in the provision of government services is not the essence of e-government; rather, it is the interaction amongst different stakeholder groups, policies, processes and technologies for the purpose of efficient services. Development and implementation will affect external as well as internal stakeholders in terms of different aspects of work practices. External stakeholders include businesses, citizens and other users of these services (Wimmer and Traunmuller, 2000), whereas internal stakeholders are government organisations, employees working at different levels of government organisations and departments, and politicians (Wimmer and Traunmuller, 2000; Irani et al., 2007; Dwivedi and Goel, 2013).

Many pieces of research in the literature describe the categories of e-government stakeholders differently (Rowley, 2011). For example, e-government initiatives can be differentiated into groups or categories based on the interaction and involvement of the stakeholders (Fang, 2002; Ndou, 2004; Gupta et al., 2008; Joseph, 2013). A number of studies have divided e-government stakeholders into four groups: (i) government to government, (ii) government to business, (iii) government to employees, and (iv) government to citizens. Government to government (G2G) refers to the development of the relationship between government organisations or organisations within different local municipalities, or with other foreign governments, by utilising new and modernised technologies within the public sector (Fang, 2002; Ndou, 2004; Bhatnagar and Singh,

2009). Government to business (G2B) refers to the relationship and interaction between government and the private sector (Layne and Lee, 2001; Rowley, 2011). Government to employees (G2E) refers to the relationship and interaction between a government and the people who work within it (Fang, 2002; Ndou, 2004; Gupta et al., 2008). Government to citizens (G2C) refers to the relationship and interaction between a government and citizens, as well as foreign residents (Fang, 2002). The aforementioned categories highlight the specific types of stakeholder interacting with government. Table 5 below summarises the literature on e-government and identifies different stakeholder groups (e.g., external and internal).

Table 5: E-government external and internal stakeholders



Stakeholders	Sources
Citizens	Yildiz, 2007; UN, 2008; Heeks, 2006; Wimmer & Traunmuller, 2000
Business (e.g. consultants, contractors)	Yildiz, 2007; Heeks, 2006; Wimmer & Traunmuller, 2000
Third party (e.g. IT service provider)	Goel et al., 2012, Chen and Perry, 2003
Government organisations	Heeks, 2006; Mintzberg, 1996; Yildiz, 2007; Orange et al. 2006
Public employees (e.g. operation level staff, middle managers, project managers, top managers, politicians, etc.)	UN, 2008; Mintzberg, 1996; Orange et al. 2006; Irani et al., 2007; Goel et al 2012, Luk, 2009; Wimmer & Traunmuller, 2000; Furuholt and Wahid 2008

Since there are two main types of stakeholder, the next sections present the literature on both the external and internal stakeholders of e-government initiatives, respectively, as indicated in Table 5.

2.7.2. External stakeholders of e-government initiatives

As previously indicated in Table 5, there are three groups of external stakeholders considered to be key actors for the successful implementation of e-government initiatives: citizens, businesses, and third parties.

Exploring the importance and role of citizens can be relevant to the successful implementation of e-government initiatives. The use and perceived benefits of e-government services by citizens can, indeed, determine the success or otherwise of the implementation of those services. A government builds a relationship with its citizens in order to deliver services and provides the information that citizens require through the use of various technological channels (PCs, mobile phones and wireless devices) (Ndou, 2004; Lee et al., 2005; Belanger and Hiller, 2006) anywhere and at any time (Ndou, 2004; Rose and Grant, 2010). This enables citizens to have access to government information, as well as to interact with government by downloading forms and conducting transactions online (e.g., paying taxes, renewing licences and filing applications) (Fang, 2002). Furthermore, in this category, interaction between citizens and government has been extended through the inclusion of democratic features such as online voting (Carter and Belanger, 2004). The ease of use of the technology associated with e-government initiatives can also be a major factor in determining the success of the implementation of those initiatives. For example, Carter and Belanger (2005) found that ease of use will increase the adoption of e-government by citizens, and Yao and Murphy (2007) support this proposition in their study exploring voters' perceptions of e-voting systems and their intention to use them. Again, their results show that the ease of use of the technology involved increased citizens' intention to use e-services provided by the government, which logically leads to successful e-government initiatives.

There are other factors relating to citizens that can affect and even shape the implementation of e-government initiatives. For instance, the feedback received from

citizens on their perceptions of e-government services, their knowledge of ICT, and their concerns about data security and protection can significantly affect the implementation and design of the services provided (Carter and Belanger, 2005; Teo et al., 2009). Trust is considered one of the key factors that increase the intention to use e-government services by citizens. According to Teo et al. (2009), trust is the key to any e-government endeavour, deeply affecting citizens' attitudes and perceptions. Carter and Belanger (2005) also maintain that trust is a fundamental factor in citizens' use and adoption of services provided by e-government initiatives.

Business organisations are also considered important external stakeholders in e-government initiatives (Wimmer and Traunmuller, 2000; Heeks, 2006b; Yildiz, 2007). Heeks (2006b) even argues that businesses are more important than citizens, since their level of interaction is higher. This is in line with Rohleder and Jupp (2004), who note that the services provided to businesses are more developed than those provided to citizens. There is a practice called public e-procurement, which is considered a main part of e-government initiatives and allows governments to increase efficiency and save costs when buying merchandise from suppliers (businesses) (Carayannis and Popescu, 2005). Vaidya et al. (2009) define e-procurement as the

use of the Internet-based Inter-organizational Information System, which automates and integrates any part of the procurement process in order to improve the efficiency and quality in public procurement, and to promote transparency and accountability in the wider public sector (p. 477).

According to Belanger and Hiller (2006), e-procurement is a major part of online transactions between government and business, as well as being critical in the hiring of contractors and the acquisition of goods and services on the part of the government.

There are times, however, when governments do not have the ability to deliver online services for various reasons. For example, unskilled employees can be a critical problem (Gil-García and Pardo, 2005) that government can overcome by using third parties to

deliver services on behalf of public organisations (Chen and Perry, 2003). However, this does not guarantee the success of IT services. A study by Lacity et al. (1995) found that a major reason for the failure of IT services provided by third parties was the management structure and culture inside the organisation. To increase the probability of success of electronic services provided by a third party (such as an IT service provider), flexible regulation is needed and the venture must be treated as a partnership by public managers (Lacity et al., 1995).

As previously mentioned, external stakeholders are key stakeholders in the successful implementation of e-government initiatives, but they are not directly involved with the systems themselves in the context of adaptation strategies. Therefore, although they are critical stakeholders, they are not fundamental in terms of the objective of this study. In contrast, internal stakeholders (e.g., employees) are, indeed, fundamental to the success of the implementation of a project (Nedović-Budić and Godschalk 1996; Luk, 2009) because running a system and providing services to the public fall under their responsibility. Beringer et al. (2013) also argue that internal stakeholders have the potential to have a significant influence on the success of any project.

Internal stakeholders are discussed in detail in the next section to determine their role in the successful implementation of e-government initiatives.

2.7.3. Internal stakeholders of e-government initiatives

There are two categories of stakeholder that are considered internal actors to e-government initiatives, as indicated in Table 5, and play an important role in their successful implementation. Public organisations are one of these categories of internal stakeholders (Luk, 2009). Public organisations often need to work together and/or deliver services to one another, as well as sharing and exchanging information (Fang, 2002). This can help government organisations to provide efficient services to other stakeholders, as well as increase their own performance. Moreover, sharing information between public

organisations will also help other stakeholders to save time and effort when they require services from the government. For example, in their study, Cresswell and Connelly (1999) indicate that the criminal justice system, law enforcement agencies, courts and corrections offices can share evidence and criminal histories to better manage and organise their efforts and increase their performance and accountability. Furthermore, collaboration in the form of sharing databases and information between public sector organisations is beneficial, increasing productivity, reducing costs and integrating services, leading to successful e-government initiatives. However, it is not an easy task for public sector organisations to share databases and other information because they face many impediments, such as inadequate technology, policy and regulation issues, and organisational and political constraints (Gil-García and Pardo, 2005).

Many scholars and practitioners have indicated in the literature the importance of public employees as key internal stakeholders, which are the second category of internal actors involved in e-government initiatives (Mintzberg, 1996; Wimmer and Traunmuller, 2000; Orange et al., 2007). Altameem et al. (2006) and Rowley (2011) have also considered this and argue that understanding these internal stakeholders' (employees') needs is critically important to e-government implementation. According to Claggett (2010), a principal component in the success of information system implementation is the adoption of the system by its key users. Public employees can affect the implementation of e-government initiatives positively or negatively. For example, in the context of e-government, if the public administrators refuse to use or adapt to a new system, this can drive the implementation to an unwanted result (i.e., failure).

There is a particular level of employee who plays a significant role when implementing IS projects in organisations. These are the middle managers, who are considered key stakeholders in IS implementation (Leonard-Barton, 1988). Caudle et al. (1991) similarly

argue that middle managers are the most critical management level in an organisation in this respect.

The next section presents the role of middle managers in more detail in the context of the successful implementation of IS.

2.7.4. Middle managers as key internal stakeholders

As previously mentioned, middle managers are important as they are key stakeholders in IS. In fact all of the human barriers (which incorporate all the barriers categories) that influence the outcome of e-government implementation do impact on middle managers (see table 4 in section 2.6.). For example, top management support found positively impact on middle managers (Lewis et al, 2003) by encouraging them to share knowledge about the benefit that new e-government initiatives can provide. Ease of use as one of the human barriers also has some impact on middle managers. Acceptance of the new electronic system is affected by individuals' perception of the systems' ease of use (Davis, 1989). Training is also a key factor that impact middle managers. Providing well training would decrease the resistance to change associated with new electronic systems.

It is noted in the study by Pinsonneault and Kraemer (1993) that the definition of a middle manager is not entirely clear, and they state that “It is doubtful that a first-level supervisor who directly manages operations plays a role similar to that of a manager just below the junior executive level” (p. 274). However, Rainey (1979) defines a middle manager as “a person in a supervisory position below the level of vice president or assistant agency head, yet with at least one supervisory position below him or her” (p. 442). From this definition, it can be inferred that middle managers can be the link between the highest level of an organisation's management and the operations-level staff (Pinsonneault and Kraemer, 1993).

Some studies have argued that middle managers have a significant role in increasing performance and supporting change (Wooldridge and Floyd, 1990; Floyd and Wooldridge, 1997). Similarly, Fernandez and Rainey (2006) argue that middle managers have important roles during organisational changes in the public sector. Wooldridge and Floyd (1990) note that some middle managers regard information technology as a way to allow them to become more involved in the improvement of the organisational structure. According to Larsen (1993), middle managers who have a positive attitude to organisational change will play a significant role in the success of the IT implementation, which increases the performance of the organisation as a whole.

However, middle managers will face significant disruption (changing processes, dealing with new technology, etc.) when an information system is being implemented in their workplace (Markus and Tanis, 2000; Beaudry and Pinsonneault, 2005; Boudreau and Robey, 2005; Morris and Venkatesh, 2010), which might cause a failure of the system. Information system implementation requires a lot of changes to existing work processes, and these modifications require new technologies to support the new work processes (Markus and Tanis, 2000; Gant and Gant, 2002; Morris and Venkatesh, 2010; Sykes et al., 2014).

Some employees (e.g., middle managers) quite often resist using new technology because they think their jobs will change completely after the implementation of such systems (Boudreau and Robey, 2005; Morris and Venkatesh, 2010; Sykes et al., 2014). Logically, system users (e.g., middle managers) like to continue with the routines they have developed over time and have found to work successfully for them (Feldman and Pentland, 2003). For this reason, public sector middle managers will find it hard to adapt to a new system, which will undoubtedly decrease the level of success.

A seminal paper by Leavitt and Whisler (1958) predicted that IT would reduce the number of middle managers in organisations. Another study by Pinsonneault and Kraemer (1993)

argues that IT could either increase or decrease the number of middle managers. They argue that when decision making is centralised by top management, it is possible that the number of middle managers will decrease; conversely, when decision making is decentralised, the number of middle managers will increase. In the case of the centralisation of decision making, middle managers might have fears or feel a threat that they might lose their jobs, which could lead to users' resistance to change. This would mean that implementation of a new IS would be unsuccessful.

Drucker (1988) has noted that middle managers are particularly affected by information technology and they might lose their jobs because technology will take their place. It is also argued in the literature that middle managers are shown to be the employees most affected in any organisation when new IS applications are implemented (Pinsonneault and Kraemer, 1993; Pinsonneault and Rivard, 1998), which might affect the implementation in terms of unwanted results. Moreover, a study by Dopson and Neumann (1998) discusses the ways in which middle managers could affect a change in any organisation negatively, particularly when they are resistant to change, such as that associated with the implementation of a new information system involving e-government applications.

The next section presents the conclusion to this chapter and the theoretical development pursued in this research study.

2.8. Conclusion and theoretical development

This section concludes the previous discussions and presents the theoretical development pursued in this research study. This section is followed by a justification for using the CMUA rather than other information system models. Section 2.8.2 is devoted to discussing the CMUA.

As can be garnered from the preceding discussions, investigating government staff perceptions of e-government appears to be critical in understanding why initiatives may or may not deliver the expected benefits. This literature review has arrived at the notion that ICT infrastructure does not just consist of technological and technical aspects; there is also the human aspect. This research has investigated various barriers that make the implementation of e-government a complicated endeavour in the public sector, and demonstrated that human factors that fall into different e-government barrier categories (e.g., political, organisational, social, technological and technical) need to be carefully considered if implementation is to be successful, particularly in terms of adaptation strategies.

Organisations failing to understand and deal with their employees' reactions to changes associated with IS implementation has been recognised as contributing to implementation failure (Markus, 2004). Neumann (2005) suggests that human behaviour issues are decisive in the success of e-government technologies. Beaudry and Pinsonneault (2005) and Elie-Dit-Cosaque and Straub (2011) also argue that user adaptation behaviours and strategies are a key factor in the successful implementation of IS systems.

This chapter has identified the importance of middle managers as key stakeholders who should be taken into account when implementing e-government initiatives (see section 2.7.4. for more details). However, it is still not understood what mechanisms link middle managers' reactions to the outcome of e-government initiatives. More investigation into their influence is essential (Balogun, 2003), particularly when they are required to deal with new technologies.

While it is important for organisations to understand the adaptation strategies of their key employees, there are few studies that have addressed users' adaptation strategies to new systems (Sykes et al., 2009; Elie-Dit-Cosaque and Straub, 2011; Fadel, 2012). For this reason, the researcher has responded to the call from Beaudry and Pinsonneault (2005) to

produce more studies about this issue in different industries, such as the public sector, to help increase the level of success of e-initiatives. Therefore, it can be seen that this issue has not been thoroughly investigated in the context of e-government.

2.8.1. Selection of an appropriate theoretical lens

Understanding users' behaviour upon implementation of a new IS, and how these internal users adapt to and cope with the new information technology accompanying the system, is not an easy task (Beaudry and Pinsonneault, 2005). Thus far, there are two main directions in which the IS field has attempted to investigate this issue.

The first direction has mainly concentrated on the usage of new information technology and the antecedents of adoption. These scholars have provided various acceptance models that seek to illustrate and explicate this phenomenon (e.g., Venkatesh et al., 2003). There are five such models that identify factors that affect user adaptation: (i) the Technology Acceptance Model (TAM) (Davis, 1989); (ii) the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003); (iii) Innovation Diffusion Theory (IDT) (Rogers, 1983); (iv) Decomposed Theory of Planned Behaviour (TDB) (Taylor and Todd, 1995); and (v) Task-Technology Fit Theory (TTF) (Goodhue and Thompson, 1995). However, these models still leave a 'black box' that needs to be opened between the usage of technology and the intention to use; namely, user adaptation strategies (Elie-Dit-Cosaque and Straub, 2010).

The other direction of research in this area has generally relied on a process approach and concentrated on individual adaptation (Orlikowski, 1996) and the effect on outcomes caused by this (e.g., group performance) (Majchrzak et al., 2000). According to Kock et al. (2006), it is important to understand user adaptation strategies (or processes) in order to help understand information system outcomes. This body of research has covered many angles regarding user adaptation, such as how individuals change and develop their

abilities, knowledge and relationships in order to use information technology (Tyre and Orlikowski, 1994) and how they amend their work processes (Leonard-Barton, 1988; Poole and DeSanctis, 1989).

The two research directions referred to above have provided considerable insight into different aspects of user adaptation, but neither approach has been integrated with the other (Beaudry and Pinsonneault, 2005). Similarly, Benbasat and Barki (2007) mention that information system scholars provide many models that study a wide range of behaviours without paying enough attention to the relation between users' behaviours when using technologies and their antecedents.

User adaptation strategies fall between usage behaviours and their antecedents and play an important role (Elie-Dit-Cosaque and Straub, 2010). Using the CMUA allows the integration of the antecedents of using technology, behaviour and the outcomes of user adaptation together. According to Elie-Dit-Cosaque and Straub (2010), the CMUA can open the black box of user adaptation strategies.

2.8.2. CMUA as a research model

Drawing on coping theory (Lazarus and Folkman, 1984), Beaudry and Pinsonneault (2005) provided the CMUA in order to examine how individuals adapt to new IT events implemented recently in their workplace (see Figure 2 below). Scholars have demonstrated that internal users who adapt themselves to using information technology in order to gain the full advantages of its features will result in the most successful implementation of IS applications (Leonard-Barton, 1988; Orlikowski, 1996).

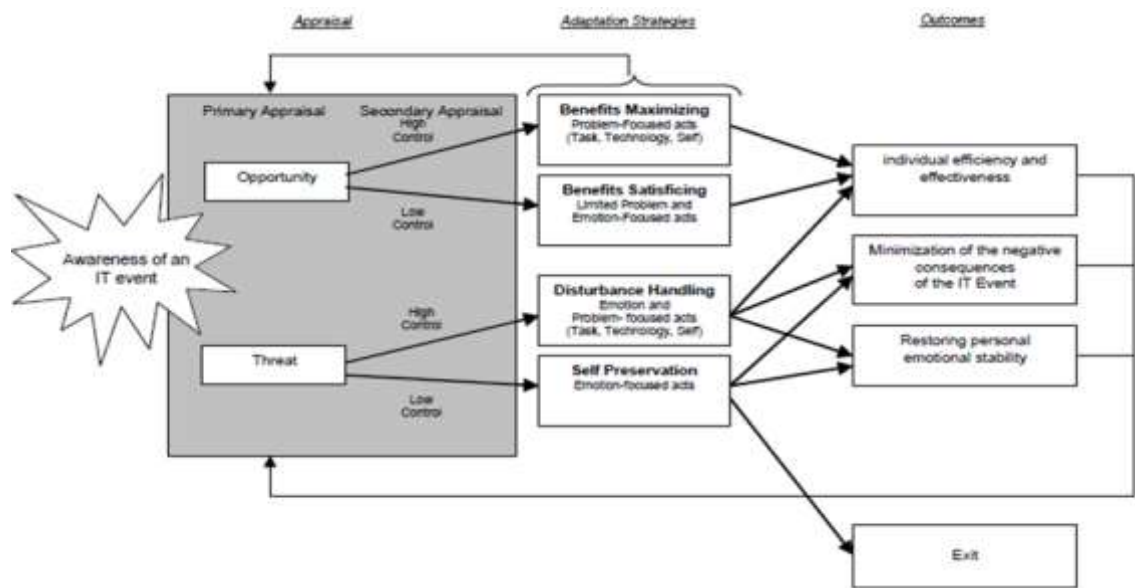


Figure 2: Coping model of user adaptation (Beaudry and Pinsonneault, 2005)

The fundamental idea of the CMUA is that the introduction of a new technology or the adjustment of an existing one can bring changes and create disruption in organisations (Lyytinen and Rose, 2003). *Coping* is defined as “the cognitive and behavioural efforts exerted to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus and Folkman, 1984, p. 141). Table 6 illustrates the CMUA constructs.

Table 6: Constructs of the coping model of user adaptation

CMUA constructs	Description
Primary assessment (Lazarus and Folkman, 1984; Beaudry and Pinsonneault, 2005)	An assessment of how risky a situation is perceived to be by an individual (Lazarus and Folkman, 1984).
Secondary assessment (Lazarus and Folkman, 1984; Beaudry and Pinsonneault, 2005)	Secondary assessment refers to users' evaluation of the level of control they have "over the technology, their work, and themselves" (p. 507).
Benefits maximising (Beaudry and Pinsonneault, 2005)	When users see technology as a good tool that provides opportunities to them and believe they have good control over the situation. (Beaudry and Pinsonneault, 2005).
Benefits satisficing (Beaudry and Pinsonneault, 2005)	When users see technology as a good tool that provides opportunities to them, but they believe they have limited control over the situation. (Beaudry and Pinsonneault, 2005)
Disturbance handling (Beaudry and Pinsonneault, 2005)	This happens "When one appraises an IT event as a threat and feels that she has some control over the situation" (Beaudry and Pinsonneault, 2005).
Self-preservation (Beaudry and Pinsonneault, 2005)	This happens "In a situation where the expected consequences of an IT event are perceived as a threat and users feel that they have only limited control over the situation" (Beaudry and Pinsonneault, 2005).
Outcomes (Beaudry and Pinsonneault, 2005)	There are four possible outcomes in the CMUA: (i) individual efficiency and effectiveness; (ii) minimisation of the negative consequences of the IT event; (iii) restoring personal emotional stability and (iv) exit (Beaudry and Pinsonneault, 2005).

The next sections present each element of the CMUA in more detail. The following section discusses the primary and secondary assessments involved.

2.8.2.1. Primary and secondary assessments

Assessments are part of coping theory and are divided into primary and secondary, both influencing each other (Lazarus and Folkman, 1984). According to the CMUA, the evaluation of an information technology event begins with a primary assessment as a starting point. At this first step, individual adaptation starts at the point when an individual assesses and determines the potential results of the IT event and how these would impact her/him personally and professionally (i.e., the IT event is evaluated as an opportunity or a threat) (Folkman, 1992). Individuals are likely to start the process of adaptation at different points from each other due to the uneven information that these individuals have about an IT event (Beaudry and Pinsonneault, 2005). For example, some of these individuals would start the adaptation process once they hear about it, while others would start the process when the IT event occurs.

The secondary assessment is the evaluation the individual performs regarding her/his own personal resources. At this point, individuals assess the coping options available to them; in other words, they assess the level of control they have over the situation (Lazarus and Folkman, 1984). According to Beaudry and Pinsonneault (2005), in the context of IT, the secondary assessment is undertaken with regard to three aspects: (i) self, (ii) work, and (iii) technology. Control over self refers to how well individuals can adapt themselves to the new situation. Control over work includes those individuals having adequate autonomy in their work and the ability to adjust to tasks in response to a newly changing circumstance (i.e., the IT event) (Shaw and Barrett-Power, 1997). Finally, control over technology deals with the degree of mastery individuals have over the features and functionalities of the IT, and whether they were engaged during the development and design of the system (Orlikowski, 1996; Poole and DeSanctis, 1988).

The next section presents the second element of the CMUA: adaptation strategies.

2.8.2.2. CMUA adaptation strategies

After the above appraisals, coping efforts take place and it is at this stage that individuals try to deal with the situation by taking different actions (Beaudry and Pinsonneault, 2005). Coping can be categorised into problem-focused and emotion-focused efforts. Problem-focused efforts aim at altering or managing the situation, while emotion-focused efforts are aimed at regulating or changing one's emotions in response to circumstances (Lazarus and Folkman, 1984). The coping process can happen before, during and/or after the impact of a disruptive event. The CMUA has four adaptation strategies: (i) benefits maximising, (ii) benefits satisficing, (iii) disturbance handling, and (iv) self-preservation. Table 6 in section 2.8.2 illustrates the aforementioned CMUA adaptation strategies.

In relation to benefits maximising, users engage in this strategy when they evaluate the expected consequences of a new IT event as an opportunity and they have high control over the situation (i.e., over work, self and technology) (Lazarus and Folkman, 1984). In this situation, users' adaptation involves mainly problem-focused efforts and always towards reaping the most advantages from the new IT event and maximising personal benefits (Beaudry and Pinsonneault, 2005).

In the case of a benefits satisficing strategy, individuals evaluate the expected consequences of the new IT as an opportunity, although they might have a low level of control over the situation (Lazarus and Folkman, 1984). In this situation, users' adaptation efforts are both limited emotion-focused and limited problem-focused (Lazarus and Folkman, 1984). Pinsonneault and Rivard (1998) argue that users will satisfy themselves with the benefits the IT offers, which, in absence of individual adaptation, are likely to be limited.

In relation to a disturbance handling strategy, users initially assess the expected effects of a new IT event as a threat when they have high control over the situation (Lazarus and

Folkman, 1984). Their adaptation efforts are going to be both emotion- and problem-focused. Emotion-focused efforts are intended to reduce perceived negative consequences and restore emotional stability, whereas problem-focused efforts are to diminish the possible harm that comes with the new IT event (Beaudry and Pinsonneault, 2005).

Users who engage in a self-preservation adaptation strategy assess the expected effects of an IT event as a threat when they have low control over the situation (i.e., work, self and technology) (Lazarus and Folkman, 1984). Users' efforts in this strategy are mainly towards emotion-focused areas, since they try to reduce the pressures arising from the IT event. Users of this strategy usually cannot increase their performance (Beaudry and Pinsonneault, 2005).

The next section discusses the likely outcomes of the adaptation strategies referred to above.

2.8.2.3. CMUA outcomes

There are four possible outcomes in the CMUA framework that result from the four adaptation strategies described above: (i) individual efficiency and effectiveness; (ii) minimisation of the negative consequences of the IT event; (iii) restoring personal emotional stability; and (iv) exit (Beaudry and Pinsonneault, 2005). As illustrated in Figure 2 in section 2.8.2, adaptation strategies that mainly or partly employ problem-focused efforts usually result in improving users' performance when they adapt positively to recently provided new technology (i.e., increased individual efficiency and effectiveness). On the other hand, adaptation strategies that mainly or partly employ emotion-focused efforts are likely to result in minimising negative consequences and restoring emotional stability. In an overwhelming situation, in which users cannot adapt to the new IT event and feel highly threatened by circumstances, these users are likely to escape from the situation (i.e., exit) (Beaudry and Pinsonneault, 2005). The outcomes

stated earlier can change users' opinion about an IT event, which results in a reassessment of the situation. Beaudry and Pinsonneault (2005) state that

the outcomes of the adaptation process (i.e., restoring emotional stability, improving individual performance, minimizing the negative consequences of an IT event) are likely to change the user's perception of the IT event, which can lead to a reappraisal of the situation and can trigger a new adaptation efforts sequence. (p.503)

As stated earlier, there is a need to recognise what mechanisms link middle managers' reactions to the outcome of e-government initiatives. Further study into their influence is needed, especially when they are required to deal with new IT event presented recently to them. Employing CMUA as a framework for this study allows the combination of the antecedents of using technology, behaviour and the outcomes of individual adaptation all together.

The next chapter outlines the research design used in the research and explains the qualitative data collection and analysis methods adopted.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

This chapter details the study approach and presents the design for this research. It starts by restating the research objective and the related research questions (section 3.2). The chapter then describes the research approaches available (section 3.3). Each research approach is discussed separately: (i) quantitative (section 3.3.1), (ii) mixed methods (section 3.3.2) and (iii) qualitative (section 3.3.3). The chapter then presents the various research methods (field study, case study, action research, ethnography, etc.) available for the study (section 3.4). Two research methods are selected for discussion because they are particularly relevant to this type of study: (i) the field study (3.4.1) and (ii) the case study (3.4.2). The sampling strategy is presented in section 3.5, which includes two sections: (i) the choice of the public sector in Saudi Arabia (3.5.1) and (ii) the cases selected (3.5.2), in order to show how the researcher chose the four case studies conducted in the study. The data gathering techniques are discussed in section 3.6. The adopted techniques are (i) interviews (3.6.1) and (ii) documents (3.6.2). Addressing cultural differences is outlined in section 3.6.3. Then, qualitative data analysis techniques are discussed in section 3.7. At the end of the chapter, a summary of the research approach is presented in section 3.8.

3.2. Restating the research objective and research questions

One of the important steps to carry out as part of a research study is to identify a clear statement of the objective, as this is essential in choosing the right research methodology (Jenkins, 1985). This study draws on Beaudry and Pinsonneault's (2005) coping model of user adaptation (see section 2.8.2 for more details). Based on the literature review presented in chapter two, the research objective for this study is:

To explore the adaptation strategies of public sector middle managers faced with an IT event and the impact of these strategies on the success of information systems (IS) implementation in the public sector.

To operationalise this research objective, three research questions were drawn up:

- *To understand how public sector middle managers adapt to new IS projects that are implemented in their organisations, using the coping model of user adaptation (CMUA) as an analytical lens.*
- *To study how these adaptation strategies impact on the success of new IS implementations.*
- *To explore how the CMUA framework can be enhanced in light of its application to middle managers in the public sector facing a new IT event.*

It is clear that the three research questions are exploratory in nature. This research adopted this design (i.e., exploratory) due to the shortage of empirical research studying the adaptation strategies of middle managers when they face a new IT event in their workplace, particularly in the public sector. The ambition behind conducting this research study is to propose guidelines for project managers and top management in the public sector to increase the level of success of information systems projects in the public sector, particularly e-initiatives.

The next section presents an overview of the research approaches available.

3.3. Research approaches

This section discusses the research approaches that could have been used for this study.

These approaches are quantitative, mixed methods, and qualitative.

One of the most important factors for the researcher in this study was choosing an applicable research approach. According to Creswell (2013), there are three main forms of research: qualitative, quantitative, and a mixed method or triangulation approach. The

research approach determines how the research data are collected and analysed and builds upon a good idea for a piece of research in order to achieve its purpose (Yin, 1994). When mapping a research strategy, it is valuable to recognise that different research approaches would allow the researcher to understand different phenomena and the various reasons behind them (Deetz, 1996). In the social science field, particularly IS, there are three strategies from which researchers can choose:

- Quantitative
- A mixed or triangulation approach
- Qualitative

In the following sections, each approach is considered from the viewpoint of its potential usefulness to this research study.

3.3.1. Quantitative research approach

Quantitative research approaches typically deal with numbers. Myers (2009) mentions that the quantitative research approach is used to study and understand natural phenomena by focusing on numbers. Moreover, scholars who use the quantitative research approach usually employ statistical tables, mathematical models and graphs (Denzin and Lincoln, 2005). One of the main characteristics of quantitative research is its ability to be used to collect a large amount of data and cover large samples of either people or organisations at the same time (Lincoln and Guba, 1985). According to Kaplan and Maxwell (1994), the quantitative research method has many strengths, but the main one is that it is well formulated and clear criteria exist for conducting quantitative study and for judging the validity of the outcomes. Quantitative research places emphasis on the analysis of predefined variables and measurements (Denzin and Lincoln, 2008). However, this kind of research has some limitations when it comes to understanding people's behaviour (Guba and Lincoln, 1994). Kaplan and Duchon (1988) raise the question of the possibility

of using quantitative approaches when studying social systems in which there are “so many uncontrolled and unidentified variables” (p. 572). Moreover, according to Benbasat et al. (1987), in the IS field there has been “general dissatisfaction with the type of research information provided by quantitative techniques” (p. 369). Therefore, since this study had the aim of investigating middle managers’ behaviour and their responses to using newly implemented IT in their workplace, the quantitative approach was not considered suitable.

3.3.2. Mixed methods approach

Researchers in the IS discipline can also use qualitative and quantitative research approaches in one study, known as a mixed methods approach. Myers (2009) proposes a type of triangulation that involves the use of both qualitative and quantitative approaches in one study. Bryman and Bell (2003) define the mixed method as “the use of more than one method or source of data in the study of a social phenomenon so that findings may be cross-checked” (p. 575). However, it is argued that adopting a mixed methods approach is a difficult task and needs a lot of experience and training in multiple research techniques (Myers, 2009). Moreover, when qualitative data are quantified, it can lead to a loss of depth and flexibility (Driscoll et al., 2007). Therefore, using mixed methods was not considered appropriate for this study either, since this research needed to focus in depth on a phenomenon. Moreover, since the researcher is a novice and this research is a PhD study, in which time is limited, this type of research approach was not considered for this study.

The next section discusses the qualitative research approach and justifies its use in this research.

3.3.3. Qualitative research approach

There has been growing recognition of the importance of qualitative research in the last two decades (Benbasat et al., 1987; Flick, 2014). Denzin and Lincoln (1998, p. 3) define qualitative research as

multimethod in focus, involving an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them. Qualitative research involves the studied use and collection of a variety of empirical materials – case study, personal experience, introspective, life story, interview, observational, historical, interactional, and visual texts – that describe routine and problematic moments and meaning in individuals' lives (p. 3).

One of the aims of qualitative research is to understand certain social situations, events, roles, groups, or give meaning to a particular interaction (Locke et al., 2013), trying to gain a holistic overview of the context under investigation (Miles and Huberman, 1994). Many scholars argue that the qualitative research approach primarily deals with words and not with numbers (Strauss and Corbin, 1990; Miles and Huberman, 1994). Moreover, the qualitative research approach includes many methods, such as ethnographic research, action studies and case study (Myers, 2009). Myers (2009) states that qualitative research is considered one of the main research approaches for studying social and cultural phenomena more deeply, with a focus on words or text.

Marshall and Rossman (1989) state that, when researchers want to investigate a particular complex phenomenon in depth or when a current theory or model has yet to fully explain a situation, further exploration is needed. According to Keating (1995), discovering, refining or refuting existing theory or models can be done using a qualitative research approach. Thus, a qualitative research approach was considered suitable in the context of this study. This research examines middle managers in specific organisations in the public sector and, in order to explore and understand the current impact of e-government

implementation on government employees, the qualitative research method was deemed the most appropriate.

The next section presents an overview of the qualitative research methods available for this research.

3.4. Research methods

This section provides an overview of qualitative research methods. As suggested by Marshall and Rossman (1989), and since this study is exploratory in nature, a discussion of the case study and field study methods is presented. This study adopted the case study method.

There are many methods for researchers to use to conduct their studies, such as field study, case study, action research, ethnography and more. According to Dennis and Valacich (2001), no method is perfect or worse than the others and each has its own advantages and disadvantages. According to McGrath (1984), research methods can be assessed from three aspects:

- (i) Generalisability;
- (ii) Realism; and
- (iii) Precision in the control and measurement of variables.

McGrath (1984) argues that it is impossible to maximise all three aspects in one research study at the same time. For example, he mentions that laboratory experiments can increase precision but may fail to meet realism or generalisability aspects, whilst surveys can increase generalisability but fail to satisfy realism. In other words, research designs entail trade-offs that must be considered in view of the objectives of each study.

Marshall and Rossman (1989) suggest a framework that combines the possible design of a piece of research in terms of the purpose of the study, the research questions and the most suitable research methods to match them. Table 7 illustrates this framework.

Table 7: Matching research questions with strategy (Marshall and Rossman, 1989)

Kind of research	Purpose of the research	Research questions	Research method	Examples of data gathering techniques
Exploratory	<ul style="list-style-type: none"> • To investigate little-understood phenomena. • To identify/discover important variables. • To generate hypotheses for further research. 	<p>What is happening in the social programme?</p> <p>What are the salient themes, patterns, categories in participants' meaning structures?</p> <p>How are these patterns linked with one another?</p>	Case study, field study	Participant observation, in-depth interviewing, and elite interviewing
Explanatory	<ul style="list-style-type: none"> • To explain the forces causing the phenomenon in question. • To identify plausible causal networks shaping the phenomenon. 	<p>What events, beliefs, attitudes and policies are shaping this phenomenon?</p> <p>How do these forces interact?</p>	Multi-site case study, history, field study, ethnography	Participant observation, in-depth interviewing, survey questionnaire, and document analysis
Descriptive	To document the phenomenon of interest.	What are the salient behaviours, events, beliefs, attitudes and processes occurring in this phenomenon?	Field study, case study, ethnography	Participant observation, in-depth interviewing, document analysis, unobtrusive measures, and survey questionnaire
Predictive	<ul style="list-style-type: none"> • To predict the outcomes of the phenomenon. • To forecast the events and behaviours resulting from the phenomenon. 	<p>What will occur as a result of this phenomenon?</p> <p>Who will be affected and in what ways?</p>	Experiment, quasi-experiment	Survey questionnaire (large sample), kinesics/proxemics, and content analysis

As Marshall and Rossman suggest in Table 7, and since this study is exploratory in nature, the discussion below concentrates on two qualitative methods: (i) field study and (ii) case study.

The next section presents a discussion of the field study method.

3.4.1. Field study method

In the literature, field study is also referred to as field experiments (Bryman, 2015). Field studies examine behaviour (i.e., human) in its natural setting (Jenkins, 1985; Scandura and Williams, 2000), and the researchers do not manipulate the independent and dependent variables (Benbasat et al., 1987). Boudreau et al. (2001) mention that researchers are sometimes likely to refer to a study as a ‘field study’ if a multiple case study has more than a dozen (i.e., mini case studies). One of the requirements for conducting field study research is to have prior definitions of the constructs in the field and the relationships between them (Benbasat et al., 1987; Orlikowski and Baroudi, 1991). There are strengths to conducting a field study, as mentioned by Jenkins (1985), as listed below:

- Researchers are able to conduct studies in a natural setting, which gives further understanding to the phenomenon under investigation.
- The prior knowledge that is needed to conduct a field study (i.e., the constructs in the field and their relationships), as mentioned earlier, gives the advantage that outcomes might be reported in less time compared with other methods, and could provide information that may not have been acquired when using other qualitative research methods.

In this research study objective, there are a number of important parameters at the following levels:

- Individuals: refers to the middle managers who adapt to a new IT event.

- Government bodies: refers to the departments who initiate specific projects.
- Public sector: refers to specific broad projects in Saudi Arabia's Vision 2030.

In this situation, conducting field research study is appropriate to understanding just the individual level of analysis, since the field study method has only observations of individuals. Thus, the case study method was considered to be more applicable for this study due to its compatibility with different levels of analysis (i.e., embedded units of analysis).

The next section presents the case study method, which was deemed the most effective research method for this study.

3.4.2. Case study method

The case study is considered one of the most common research methods used to conduct qualitative research in the information systems field (Benbasat et al., 1987). According to Yin (2009), a case study is an appropriate method if the questions of the research are based on "how", "why", and "what", and the study concentrates on a contemporary phenomenon within a real-life context. Eisenhardt (1989) define the case study as "a research strategy which focuses on understanding the dynamics present within single settings." Another study by Yin (1994) defines a case study as "an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 13). Benbasat et al. (1987) point out 11 key characteristics that the case study method can deliver to the researcher. These characteristics are presented in Table 8.

Table 8: Key characteristics of the case study method (Benbasat et al., 1987)

1. The phenomenon is examined in a natural setting.
2. Data are collected by multiple means.
3. One or a few entities (person, group, or organisation) are examined.
4. The complexity of the unit is studied intensively.
5. Case studies are more suitable for the exploration, classification and hypothesis development stages of the knowledge-building process; the investigator should have a receptive attitude towards exploration.
6. No experimental controls or manipulation are involved.
7. The investigator may not specify the set of independent and dependent variables in advance.
8. The results derived depend heavily on the integrative powers of the investigator.
9. Changes in site selection and data collection methods could take place as the investigator develops new hypotheses.
10. Case research is useful in the study of "why" and "how" questions because these deal with operational links to be traced over time, rather than with frequency or incidence.
11. The focus is on contemporary events.

Despite the strengths of the case study method, it also has some weaknesses. According to Bhattacharjee (2012), weaknesses are present in case study “Because it involves no experimental control, internal validity of inferences remain weak” (p. 93). The case study method is often classified as taking a long time, as not being easy to conduct and producing a large number of documents (Yin, 1994). Another disadvantage of the case study research method is that there might be a risk of bias because of information overload, which might represent weak documentation (Siggelkow, 2007). However, these weaknesses can be counter-balanced by the use of a strong theoretical lens.

Case study can be (i) a single case study or (ii) a multiple case study; each is suitable for specific circumstances (Eisenhardt, 1989; Miles and Huberman, 1994; Yin, 1994). Single case study is deemed to be appropriate when the situation under investigation is extreme or unique, and it has the advantage of taking less time (Yin, 1994). On the other hand, multiple case study is time consuming but has the advantage of allowing researchers to compare cases with each other, to do cross-case analysis and to investigate a phenomenon in different settings (Darke et al., 1998). Miles and Huberman (1994) mention that in their

study “multiple-case sampling adds confidence to findings” (p. 29). It has been argued by Miles and Huberman (1994) that the multiple case studies method has more generalisability and provides strong explanations. The determination of whether to conduct a single or a multiple case study to examine a particular phenomenon depends on the objective of the research under investigation and the research questions (Darke et al., 1998). For the purpose of this study, a multiple case study seemed more appropriate.

According to Yin (1994), case study can be used for testing or generating theory. Thus, a case study was considered appropriate for this research study. According to many scholars in the literature, when exploring areas in which existing knowledge is limited, conducting a case study method would be the most appropriate way compared with the other research methods (Benbasat et al., 1987; Marshall and Rossman, 1989; Yin, 1994). The adaptation strategies literature has gained momentum but is completely new in the context of the setting in which this research was carried out. Therefore, the case study method seemed appropriate for this study.

The next section explains the sampling strategy employed in the research.

3.5. Sampling strategy

This section presents the reasons for choosing Saudi Arabia as the setting for a case study and reconsiders the reasons for choosing the public sector as already explored in the literature review to conduct this research study. The strategy used by the researcher is also discussed in this section, and led to the choice of four case studies to be used in the conduct of this study. Four of the nine departments initially identified were chosen, as follows:

- Commercial Register Office
- Department of Corporate Services
- Recruitment Department

- Passport Department

The next section discusses the reasons for choosing the public sector in Saudi Arabia in which to carry out this study.

3.5.1. Choosing the public sector in Saudi Arabia

Based on the following three criteria, the researcher chose the Kingdom of Saudi Arabia in which to conduct this study and, in particular, the public sector. The first criterion is the trend of transforming the services in Saudi Arabia, particularly public services, that are provided to the public (i.e., individuals, for-profit organisations, non-profit organisations, and other public organisations) from paper-based services to electronic. Saudi Arabia started a major national transformation plan called "Vision 2030". One of the Vision's objectives is to change the country's ranking in the UN E-Government Index, from 36 to 5 by 2030.

Researchers have overlooked the topic of organisational change (e.g., computerising the process of providing services to the public) and particularly the adaptation strategies of middle managers when they face new IT events in their workplace. This recurrent theme of change in Saudi Arabia has not induced a high volume of studies that explicitly address this topic. Researchers pay much attention to topics related to the technical issues surrounding e-initiatives in the public sector, but not to the people who will run the new changes. The second criterion is the degree of accessibility to different organisations to conduct the interviews needed for this study. Accessibility was critical, since having access to the organisation under study is one of the important factors for researchers conducting qualitative research.

The last criterion is there is a need to focus on human aspects, particularly employees' issues, and how they cope with and adapt to new electronic systems, which would improve the level of success of e-initiatives in the public sector. This study is intended to

shed light on the issue of middle managers' adaptation strategies when they face new IT events, in order to help increase the level of success of e-initiatives in Saudi Arabia, since this has not so far been studied. Since implementing e-initiatives is expensive (Alshehri and Drew, 2010), and losing money would not be very convenient for officials, this study addresses some recommendations to those at the top and project management levels in order to improve the level of success of new e-initiatives by shedding light on middle managers' responses and their adaptation strategies to IT events.

The next section presents the criteria for how the researcher selected the cases under investigation in this research study.

3.5.2. Selected cases

Sampling is particularly important in the case study research method, as it involves literally selecting cases for the study based on the specific attributes they possess (Sandelowski, 1995). In the qualitative research method, the selection of case studies depends on the nature of the study, the organisations' size, the structures of the organisations and the particular industry or sector (Benbasat et al., 1987). According to Eisenhardt (1989), "cases may be chosen to replicate previous cases or extend emergent theory, or they may be chosen to fill theoretical categories and provide examples of polar types" (p. 537). Selecting case studies randomly is dangerous, especially with a very small sample (Seawright and Gerring, 2008), and is not advisable in the qualitative research approach (Eisenhardt, 1989). In order to raise the research quality, there are two aspects that should be followed: (i) appropriateness, which means showing the fit between the aim of the research and the phenomenon under investigation; and (ii) adequacy, which relates to the number of cases (Patton, 1990; Miles and Huberman, 1994). Cases presenting the following characteristics were sought. Table 9 shows a typology of the sampling in the qualitative research approach. Nine such cases were identified in this study.

Table 9: Sampling strategies (adapted from Patton, 1990)

Sampling types	Purpose
Convenience sampling	Saves time, money, and effort. Poorest rationale; lowest credibility.
Purposeful	Chooses information-rich cases for in-depth study. Size and specific cases depend on the research purpose.
Homogeneous	Concentrated, reduces variation, simplifies analysis, facilitates group interviewing.
Typical	Illustrates what is normal and average.
Critical case	Allows logical generalisation and maximum application of information to other cases.
Stratified purposeful	Highlights characteristics of particular subgroups of interest; facilitates comparisons.
Intensity	Information-rich cases that manifest the phenomenon intensely, but not extremely.
Extreme	Learning from highly unusual manifestations of the phenomenon of interest.
Snowball	Identifies cases of interest from people who know people who know people who know what cases are information rich.
Theory-based	Finding manifestations of a theoretical construct of interest so as to elaborate and examine the construct.
Opportunistic	Following new leads during fieldwork, taking advantage of the unexpected.
Confirming and disconfirming cases	Elaborating and deepening initial analysis, seeking exceptions, testing variation.
Random purposeful sampling	Adds credibility to a sample when potential purposeful sample is too large for one researcher to handle.
Mixed purposeful	Triangulation, flexibility, meets multiple interests and needs.
Politically important cases	Avoids attracting undesired attention by purposefully eliminating politically sensitive cases from the sample.
Criterion sampling	Picking all cases that meet some criterion.
Maximum variation	Documents different variations and identifies important patterns that cut across variations.

Since this study is qualitative and these kinds of studies usually focus on small samples (Patton, 1990), a purposeful sampling strategy (Patton, 1990) was used in this research.

Using the above strategy (purposeful sampling), the researcher selected the case studies based on certain criteria. The criteria that the researcher employed to choose appropriate departments in which to carry out this study are as follows:

- Recently implemented e-government initiatives.
- Managers were interested in the proposed study, which meant a high level of accessibility to the data needed.

The above two reasons were given a unique code, whereby a recent implementation reason was coded “R” and an accessibility reason was coded “A”. Table 10 illustrates all nine cases and which ones were selected.

Table 10: All the public departments that were likely to be investigated in this research in the planning stage

Department	Date of implementation	Level of access	Chosen case	Reason code
Commercial Register Office	03/2014	High	Yes	A and R
Traffic Department	10/2014	Low	No	R
Ministry of Higher Education	03/2010	Low	No	A and R are not present
Recruitment Department	06/2014	High	Yes	A and R
Passport Department	09/2014	High	Yes	A and R
Riyadh Municipality /Shop Licences	09/2009	Low	No	A and R are not present
Department of Corporate Services	12/2015	High	Yes	A and R
Ministry of Foreign Affairs/Hajj visas	07/2012	Low	No	A and R are not present
Ministry of Housing	2011	Low	No	A and R are not present

Regarding gaining access to public organisations, researchers have noted that it is not an easy process and a number of factors might prevent it. For instance, Buchanan et al. (1988) recommend a realistic opportunistic approach to fieldwork in organisations:

This opportunist approach is supported by wider trends. Research access has become more difficult to obtain for at least two reasons. First, further education has widely recognised the value of project work across a range of courses and many organisations have been deluged with requests for research access. We have been denied access in some cases because someone else got there first. Second, as the economic climate has become harsher, in the private and public sectors, managers increasingly feel that they and their staff have little time to devote to non-productive academic research activities. These trends encourage the organisational researcher to become more innovative, devious and opportunistic in the search for sites and data (p. 55).

The researcher made a great number of telephone calls (over 50) to the people concerned in relevant departments to collect information about all the cases likely to be included in this research, provided they met the two criteria mentioned earlier. Four public departments were selected for study, since they met the two criteria. Another five public departments were excluded, as the researcher believed there was not sufficient access to the departments and the electronic systems were not newly implemented, which meant it would have been hard for middle managers to recall their initial assessment. The nine departments initially considered are mentioned in Table 10 above.

It is important to state that this study did not have the aim of criticising any of the e-initiatives in any of the four departments selected. Instead, the aim was to explore the adaptation strategies of the middle managers when they faced a new IT event and how these adaptation strategies affected the level of success of the e-initiatives.

The following section presents an overview of data gathering techniques that can be used in qualitative research.

3.6. Data gathering techniques: an overview

This section presents a discussion of the data gathering techniques used in research generally. The strengths and weaknesses of each technique are discussed. This study adopted two data gathering techniques: (i) interviews (particularly semi-structured interviews) and (ii) documents.

There are many data gathering techniques that researchers can use when conducting qualitative research and case studies in particular. Yin (1994) suggests six data gathering techniques for researchers who conduct case study research:

- Interviews
- Documentation
- Archival records
- Direct observation
- Participant observation
- Physical artifacts

Each source of data above has its own strengths and weaknesses. The two data gathering techniques used in this study (interviews and documents) were selected to increase validity. Researchers should choose the most appropriate data collection technique(s) based on the data they are seeking (Marshall and Rossman, 2006). Table 11 below illustrates the strengths and weaknesses of the six main data gathering techniques.

Table 11: Appropriate data gathering techniques for the case study research method: weaknesses and strengths (Yin, 1994)

Data gathering techniques	Strengths	Weaknesses	Adopted in this study
Interviews	<ul style="list-style-type: none"> • Targeted, focused directly on the case study topic. • Insightful, provide perceived causal inferences. 	<ul style="list-style-type: none"> • Bias possible due to poorly constructed questions. • Response bias. • Inaccuracies due to poor recall. • Reflexivity: interviewee gives what the interviewer wants to hear. 	✓
Archival records	<ul style="list-style-type: none"> • Stable, can be reviewed repeatedly. • Unobtrusive, not created as a result of the case study. • Exact, contain exact names, references and details of an event. • Broad coverage, long span of time, many events and settings can be included. • Precise and quantitative. 	<ul style="list-style-type: none"> • Retrievability can be low. • Biased selectivity, if collection is incomplete. • Reporting bias, reflects (unknown) bias of the author. • Access may be deliberately blocked. • Lack of accessibility due to privacy reasons. 	Not adopted
Documentation	<ul style="list-style-type: none"> • Stable, can be reviewed repeatedly. • Unobtrusive, not created as a result of the case study. • Exact, contains exact names, references and details of an event. • Broad coverage, long span of time, many events and many settings can be included. 	<ul style="list-style-type: none"> • Retrievability can be low. • Biased selectivity, if collection is incomplete. • Reporting bias, reflects (unknown) bias of author. • Access may be deliberately blocked. 	✓

Data gathering techniques	Strengths	Weaknesses	Adopted in this study
Direct observation	<ul style="list-style-type: none"> • Reality, covers events in real time. • Contextual, covers the context of an event. 	<ul style="list-style-type: none"> • Time consuming. • Selectivity, unless broad coverage. • Reflexivity, event may proceed differently because it is being observed. • Cost, hours needed by human observers. 	Not adopted
Participant observation	<ul style="list-style-type: none"> • (Same as above for direct observations.) • Insightful into interpersonal behaviour and motives. 	<ul style="list-style-type: none"> • (Same as above for direct observations.) • Bias due to investigator's manipulation of events. 	Not adopted
Physical artifacts	<ul style="list-style-type: none"> • Insightful into cultural features. • Insightful into technical operations. 	<ul style="list-style-type: none"> • Selectivity • Availability 	Not adopted

The researcher did not use the other four data gathering techniques mentioned in Table 11 for various reasons. Direct and participant observation techniques were not considered since they are time consuming and selective (Yin, 1994). According to Yin (1994), “physical artefacts have less potential relevance in the most typical kind of case study” (p. 90). Therefore, physical artifacts were not considered as one of the data gathering techniques for this research study.

Validity is improved by drawing on multiple data gathering techniques; this process is known as triangulation. Using triangulation, the substantiation of evidence can be demonstrated (Yin, 2009). According to Patton (1999), there are four ways of using triangulation that can be used for the validation of qualitative findings. These methods are illustrated in Table 12 below.

Table 12: Types of triangulation (Patton, 1999)

Type of triangulation	Detailed description
Mixed approaches: triangulation (reconciling qualitative and quantitative data)	“Methods triangulation often involves comparing data collected through some kinds of qualitative methods with data collected through some kinds of quantitative methods” (Patton, 1999, p. 1193). This increases the validation of findings.
Triangulation of qualitative data sources	Here, the data are gathered using different qualitative techniques to check the validity of the findings. This means comparing the same data but with different techniques.
Triangulation through multiple analysts	Multiple researchers analyse the same data by applying the same research approaches in order to reduce the bias that could occur when only one researcher gathers data. In addition, this approach “provides means to assess more directly the reliability and validity of the data obtained” (Patton, 1999, p. 1195).
Theory triangulation	Various theoretical perspectives are used to examine/look at the same data.

The main source of data gathered for this study is interviews and the other is the reviewing of some of the organisations’ documents to compare the middle managers’ duties and performance before and after implementing new electronic systems.

The next section presents more details about interviews as a data source for this study.

3.6.1. Interviews

This section presents the various of types of interview available for use by researchers. However, semi-structured interviews were used as the primary source of evidence in this study. Information about the interviews conducted in each case study in this research is also presented in this section.

Interviews are perhaps the most widely used technique in qualitative research when using the case studies method (Walsham, 1995; Myers, 2009; Yin, 2009). Yin (1994) asserts that interviews are an important source of data when researchers are conducting case study research. Interviews can take place in a face-to-face context, via email, over the

telephone and using interviewing software, such as Messenger (Opdenakker, 2006). There are certain steps a researcher can take that make interviews more beneficial. First, interviews should be held in a comfortable atmosphere, helping to facilitate the collecting of good-quality information. When this environment is achieved, the researcher should start to ask questions about the phenomenon of interest (Hair et al., 2007). Second, it is better to stop and finish an interview, even if that leads to some loss of interaction between the researcher and the respondent, if the interviewee is obviously stressed (Walsham, 2006). There are three types of interview: structured, semi-structured and group interviews (Myers and Newman, 2007). Table 13 gives more details about the types of interview.

Table 13: Types of qualitative interview (Myers and Newman, 2007)

Interview type	Description	Adopted in this study
Structured	In this type of interview, a full text should be prepared in advance, prior to the intended interviews. Improvisation is not permitted in this type of interview. Surveys are usually used in this case, which means that the interviews are not necessarily to be conducted by the researcher.	Not adopted
Semi-structured	Unlike structured interviews, this type does not require a full script. Improvisation is needed here and preparing questions in advance before the interviews may be required. The interviews should also be conducted by the researcher or one of the research team members.	✓
Group	In this type, one or a number of participants can be interviewed all together by one or a number of researchers. This form of interview can be structured or unstructured.	Not adopted

Structured interviews were not adopted in this research since they usually produce quantitative data (DiCicco Bloom and Crabtree, 2006); nor do they focus on the participant's point of view (Bryman, 2001), which was important for this study. Group interviews were not adopted in this study either, since they concentrate on "how people respond to each other's views and build up a view out of the interaction that takes place within the group" (Bryman, 2001, p. 336), which is not the case in this study.

For the reasons given above, semi-structured interviews were the primary source of evidence for this study. Patton (1990) explains the purpose of interviews in qualitative research as "To find out what is in and on someone else's mind ... to access the perspective of the person being interviewed" (p. 278). The study took this explanation into account, since the aim of conducting interviews was to understand the experience of the middle managers who participated in the research after the implementation of a new online system in their workplace and what they had done to adapt to the situation.

Researchers can record interviews by taking manual notes or through the use of audio recording devices (Oates, 2006). One of the advantages of recording interviews with audio devices is the ability to re-examine the transcript many times (Walsham, 2006). Yin (1994) agrees on the importance of recording interviews, since it is hard for researchers to recall most of the information elicited during an interview session. Recording interviews allows researchers to save all the information (i.e., not to forget it) and not be under pressure to remember all the conversations they have had with the interviewees. Taking notes is also helpful to record other important information, such as the reaction of the interviewees, particularly their emotions or expressions and behaviour. In this study, the interviews with middle managers and others (i.e., developers) were recorded using a Sony ICD-PX440 Digital Voice Recorder. Prior to recording the interviews, a promise was given by the researcher to the participants that all the information would be confidential and would only be used for the purpose of this study. Only one of the

interviewees refused to allow the conversation to be recorded (the developer at the Ministry of Labour), stating that the information under investigation is confidential. After the interviews were recorded, approval from the participants was taken to transcribe the contents.

The interview questions were guided by the CMUA (Beaudry and Pinsonneault, 2005) and the researcher used this model as a lens to guide the study. A semi-structured interview protocol was developed with and tested by a Business Information System Department faculty member at University College Cork. After testing the semi-structured interview protocol, some of the questions were removed and the order of the questions was changed based on the research supervisors' suggestions. The research protocol can be reviewed in the Appendix. The researcher conducted a total of 24 interviews for all four case studies (the Commercial Register Office, the Department of Corporate Services, the Recruitment Department, and the Passport Department - Riyadh branch) in three different public organisations (the Ministry of Commerce and Industry, the Ministry of Labour, and the General Directorate of Passports).

The selection of the participants was important. A snowball sampling strategy was used in this study to select the participants. Bhattacharjee (2012) explains snowball sampling as follows: "you start by identifying a few respondents that match the criteria for inclusion in your study, and then ask them to recommend others they know who also meet your selection criteria" (p. 70). The researcher asked the head of each selected unit to suggest a middle manager to be interviewed; the snowball method was then applied. The researcher also asked the head of each unit to talk with each selected participant to ensure commitment from the participants, which was very helpful. A brief discussion of the interviews conducted in each case study is presented below.

Commercial Register Office

The number of interviews conducted in this case was eight. Six of the eight middle managers are using a new commercial electronic system (the first six participants in Table 14 below).

Table 14: Data collection - Commercial Register Office

Participant code	Position	Interview format	Duration	Date	Number of visits	Transcript length
CRTN	Senior manager	Face to face/ audio taped	25 min	05/01/16	4	102 pages
CMMN2	Supervisor	Face to face/ audio taped	30 min	06/01/16		
CMMM3	Senior manager	Face to face/ audio taped	30 min	06/01/16		
CMMY4	Supervisor	Face to face/ audio taped	40 min	06/01/16		
CMMA5	Supervisor	Face to face/ audio taped	20 min	07/01/16		
CMMH6	Supervisor	Face to face/ audio taped	40 min	06/01/16		
Developer	N/A	Face to face/ audio taped	25 min	13/01/16		
CMMN7	General manager	Face to face/ audio taped	35 min	05/01/16		

All the interviews were located in the main Ministry of Commerce and Industry building in Riyadh, the capital city of Saudi Arabia. Each participant has been given a unique code to ensure that their names and job positions are kept confidential (more detailed information about the participants is given in chapter four). All the interviews were conducted face to face and audio taped and then converted to text, which resulted in a total of 102 pages of transcripts. The total time for all the interviews in this case is 4 hours

and 5 minutes. The period of the interview process was between 5th and 13th January 2016.

Table 14 above summarises the research materials for this case study.

Department of Corporate Services

The number of interviews conducted in this case was three and all three middle managers are utilising a new electronic system to establish new companies. All three interviews were conducted in the east branch building of the Ministry of Commerce and Industry in Riyadh. Once again, a unique code was given to each of the participants to keep their identities anonymous. All the interviews took a face-to-face/audio-taped format and were then converted to text, which resulted in 33 pages of transcripts. The interviews took a total of 1 hour and 25 minutes to complete. The researcher visited the branch building twice, on 13th and 14th January 2016. Table 15 below illustrates the data collection for this case study.

Table 15: Data collection - Department of Corporate Services

Participant code	Position	Interview format	Duration	Date	Number of visits	Transcript length
GAHA	General manager	Face to face/ audio taped	25 min	13/01/16	2	33 pages
GARA	Senior manager	Face to face/ audio taped	30 min	14/01/16		
GASA	Supervisor	Face to face/ audio taped	30 min	14/01/16		

Recruitment Department

Six interviews were conducted in this case to explore the middle managers' reactions when the new Visa electronic system was implemented in their workplace. The interviews were conducted in two different places: the main building of the Ministry of Labour and the east branch of the Recruitment Office in Riyadh. A unique code has been given to all

the participants in this case study to ensure confidentiality. Five of the interviews took a face-to-face/audio-taped format and only one set of paper notes was taken. The interviews were transcribed and amounted to 88 pages of transcripts. The total duration of the time the researcher spent with the participants to gather the evidence was 3 hours and 25 minutes. All the interviews were conducted between 22nd and 28th January 2016. Table 16 provides an overview of the interview details.

Table 16: Data collection - Recruitment Department

Participant code	Position	Interview format	Duration	Date	Number of visits	Transcript length
RDYZ	Supervisor	Face to face/ audio taped	35	25/01/16	6	88 pages
RDSM	Supervisor	Face to face/ audio taped	30	25/01/16		
RDYE	Senior manager	Face to face/ audio taped	25	22/01/16		
RDSH	Senior manager	Face to face/ audio taped	30	23/01/16		
RDBY	Supervisor	Face to face/ audio taped	40	23/01/16		
TAKAM /developer	N/A	Paper notes	45	28/01/16		

Passport Department

In this case, seven interviews were conducted to collect evidence. The first five participants in Table 17 are considered middle managers (as described in chapter two), the group of employees on which this study is focusing. All the interviews were conducted in the Passport Department - Riyadh city branch. As with the other cases in this study, each participant has been given a code to ensure confidentiality, as per the participants' request. All the interviews conducted were face to face and audio taped except one, the

notes for which took a paper format as per the interviewee's request. These interviews were transcribed and amounted to 79 pages of transcripts. The researcher visited the Passport Department to collect evidence five times between 25th January and 1st February 2016. Table 17 below summarises the interview information.

Table 17: Data collection - Passport Department

Participant code	Position	Interview format	Duration	Date	Number of visits	Transcript length
PDMR	General manager	Face to face/ audio taped	35	26/01/16	5	79 pages
PDMO	Senior manager	Face to face/ audio taped	25	31/01/16		
PDFM	Supervisor	Face to face/ audio taped	30	26/01/16		
PDBO	Senior manager	Face to face/ audio taped	25	25/01/16		
PDAS	Senior manager	Face to face/ audio taped	30	01/02/16		
PDAK	Entry-level employee	Face to face/ audio taped	20	28/01/16		
PDBS/IT staff	Senior manager	Paper note	50	01/02/16		

The next section presents the second data gathering technique (i.e., documents) that the researcher used to increase the validity of the data collected in the study.

3.6.2. Documents

The researcher was able to review some documents with the assigned employees to check information about the participants' duties and performance before and after implementing the new electronic system in all four case studies.

For all qualitative studies, it is important to gather historical data. This may not be a main part of data gathering, but knowledge of the history of a specific issue or event comes, in

part, from reviewing documents. There are many forms of document, such as hard copy or electronic, and each format may include reports, meeting minutes, programme records, system manuals, marketing materials and newsletters. Myers (2009) argues that documentation is useful when used with other techniques. Reviewing documents helps researchers to develop other data collection tools for evaluation. For example, reviewing existing documents will lead to understanding an organisation or event, which will make it easier for researchers to formulate questions for interviews and focus groups or develop an observation guide (Myers, 2009). It is important to mention that using documents as a data collection method is sometimes considered a secondary method of gathering data in some fields, while to others these are primary data, for example in the area of history (Sapsford and Jupp, 2006). In this study, documents are used in combination with the other technique mentioned in the prior section (semi-structured interviews) to support and increase the accuracy of the evidence presented.

3.6.3. Handling cultural differences

There were some challenges the researcher faced when conducting this research study. One of these challenges is the difference in writing style between Arabic and English. Writing in English is not an easy task for international students if they are non-native English speakers; however, they are required to produce native-like written documents as part of their studies (Casanave, 2003).

All the interviews for this research were conducted in Arabic, which is the national language of Saudi Arabia. The researcher then transcribed the interviews directly into English, without transcribing in Arabic first. It was a challenge to find equivalent English vocabulary for some Arabic expressions. To overcome this challenge, the words used were very carefully selected to give the same meaning in both languages. To check the accuracy of interpretation, particularly in some of the more challenging words and

sentences, a consultation was sought with one of the researcher's colleagues, who is fluent in both Arabic and English.

However, conducting the interviews in Arabic was beneficial for this study, since the first language of both the researcher and the interviewees is Arabic and this helped to provide high-quality responses about the phenomenon under investigation. Walsham (2006) states the following with regard to using the same language for both the participants and the researcher(s): "it is clearly better to be able to speak the local language fluently in order to carry out field research there" (p. 323).

The following section discusses the data analysis techniques that were utilised in this study.

3.7. Qualitative data analysis techniques

This section relates to the unit of analysis used in the research: thematic analysis (Miles and Huberman, 1994). Finer-grained coding was also used in this study, as well as the chain of evidence technique (Yin, 1994). Moreover, NVivo 11 Pro, which is qualitative data analysis software, was used to code the transcribed interviews.

The unit of analysis needs to be identified in any research study. Patton (1990) states that the "key issue in selecting and making decisions about the appropriate unit of analysis is to decide what it is you want to be able to say something about at the end of the study" (p. 168). According to Yin (1994), the unit of analysis means the analytical level of the case that needs to be under investigation. In this research study, there are three levels of analysis, as stated earlier in section 3.4.1.

In order to maximise the analytical lens (i.e., the CMUA), the researcher needed to examine and analyse adaptation strategies at the individual level (the first level), which in this case is the middle managers who faced a new IT event recently implemented in their workplace. Then, the researcher considered the group level (the second level) to

examine the interaction between the adaptation strategies of different middle managers and whether these strategies affected the adoption of the new e-government initiatives by the public organisations negatively or positively. The researcher then analysed the situation at a higher level (the third level) to provide advice to those in top management.

Data analysis is a means by which the researcher can produce accurate conclusions to research studies when using appropriate techniques. Qualitative analysis is the analysis of qualitative data gathered from the field by a number of means, such as interviews, group observations and documents (Bhattacharjee, 2012). Gliner and Morgan (2000) refer to qualitative data analysis as the “various methods for coding, categorising and assigning meaning to data” (p. 9). According to Creswell (1994), there is no correct method of doing qualitative data analysis. Miles and Huberman (1994) have indicated five main issues relating to data analysis:

- Data displays
- Threats to analytic validity
- Transparency
- Distribution of data management
- Data analysis procedures

Miles and Huberman (1994) also discuss four processes that happen before, during and after data analysis: (i) data reduction, (ii) data display, (iii) drawing conclusions, and (iv) verification.

Thematic analysis was adopted in this study and was the first phase of coding. Following the procedure described by Miles and Huberman (1994), the data gathered from each interview were treated and analysed separately from the other interviews. The information obtained was then classified into themes already identified before conducting the interviews in relation to the theoretical basis, which in this study is the CMUA (Beaudry and Pinsonneault, 2005). The themes identified are as follows:

- The roles of the middle managers before the CMUA
- The process before the CMUA
- Primary assessment
- Secondary assessment
- Adaptation strategies
- Outcomes
- The roles of the middle managers after the CMUA
- The process after the CMUA (see Figure 3 below).

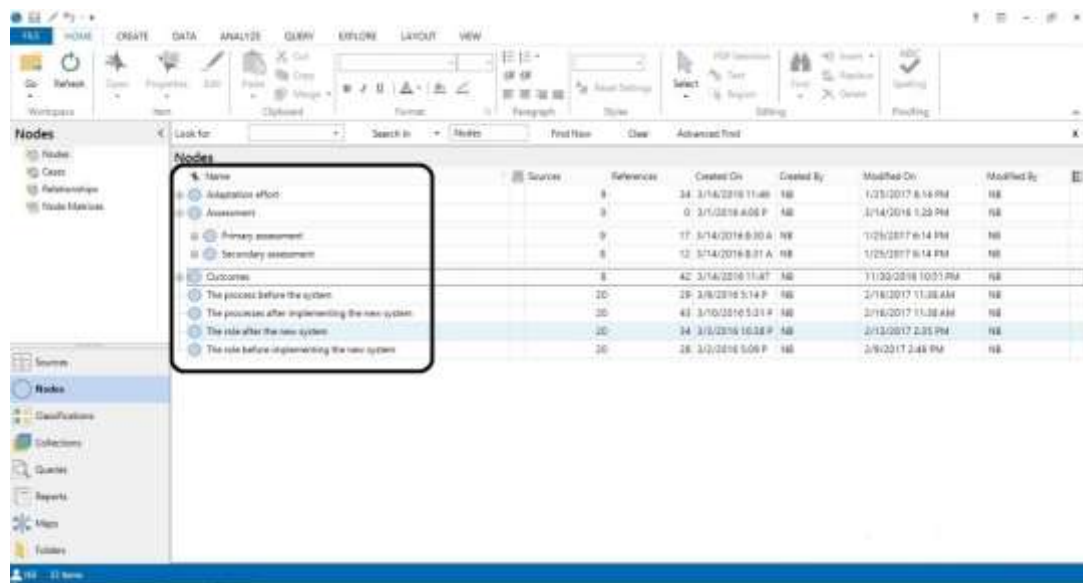


Figure 3: Screenshot of primary themes

After finishing the coding of the interviews and grouping all the codes into themes, as mentioned earlier, the second phase of coding started. Finer-grained coding was carried out to give more accurate meaning to the coded interviews. For example, quotations that related to primary assessments were broken down into (i) opportunity and (ii) threat. Then, quotes regarding secondary assessments were also broken down into high and low control with relation to (i) work, (ii) self and (iii) technology. Adaptation efforts were broken down into the following categories: (i) problem-focused and (ii) emotion-focused; the quotations in these two categories were then allocated to the adaptation strategies identified in the framework. The outcomes were then broken down into sub-

themes, namely: (i) exit, (ii) restoring personal emotional stability, (iii) minimising the negative consequences of the IT event, and (iv) individual efficiency and effectiveness.

Figure 4 shows the breaking down of the themes into sub-themes.

The screenshot displays the NVivo Pro Version 11 interface. On the left, a tree view shows the hierarchy of nodes: Nodes, Cases, Relationships, and Node Matrices. The main area shows a list of nodes with their names, sources, references, and creation/modification dates. The nodes are organized into a hierarchical structure, with primary themes at the top and sub-themes below them. The nodes are: Adaptation effort, Benefits Maximizing, Benefits Satisfaction, Disruption Handling, Self Preservation, Assessment, Primary assessment, Neutral, Opportunity, Threat, Secondary assessment, Self, Technology, Work, Exit, Minimizing the negative consequences, and Efficiency & effectiveness. The table below shows the references for each node.

Node Name	Source	References	Created On	Created By	Modified On	Modified By
Adaptation effort		0	3/14/2016 11:48	NB	1/25/2017 6:58 PM	NB
Benefits Maximizing		12	5/1/2016 4:58 P	NB	2/16/2017 11:39 AM	NB
Benefits Satisfaction		0	0/4/18/2016 5:05 P	NB	4/18/2016 5:05 PM	NB
Disruption Handling		3	0/4/18/2016 5:01 P	NB	1/18/2017 1:37 AM	NB
Self Preservation		3	0/4/18/2016 5:04 P	NB	1/24/2017 9:54 PM	NB
Assessment		0	0/3/1/2016 4:08 P	NB	3/14/2016 1:28 PM	NB
Primary assessment		0	17/3/16/2016 8:38 A	NB	1/25/2017 6:14 PM	NB
Neutral		3	4/11/2016 8:41	NB	3/2/2017 10:37 PM	NB
Opportunity		13	27/4/18/2016 4:18 P	NB	2/16/2017 4:08 PM	NB
Threat		4	7/4/18/2016 4:17 P	NB	3/2/2017 10:54 PM	NB
Secondary assessment		0	12/3/14/2016 8:31 A	NB	1/25/2017 6:14 PM	NB
Self		0	0/4/18/2016 4:42 P	NB	4/18/2016 4:42 PM	NB
Technology		0	0/4/18/2016 4:42 P	NB	4/18/2016 4:42 PM	NB
Work		0	0/4/18/2016 4:41 P	NB	4/18/2016 4:41 PM	NB
Exit		0	0/3/16/2016 11:47	NB	11/30/2016 10:31 PM	NB
Minimizing the negative consequences		10	74/4/17/2016 9:33 P	NB	2/16/2017 4:08 PM	NB
Efficiency & effectiveness		4	0/11/28/2016 1:20 P	NB	1/24/2017 9:54 PM	NB
		0	0/11/28/2016 11:27 P	NB	2/5/2017 4:41 PM	NB
		0	0/11/28/2016 11:27 P	NB	2/5/2017 4:41 PM	NB

Figure 4: Screenshot of both primary and sub-themes

Using software to code transcribed interviews and notes that were taken manually is now common in qualitative research (Richards, 1999). The software used in this study was NVivo Pro Version 11, which is considered a widely accepted program for managing qualitative data (Bazeley and Jackson, 2007). NVivo was used to code the raw data into categories (themes) and it was observed that creating these data was very fast and accurate using this software. Figure 5 below shows a sample of coding the raw data.

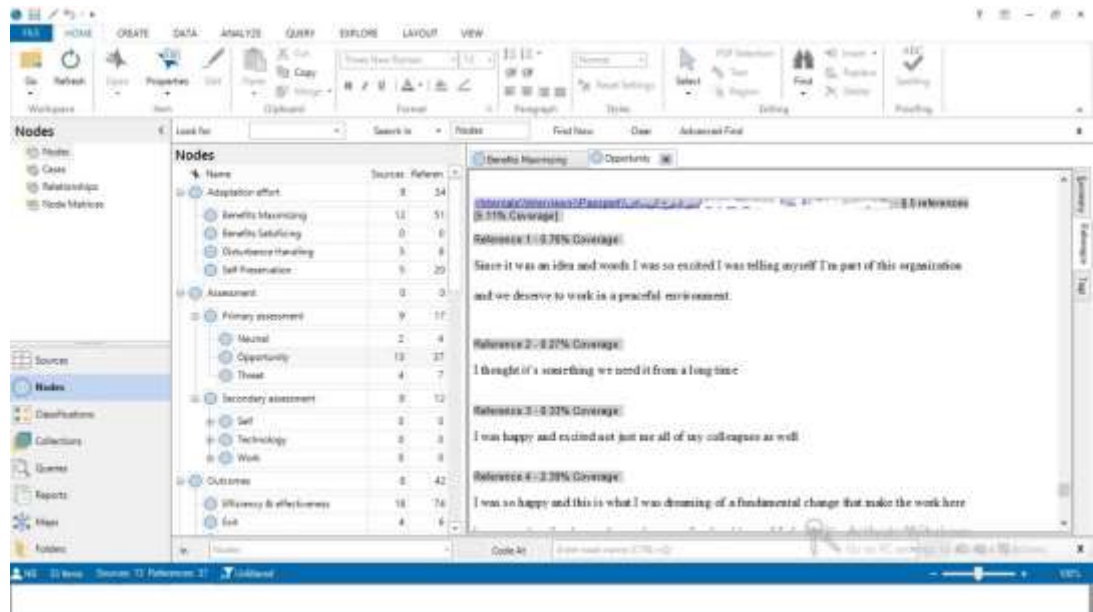


Figure 5: Sample of coding raw data using NVivo 11 Pro

Following the finer-grained coding, the chain of evidence technique was used. This allowed the researcher to group all the quotations from each of the middle managers that participated in the study. These quotations about their primary and secondary assessments of the new IT event and their subsequent adaptation efforts were grouped into patterns of actions that led to the identification of the adaptation strategies and then the associated outcomes of these strategies. Table 18 below presents a sample of this process.

Table 18: Sample of chain of evidence tables used in this study

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity or threat	High or low control over work, technology and self	Benefits maximising or one of the other adaptation strategies in the CMUA	For example: <ul style="list-style-type: none"> • Increase efficiency and effectiveness (Quote (x) and Quote (x)). • Seeking more enhancement (Quote x).
Quote (x) Quote (x)	Quote (x) Quote (x)	Quote (x) Quote (x)	Quote (x) Quote (x)
<div style="text-align: right;">➔</div> <p>“x” represents the quotation number.</p>			

The data gathered for this study were analysed in two phases: (i) within-case analysis and (ii) cross-case analysis. In the within-case analysis, the writing up of descriptive reports about each case study is required to generate more insight into the phenomenon under investigation (Gersick, 1988, cited in Eisenhardt, 1989). One of the important factors to consider during within-case analysis is the significant amount of data generated when using the qualitative case study method (Eisenhardt, 1989). The second phase of analysing the data in this study was cross-case analysis. One of the advantages of using cross-case analysis is that it forces researchers to go beyond the first impressions during data collection, and to use structured and diverse lenses on the data. Cross-case search strategies improve the likelihood that researchers will capture interesting findings that might exist in the data (Eisenhardt, 1989). In this regard, the researcher examined the data in various ways to look for trends across the four cases under investigation. For each theme and dimension previously identified and included in the CMUA, the researcher looked for both similarities and differences, then examined the data in various ways to look for trends in the four cases under investigation.

The next section presents a summary of the research approach used in this study.

3.8. Summary of the research approach

This chapter has presented an explanation of this study's research design. It began by presenting the research objective and the research questions. The researcher's approach to conducting this study was exploratory, using a small number of cases (four) to attempt to provide theoretical arguments to enhance knowledge of the area under investigation. The researcher in this chapter was clearly shown to have evaluated the methodological approaches available. This chapter has justified the decision to conduct a qualitative multi-case research design. Furthermore, the chapter has also provided rich detail of the study protocol. It described the research methods available to the researcher (i.e., case study and field study) as well as details about the sampling strategy used for this study.

The chapter also provided an overview of the data gathering techniques used in qualitative research in general and explained in great detail the data gathering techniques (i.e., semi-structured interviews and documents) conducted in this particular study. The data analysis methods and the process of the data analysis were also presented in this chapter.

The next chapter presents a full description of the four cases studies and the results of the initial data analysis conducted in this research.

CHAPTER FOUR: CASE DESCRIPTION AND INITIAL DATA ANALYSIS

4.1. Introduction

Having identified a gap in the literature (chapter two) and the methodological approach underpinning this research (chapter three), this chapter presents the study findings from the four qualitative case studies conducted in three different public sector organisations in Saudi Arabia: (i) the Ministry of Commerce and Industry, which contains the Commercial Register Office and the Department of Corporate Services; (ii) the Ministry of Labour, which contains the Recruitment Department; and (iii) the General Directorate of Passports, which contains the Passport Department. Each of the four cases is presented below in respect of its own characteristic, as follows:

- *Most distantly implemented system* – Commercial Register Office
- *Least distantly implemented system* – Department of Corporate Services
- *An unsuccessfully adopted system* – Recruitment Department
- *A hands-off system* – Passport Department

4.2. Ministry of Commerce and Industry - case number one

4.2.1. Introduction

This case study investigates the adaptation strategies of the middle managers in the Commercial Register Office when a new system was implemented in their workplace. The case study is categorised in this research as a mature implemented system, since it started before the other systems under investigation. A number of materials are presented in the following sections regarding this case study. First, the case context is presented in section 4.2.2 to provide information about the Ministry of Commerce and Industry. The context of the division that provides the electronic service is presented in section 4.2.2.1. In 4.2.2.2, the public service, which is the Commercial Registration Certificate, is

presented to provide information about the processes involved. Following this, the participants' profile is discussed in 4.2.2.3. The data analysis is then presented in section 4.2.3 with the findings, which include a comparison of the situation before and after the CMUA (section 4.2.3.1), the first adaptation strategy – benefits maximising (4.2.3.2), the second adaptation strategy – disturbance handling (4.2.3.3), and the third adaptation strategy – self-preservation (4.2.3.4). A summary of the case is presented in section 4.2.4.

4.2.2. Case context

This section presents information regarding the Ministry of Commerce and Industry. Some of the regular tasks that the ministry is required to perform are also presented in this section. It also presents the electronic services that are provided by different divisions in the ministry.

The Ministry of Commerce and Industry was established in 1954 and has since served to organise all trade and business activities in Saudi Arabia. It has 20 medium-sized branches and 45 small offices in different cities across Saudi Arabia. The headquarters are located in the capital of Saudi Arabia, Riyadh. The ministry's remit is to develop both the commercial and private sectors for investment, while protecting the interests of its beneficiaries by enhancing and developing effective and efficient policies. The hope is that these will lead to sustainable economic development. The ministry's goals are as follows: (i) to widen domestic and overseas non-oil trade; (ii) to increase the effectiveness of the private sector role; (iii) to increase the number of Saudi citizens in commercial activities; and (iv) to improve and organise private sector activities, namely, commercial, financial and financing, with the agencies concerned. To achieve these goals, the Ministry of Commerce and Industry has started an e-transformation project to provide multiple electronic services to the public. The reason for this transformation is to facilitate and increase the accuracy and speed of all the services provided to the stakeholders involved (e.g., citizens, businesses and other government departments).

The Ministry of Commerce and Industry is charged with a number of tasks, which include:

- Proposing and establishing commercial systems and regulations for every type of trade, as well as reviewing the existing systems and regulations.
- Licensing the commercial chambers and their branches, as well as supervising the elections of their board members.
- Improving foreign trade relations with different countries and companies.
- Providing the data and statistics required by business people and specialised government bodies.
- Reviewing the applications of non-Saudi companies to do business inside Saudi Arabia.
- Preventing commercial fraud.
- Reviewing the applications of establishing companies and their branches.

The Ministry of Commerce and Industry provides a number of electronic services to the public via different departments, such as Commercial Registration Certificates (issued by the Commercial Register Office); services for companies, such as issuing contracts for establishing businesses (issued by the Department of Corporate Services); industrial licensing (by the Deputy Minister for Industry Affairs); laboratory licences and chemicals release (by the Division of Laboratories and Quality Control); the settling of trade disputes and the reporting of commercial fraud (by the Consumer Interaction Centre); and industrial information and customs exemption (by the General Administration of Industrial Licences and Follow-up).

The researcher intended to focus on two different departments in the Ministry of Commerce and Industry that have implemented electronic services: the Commercial Register Office and the Department of Corporate Services. Both departments have newly

electronic services for dealing with the following: (i) Commercial Registration Certificates, and (ii) the establishment of new companies. These services are discussed in more detail in sections 4.2.2.2 and 4.3.2.2, respectively, and each case is dealt with separately.

4.2.2.1. Department context - Commercial Register Office

This section presents general information concerning the Commercial Register Office, such as its location and the number of employees. This section also covers the tasks for which the office is responsible.

The Commercial Register Office implemented the first online electronic services before any of the other Ministry of Commerce and Industry departments. The office has many branches across Saudi Arabia. However, after deploying the new electronic service, most of the branches closed, except for those in major cities. All the employees of the closed branches were moved to other branches that are still working, or to other departments in the ministry. The Trade Name Unit in the Commercial Register Office now provides a service exclusively in the main branch, located in the capital city. The office has 250 employees around Saudi Arabia; one-third of them work in the main branch, which is in Riyadh (the main branch is the case in this study).

The Commercial Register Office is in charge of performing a number of duties, as follows:

- Providing studies and suggestions related to commercial registration functions.
- The office is responsible for the formation of a permanent committee to study the issue of similarities in trade names.
- Participating in committees with many other competent authorities to improve the conduct of office work and to study other issues related to office tasks.

- Organising everything related to Commercial Registration Certificates and controlling all the branches around the country.
- Issuing commercial registration for individual companies and the other different forms of partnership, as well as performing tasks such as modification, renewal or cancellation, through the website.
- Answering all inquiries from other public organisations, as well as the private sector and the media, that are related to the Commercial Register Office.

This study focuses on a newly implemented electronic service, which issues the Certificate of Commercial Registration, to investigate the adaptation strategies of some of the middle managers in the office.

4.2.2.2. Public service - Certificate of Commercial Registration

This case covers the Commercial Registration service that is provided by the Ministry of Commerce and Industry through the Commercial Register Office. One of the requirements for doing business in Saudi Arabia is to be issued with a Commercial Registration Certificate. The Ministry of Commerce and Industry has developed an electronic service to serve its clients through the Internet and the new electronic system was deployed at the beginning of the second quarter of 2014. This service allows the clients of the Commercial Register Office to be issued with a Commercial Registration Certificate electronically. Approval of the Commercial Registration Certificate has also become electronic and is done by competent employees, without clients needing to visit the ministry building or its branches. There are two ways to issue a Commercial Registration Certificate electronically: (i) a fully-automated service, and (ii) a semi-automated service.

Commercial Register-Fully Automated way



Figure 6: Fully-automated system

First, with the fully-automated service (shown in Figure 6), which is known as the 180-seconds initiative, there is no need for human interaction to review or process the applications because the names have already been approved and entered into the system. According to the Commercial Register Office manager in the Ministry of Commerce and Industry, this is the fastest issuing time for Commercial Registration Certificates in the world. In this service, clients use a pre-approved trade name or their personal names to be issued with a Commercial Registration Certificate. In this way, clients complete applications online and the integrated systems of a number of public departments check the clients' eligibility. The electronic system then approves the application and issues a new bill for the client to pay online, and the Commercial Registration Certificate can then be printed immediately from anywhere.

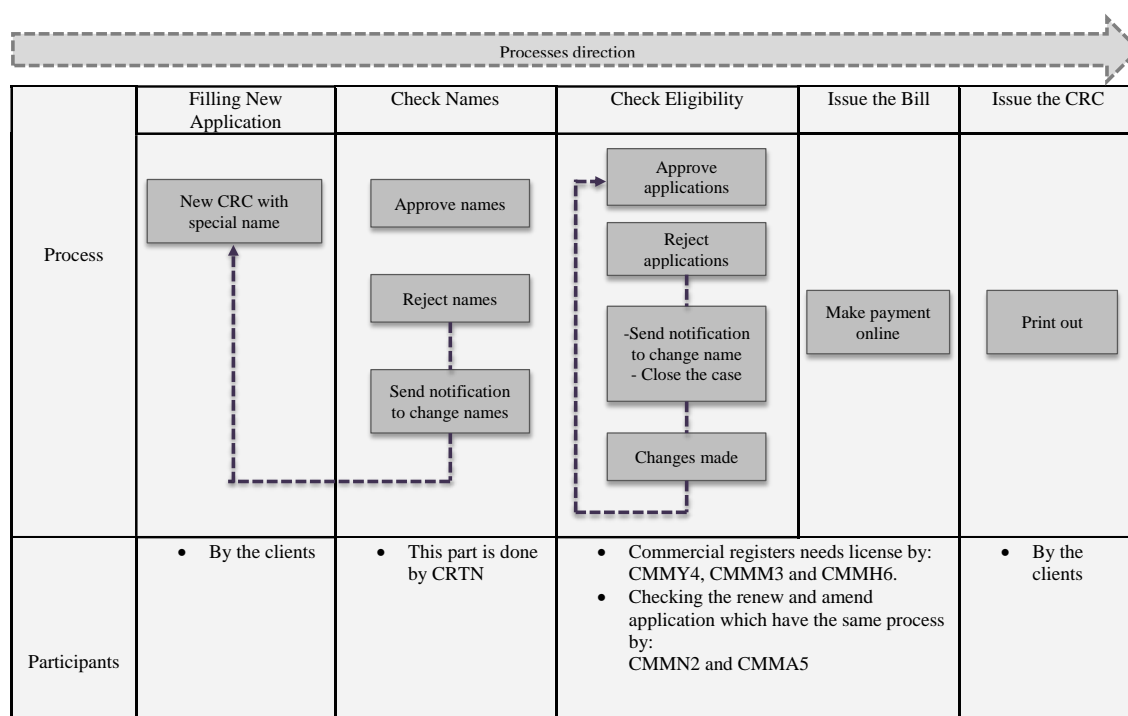


Figure 7: Semi-automated system

The second way to issue a Commercial Registration Certificate, which is a semi-automated system (see Figure 7), is designed for clients who want a new name that is not in the database, or for clients who need to provide more documents, such as licences (chemical laboratories, restaurants, poultry businesses, etc.). In this service, the client sends an online application requesting a new name, then the assigned employees in the Commercial Register Office check the name to ensure that it meets the criteria. After that, the employees approve the name if it meets the conditions and then send a notification to the client that the name is approved and reserved for 60 days. However, if the name does not meet the conditions, the employees have the right to reject it and ask the client to find another one. After approving the name, the next step is to check clients' eligibility. The Commercial Register Office employees use the integrated system to do so. Then, if the application is rejected for any reason, the employees send a notification to the client to modify the application. However, if the application is approved, the employees then issue a bill for the client, who can pay it online, and then print the Commercial Registration

Certificate. There are special Commercial Registration Certificates that need licences, which follow the same processes.

The next section presents profiles of the middle managers interviewed for this study.

4.2.2.3. Participants' profiles

In this study, a number of participants were interviewed in the Commercial Register Office in order to study their adaptation strategies. These participants were from different managerial levels and all of them were considered middle managers, since they supervise the level of employees below them and they are all below the level of vice president (in agreement with the definition in section 2.7.4).

Each participant was asked about his IT capability before the implementation of the new commercial register system by evaluating himself using a scale from 1-5, where 1 means extremely low knowledge of how to handle technology and 5 means high knowledge of how to use technology tools. Table 19 at the end of this section illustrates the scale.

Table 20 shows the interviewees' details, where 'code' corresponds to the participants, and 'unit' is the department in which they work. 'Experience' corresponds to how long the participants had worked in the Commercial Register Office. Moreover, regarding experience, four of the six participants have worked in the private sector (CMMN2, CMMM3, CMMY4 and CMMA5), while the other participants have mainly worked within government. The 'Use of the system' category corresponds to the participants using the new system in their daily routine. All the participants work in the same place, which is located in the Ministry of Commerce and Industry building in Riyadh. One of the six interviewees (CRTN) is specialised in trade names and is very experienced in the Commercial Register Office. His ability to use technology is quite good, as he described. His primary work in the Trade Name Division is to review and check the trade names that clients prefer. Two of the interviewees are specialised in the commercial registers that

need licences (CMMN2 and CMMA5). The primary work of both these participants is to issue, modify and renew Commercial Registration Certificates. All the other interviewees (CMMM3, CMMY4 and CMMH6) are assigned to review applications that do not need licences and their main work is also to issue, modify and renew Commercial Registration Certificates. There was a need to interview both the director of the Commercial Register Office and one of the developers to enrich the data as much as possible and increase the accuracy of the results.

Table 19: Scale of participants' knowledge before implementing the new electronic system

1	2	3	4	5
Extremely low knowledge	Low knowledge	Medium knowledge	Knowledge	High knowledge

Table 20: Details of the participants interviewed in the Commercial Register Office

Code	Unit	Education level	IT capability Scale 1-5	Experience	Use of the system and tasks
CRTN	Trade Names	Bachelor's degree	4	16 years	Yes, to review and approve names.
CMMN2	Commercial registrations that need a licence	High diploma	4	5 years	Yes, to review and approve applications that need a licence.
CMMM3	Commercial Register Office	Postgraduate	4	Less than one year in the Commercial Register Office	Yes, to review and approve applications and monitor employees.
CMMY4	Commercial registrations that do not need a licence	2-year degree	2	12 years	Yes, to review, approve, cancel and modify applications.
CMMA5	Commercial registrations that need a licence	Bachelor's degree	4	12 years	Yes, to review and approve applications that need a licence and answer inquiries.
CMMH6	Commercial registrations that do not need a licence	2-year degree	4	14 years	Yes, to review and approve applications that need a licence.
Developer	Third party	Bachelor's degree	-	-	No.
CMMN7	Commercial Register Office	Postgraduate	3	8 years	Admin., partly using the system.

4.2.3. Analysis of the first case - Commercial Register Office

As stated previously (in chapter three), this study is guided by the CMUA in the manner in which the data were gathered and analysed. First, section 4.2.3.1 presents and discusses the extension to the CMUA that was observed from the data analysis of the situation before and after the implementation of the new system. This section also presents an analysis of each participant individually. The unit of analysis in this context is the adaptation strategies of the middle managers with regard to the implementation of a new e-government system in the Commercial Register Office. The examination of six middle managers proved to be varied and resulted in three different adaptation strategies that are mentioned in the CMUA:

- Benefits maximising
- Disturbance handling
- Self-preservation

There was no evidence found of the fourth adaptation strategy that is included in the CMUA, which is benefits satisficing

The adaptation strategies are discussed in turn in the next sections (4.2.3.2, 4.2.3.3 and 4.2.3.4). Each interview is analysed separately and classified according to the associated adaptation strategies. The analysis of the gathered data considered four outcomes: (i) before and after the CMUA; (ii) a benefits maximising strategy; (iii) a disturbance handling strategy; and (iv) a self-preservation strategy.

4.2.3.1. Before and after the CMUA

This section presents the roles of the middle managers before and after the implementation of the new system. The changes in the processes before and after the new system and how the middle managers felt about these are also presented.

The middle managers' tasks in the Commercial Register Office before the e-service system were mostly paper-based work. These tasks mostly involved issuing, renewing, modifying and cancelling Commercial Registration Certificates. The middle managers in the Commercial Register Office were asked to explain their roles before and after the implementation of the new system and their answers generally reflect that they have the same roles and tasks, but the way they do their job now is completely electronic through the new integrated system. However, before the new system, their roles and tasks were mostly paper-based, except for using the computer to enter basic data to print out Commercial Registration Certificates. Most of the participants, except for one middle manager, stated that they had easier roles than before, even though they were now performing more tasks. One of their additional tasks is completing new applications for people who come to the Commercial Register Office building, and most of these clients are old or unskilled. The number of applications that need to be processed also increased dramatically after implementing the new commercial registration system. One of the middle managers (CRTN) appreciated the difference in his role since the new system had been implemented. CRTN stated: *"My role now is easier than before, no archiving, I don't do statistics reports anymore and also I can get the employee performance through the system"*. Another participant noted: *"No doubt my roles are now much better and easier than one year ago, even though I have to do more applications"*. However, there was just one participant (CMMH6) who found that the new online system was making the work more complex and he had a negative perception about the new system.

The processes for issuing Commercial Registration Certificates changed completely after the implementation of the new system. Since the new system is integrated with different public departments, a lot of requirements have been cancelled, which saves the middle managers time in reviewing and then processing applications. A number of the requirements for issuing Commercial Registration Certificates have been eliminated; for

instance, a letter from social services to prove that the applicant is not a government employee because the law in Saudi Arabia prevents public employees from establishing or conducting business. The requirement to publish the desired name of a business in one of the newspapers no longer exists. Moreover, rent contracts serving as proof of a place or location of business were not needed after the new system was introduced. Moreover, Saudisation and welfare benefit certificates are no longer required, since the new system has been integrated with the Ministry of Labour and Social Development. A letter from the Department of Zakat and income tax statements are two more important documents that have been eliminated from the new system for the Commercial Register. This means less paper has to be reviewed by the middle managers, which has made the process much easier and given them more time to do other tasks. This change in work practices is illustrated in Table 21. This is not just easier for the public employees – it is also much easier for clients, who were previously required to provide a great number of documents. As mentioned earlier, there are two ways to issue a Commercial Registration Certificate: (i) the fully-automated way, which takes just 180 seconds, and (ii) the semi-automated way. For more details, see Figures 6 and 7 above.

Table 21: Before and after the CMUA (CRO)

Participants	Role of the person		Process	
	Before implementing the new system	After implementing the new system	Before implementing the new system	After implementing the new system
Commercial Register Office middle manager	Most of the middle managers interviewed were responsible for issuing and modifying Commercial Registration Certificates. Two of the middle managers were doing extra tasks, namely, cancelling certificates. There was one participant who was responsible for approving new trade names before issuing the certificates.	Most of the middle managers have similar responsibilities and most mentioned that they now had easier roles, except for one middle manager who found the new system disruptive.	All the middle managers interviewed agreed that the process before implementing the new e-government system was long and a lot of effort was needed to issue Commercial Registration Certificates.	All the participants agreed that the process after implementing the new system is faster, shorter and there is no need for clients to come to the ministry in person. Moreover, there is no need for archiving or using paper anymore.

The following sections present the adaptation strategies of all the middle managers who participated in this case study.

4.2.3.2. First adaptation strategy - benefits maximising

The analysis of the Commercial Register Office data showed that three of the six middle managers' adaptation strategies were mainly to maximise the expected benefits from the system recently implemented in their office (participants CRTN, CMMN2 and CMMM3). This section presents and explains the evidence found that these participants were trying to obtain the greatest benefits from the system (benefits maximising strategy). This section also presents two outcomes: one is a new outcome that has not been presented in the CMUA and might be added to it, which is "seeking more enhancement", and the other already exists in the CMUA: "increased efficiency and effectiveness".

One participant who exhibited this strategy was CRTN. He welcomed the new system once he heard about it. He thought it was an important system that would help him a great deal, as indicated in Table 22 in quotes 1 and 2 below (i.e., opportunity) and he found that the new system is better and faster than the previous one.

Table 22: CRTN - coping model of user adaptation

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work, technology and self	Benefits maximising	Increased efficiency and effectiveness (Q7, Q8 and Q9)
<p>(Q1) That was an excellent idea, we were struggling in the Commercial Register with the queues of clients who want to be served, so when I heard about the new electronic service, I was saying this is something we have really needed for a long time.</p> <p>(Q2) I was hoping that the ministry would launch the system as soon as possible, even if there were some issues that we were going to face – you know, facing some difficulty is expected.</p>	<p>(Q3) I was confident that I could overcome and reduce any side effects (e.g., if the system was complicated, I could learn it, I could handle more applications and I could handle the shock of the employees when they started using the system) (self and technology).</p> <p>(Q4) I was sure the new system would change everything here. As I said earlier, there will be no more queues full of clients anymore, which is amazing. Nowadays, when you compare the situation with one year ago, there is a big change. I can now manage my tasks effectively and faster, while before it was impossible to do any tasks that I was assigned to because a lot of people were waiting outside my office to be served (work).</p>	<p>(Q5) I was part of this project and I have provided many suggestions, so I'm familiar with the new system, except for some new improvements by the developer. These surprise me sometimes, but with a little practice I can adapt within a short time.</p> <p>(Q6) I have to adapt to it; I have no choice. We are providing a public service so we don't have a choice to say no, even if I want to say no, which is not true as that would affect my reputation here. So I was training myself with the demo version and the new process every day to be ready and look professional in front of my employees. I also did this so I wouldn't be surprised by the new system when it was launched and delay the work that I was supposed to perform just because I didn't know how to use the new system.</p>	<p>(Q7) Yes, I feel I'm faster than before, I'm specialised now to review the trade names. The system has also reduced errors and it has impacted work positively. Until today, we were suffering from mistakes from the old manual work. The system has controlled that very well.</p> <p>(Q8) The system has shortened the process and the time for reviewing applications, so now I can approve many more trade names than before.</p> <p>(Q9) They pay me good overtime if I process the applications remotely over the weekend, which is something that didn't exist before the system, for me this is really beneficial.</p>

Quote 3 in Table 22 indicates that CRTN had control over the IT event (the new e-government system) and, in particular, control over himself and the technology, since he has the ability to learn a new system and increase the throughput. He felt that he had control over the work because his routine would change for the better and he would be able to manage his tasks more effectively, as indicated in quote 4 (i.e., high control over the situation).

In relation to adaptation strategies, CRTN's strategies were mainly problem-focused and towards taking full advantage of the new system for the Commercial Register service. His strategies towards adaptation were directed at himself and the technology. At the beginning, and before the launch of the system, CRTN was trying to learn the system quickly by training himself with a demonstration version (quote 6). Moreover, when the developer made some changes to the new system (the Commercial Register service) CRTN had no problem with learning quickly (quote 5). This indicates that this participant's adaptation strategies were mainly to maximise the benefits from the new electronic system (i.e., a benefits maximising strategy).

With respect to the outcomes, CRTN stated that he was working more quickly than before since the application had been implemented (i.e., increased efficiency) and his work had fewer mistakes (i.e., increased effectiveness), as indicated in quotes 7 and 8. According to CRTN in quote 9, the system allowed him to earn more money compared with the previous situation, which is favourable for him.

Another participant who exhibited a benefits maximising strategy was CMMN2. He was very welcoming of the new system and looked at it positively, as indicated in quotes 1, 2 and 3 (i.e., opportunity) in Table 23 below. His feeling when the new system was introduced was that he had good control over the situation, particularly with regard to his capability to learn and to handle the new system, as shown in quote 4 (i.e., high control over self and technology) and to change the work routine, since using the new system to

perform applications saved him time, allowing him to do other tasks, as indicated in quote 5 (i.e., high control over work).

Table 23: CMMN2 - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work, technology and self	Benefits maximising	<ul style="list-style-type: none"> • Increased efficiency and effectiveness (Q10, Q11, Q12, Q13 and Q14). • <i>Seeking more enhancement</i> (Q15).
<p>(Q1) I was not worried at all about the new system; it is a good step to have a new system. When I first worked in the Commercial Register, I was afraid of the old system, because I was seeing so many queues, and old computers for printing and manual work. The way of delivering services was outdated. I was really happy with the new system because we won't see the citizens coming and standing in queues and this is what I really want.</p> <p>(Q2) I think that no one will hate new technology, as it makes life easier in the workplace.</p> <p>(Q3) I was really excited because I can improve my skills, avoid long queues, and I will get rid of paper. It was very hard to work using papers and files. In the new system, approval and rejection is through the website and if there is a mistake, it will be the customer's mistake.</p>	<p>(Q4) My boss told me the ministry will run some training sessions to train us on the new system, so I was telling myself there is no excuse in learning how to use it, just attend the training sessions and with a little attention I will be okay to use it perfectly (self and technology).</p> <p>(Q5) The new system has shortened the time that I spend every day reviewing applications, so I can find some time for other sub-tasks, for example, developing relationships with important people here in the ministry, you know how it works here, it is not a secret (work).</p>	<p>(Q6) In the beginning, I wanted to learn quickly, first to stop processing and reviewing paper-based applications and then to satisfy myself and my boss.</p> <p>(Q7) At that time I was asking a lot of questions, first of all to learn and then to avoid making mistakes, but now I'm totally fine with it.</p> <p>(Q8) Learning the system is so easy. You can understand how it works in a few hours if you give some attention to the trainer. However, it is a big responsibility if I make any mistake, so I need to pay more attention when I work on the new system.</p> <p>(Q9) There was no difficulty at all, I have adapted to it so easily. The new system is clear, but you need to practise it and ask if you are not certain about something.</p>	<p>(Q10) The electronic services made it easier because there are no papers anymore. The new electronic system has also shortened the time of processing the applications, which is great.</p> <p>(Q11) I can check and process 60 applications in an hour. The paper-based work time is not even close to this at all.</p> <p>(Q12) The new system has greatly changed the way I work; it has changed everything positively and even my mood has changed. I'm happier than before. Work used to be exhausting; by 2pm I was not able to take any more. It even affected my mood and relationships with people, but the new system has made life easier.</p> <p>(Q13) Some employees used to be better than me, but now I feel I'm better than them. That is why I'm supervisor now. The system improves my skills and increases my ability to do better work. The top management decided to assign me to a new service, which is the cancellations on the Commercial Register, besides issuing commercial registers that need a licence for commercial activities. My name</p>

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work, technology and self	Benefits maximising	<ul style="list-style-type: none"> • Increased efficiency and effectiveness (Q10, Q11, Q12, Q13 and Q14). • <i>Seeking more enhancement</i> (Q15).
			<p>(Q13 continue) now is known in all the branches, so when a high position is available, my name will be in their minds.</p> <p>(Q14) The new system has reduced the number of mistakes that I used to make frequently.</p> <p>(Q15) <i>Regarding your question, I'm looking for more improvements in the system so that we don't go back to the miserable way of work. With more improvements, we won't see a single citizen coming to our building, which will increase my performance.</i></p>

In respect to adaptation strategies, CMMN2 was trying to learn the new Commercial Register system as fast as he could to satisfy himself and his managers, as indicated in quote 6 (i.e., getting promoted or being paid overtime). Moreover, he was trying to learn quickly by paying attention in the training sessions and by calling the help desk to increase the quality of his work, as shown in quotes 7 and 8 (e.g., making fewer errors). He mentions in quote 9 that the new system is easy to learn and adapt to and all he needed at the time was to practise the system to be more familiar with how to use it. Based on the initial and secondary assessments, CMMN2's adaptation strategies were completely problem-focused and oriented to taking full advantage of the new Commercial Register system in order to maximise his personal benefit (i.e., get promoted and improve his computer skills, stop processing paper applications, etc.), as well as the opportunities that were offered by the new system (i.e., benefits maximising).

With regard to the outcomes, CMMN2's performance and efficiency increased and the work became easier for him, as indicated in quotes 10, 11, 12, 13 and 14 (i.e., increased efficiency and effectiveness). *Surprisingly, the data also show evidence that CMMN2 has even asked for more enhancements of the new system in order to be more productive, as shown in quote 15 (i.e., seeking more enhancement). This outcome is not catered for in the existing CMUA model. CMMN2 stressed that he is now well known in the ministry and this could benefit him greatly. He also compared the situation before and after the new system: he shows how happy he is after using it and how miserable the situation was before.*

One more interviewee who also exhibited a benefits maximising strategy was CMMM3. He positively appraised the new Commercial Register system and felt it was a chance for him to be better and for the work to be easier, as indicated in quotes 1 and 2 (i.e., opportunity) in Table 24 below. CMMM3 found the implementation of the new

Commercial Register system to have been a positive idea for him. CMMM3 felt that he had good control over the work (e.g., increased flexibility and better work organisation), as well as over himself (i.e., learning the system quickly), as shown in quotes 3 and 4 (i.e., high control over work, self and technology).

Table 24: CMMM3 - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work, technology and self	Benefits maximising	<ul style="list-style-type: none"> Increased efficiency and effectiveness (Q8). <i>Seeking more enhancement (Q9)</i>
<p>(Q1) I felt it would be a fantastic idea! It will make it easy for both the clients and myself.</p> <p>(Q2) Change to be better in work is necessary. I was sure if I don't keep up with new technology, I will never compete with others. I need to accept any change that would make me better and improve the workplace environment.</p>	<p>(Q3) With a little effort from the employees, including myself, of learning how the system works, the work would be better and faster. I was saying to myself that if we learn it as fast as we can, then we will not see a lot of clients coming here and handing us lots of papers (self).</p> <p>(Q4) The new system has increased flexibility here and it made me more organised in doing my jobs (work).</p>	<p>(Q5) For me, learning and using the system was so easy; it is even easy for those who have no skills using computers. After using it for a while, it becomes extremely easy.</p> <p>(Q6) It wasn't real training, it was just a 2-hour presentation to show us how to use the system and what kind of benefits we can get from it. I also asked one of the trainers to send the presentation slides to me to study them if I needed to. They launched a demo version before launching the real new system, which was a great opportunity to learn quickly.</p> <p>(Q7) The way we work now is so different. For example, we got rid of papers, which had been easy to lose. When I serve a client, I take a scanned copy of the original documents and go through the system to issue the commercial register. No need for lots of folders to archive papers – we have it electronically now.</p>	<p>(Q8) It is a much better performance; the new system has made things easier and saved energy. In paper-based work, things were exhausting; you collect documents and may go up and down. Before the new system, the time it took to serve a client was 15-20 minutes, but now through the new system I can serve a customer in 2 minutes.</p> <p><i>(Q9) As a supervisor of the reception desk, I'm trying to contact the developer through my boss to improve the system; since we are the users of the system, we know what needs further improvement.</i></p>

CMMM3's adaptation strategies are completely problem-focused and oriented towards maximising the benefits of the new Commercial Register system. CMMM3 was trying to learn the new Commercial Register system quickly in order to gain the most advantages from it, as indicated in quote 5. He also wanted to learn quickly by training himself on the demonstration version (quote 6). The new system allowed him to change the work routine positively, as indicated in quote 7.

With respect to CMMM3's outcomes, he was able to increase his performance when he used the new Commercial Register system (quote 8) (i.e., increase efficiency and effectiveness). *Moreover, he asked for more improvements in the newly implemented system, since the system is mandatory and is the only way to perform the applications (quote 9). That means that any shortcomings in the new system will lead to greater complexity of the tasks (i.e., seeking more enhancement). This a new outcome not currently presented in the CMUA model and could be a potential element.*

4.2.3.3. Second adaptation strategy - disturbance handling

The data analysis revealed that two of the six middle managers (CMMY4 and CMMA5) had mainly disturbance handling adaptation strategies, but with different outcomes. They both appraised the new system negatively (i.e., threat). However, both participants had control over their work situation (i.e., high control over self, technology and work). Regarding the outcomes, both participants tried to minimise the negative consequences of the new electronic system. They were also successful in increasing their efficiency and effectiveness in the workplace. However, CMMY4 had one more outcome, which was to seek more IT enhancement. The following paragraphs present more in-depth details about both participants.

As referred to above, one middle manager who exhibited a disturbance handling strategy was CMMY4. In the beginning, CMMY4 was afraid, since his skills in using computers were not very good, as mentioned in quotes 1 and 2 (i.e., threat) in Table 25. However,

CMMY4 felt that he had some control over the situation. He showed great enthusiasm in learning the new system (i.e., control over himself) and over the technology and the work by learning the system to change the way he does his tasks (quotes 3 and 4).

With regard to adaptation strategies, CMMY4's were both emotion- and problem-focused. CMMY4's emotion-focused strategies operated in trying to convince himself that the new system represented the future and the services provided by the ministry needed to keep pace with the development in Saudi Arabia. He gives examples, such as online banking and the electronic service provided by other public departments (quote 5).

Table 25: CMMY4 - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Threat	High control over work, technology and self	Disturbance handling	<ul style="list-style-type: none"> • Minimising negative consequences (Q8). • Increased efficiency and effectiveness (Q9 and Q10). • <i>Seeking more enhancement (Q11).</i>
<p>(Q1) Because I'm not an expert in using computers, I felt that I might face a hard time, but my friends and my boss were telling me it would be an easy system and we would learn it quickly.</p> <p>(Q2) I was a little afraid and very careful because it was something new and I don't know much about computers and software.</p>	<p>(Q3) We couldn't continue manually [paper-based], and I wanted to learn it in order to benefit myself and be more efficient, even though it was not going to be an easy task for me (technology and self).</p> <p>(Q4) You know, the difficult part was meeting the public. Citizens were coming to the building, a lot of people were coming here and you needed to check lots of papers. Thank God, this situation has gone. Now we have clients coming in but I just take original papers (e.g., licences, national) scan them and attach them to their application, so I don't keep papers at my desk at all. This is what I would call it a very big change in work (work).</p>	<p>(Q5) I was certain that this is the ministry's future and you can see here in Saudi that everything is electronic via the Internet, like online banking, government services, etc., so I'm part of this community and I need to do the same and learn the new future.</p> <p>(Q6) There were so many things that I didn't understand at the beginning and I was asking my colleagues a lot so that I could learn.</p> <p>(Q7) At the beginning, it was a bit hard because I'm not quite familiar with computers and software, but after the training sessions that I had and the help from other employees, it became so easy to deal with the new system.</p>	<p>(Q8) At the beginning, it was a bit hard because I'm not quite familiar with computers and software, but after the training (3 days) that I had and the help from other employees, it became so easy to deal with the new system.</p> <p>(Q9) The new system has definitely increased my efficiency; I may handle up to 75 applications per day.</p> <p>(Q10) I personally benefited a lot from the system. I didn't know much about computers before. It helped me to develop my skills. The new system is more accurate and protects me as an employee from making mistakes.</p> <p>(Q11) <i>The system needs to be enhanced a little bit by adding some new features, for example editing address, editing trade name, post office code, phone number, etc. If we add these features, I think you won't see many clients coming here. The IT Department told my manager that they will add these features soon for the clients.</i></p>

CMMY4 was successful in reducing the negative impact of the new system by comparing it with other services in the public and private sectors (quote 5). CMMY4's problem-focused strategies were oriented towards himself mainly by seeking training and asking his workmates in order to learn how to use computers and the new Commercial Register system, as shown in quotes 6 and 7 (i.e., disturbance handling strategies).

Since CMMY4 has successfully reduced the negative impacts of the new system, as indicated in quote 8 (i.e., minimising the negative consequences), and, after learning the system, he became more accurate and faster than before and the new system has also developed his skills in using computers, as shown in quotes 9 and 10 (i.e., increased effectiveness and efficiency). *CMMY4 has also asked for further enhancement to the system, as indicated in quote 11 (i.e., seeking more enhancement). This is a new outcome that the CMUA model does not include and could be a potential element.*

Another middle manager who exhibited a disturbance handling strategy was CMMA5. At first, CMMA5 had some fears that he would lose some of his skills, so he perceived the new system as a threat (quote 1, as shown in Table 26 below). CMMA5 thought that he had control over the situation, mostly regarding his ability to learn the new system quickly (i.e., control over self and technology), as indicated in quote 2.

Table 26: CMMA5 - coping model of user adaptation

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Threat	High control over work, technology and self	Disturbance handling	<ul style="list-style-type: none"> • Minimising negative consequences (Q6). • Increased efficiency and effectiveness (Q7 and Q8).
(Q1) I was worried that I would lose other skills, such as meeting with the public face to face and management skills.	<p>(Q2) Since I'm familiar with computers and IT, I thought that there would be no complications at all, or that I could handle them and learn it correctly right away (self and technology).</p> <p>(Q3) I was thinking that it should be better, especially in reducing the number of clients who come here and the piles of papers. I also was thinking that the new system would increase the accuracy of the work that I deliver (work).</p>	<p>(Q4) At first, there was some difficulties even after the training I got, but when I need help I ask my friends here or the help desk. I was practising gradually, so the usage of the new system became easier after a while.</p> <p>(Q5) I was working in office cubicles without meeting anyone for a long time, which is boring, but anyway, I need to work and there is no time for complaining. However, I don't feel like that anymore.</p>	<p>(Q6) I was working in office cubicles without meeting anyone for a long time, which is boring, but anyway, I need to work and there is no time for complaining. However, I don't feel like that anymore.</p> <p>(Q7) For sure, I'm faster now than before and produce more accurate work. My performance and achievement is much better I think.</p> <p>(Q8) I can find what I want by pressing a button; I don't need to go and open old files and find it manually. Also, the system and how it is organised helps me to be much more organised in handling other work as well.</p>

Moreover, CMMA5 felt that the system would change the way he worked, since using it would make him more accurate (i.e., control over work), as shown in quote 3.

With regard to adaptation strategies, CMMA5's were both emotion- and problem-focused. CMMA5's problem-focused strategies were completely oriented towards himself and were about practising the new system and seeking help from other employees and the help desk in learning the system (quote 4). His emotion-focused strategies were mainly to minimise the negative perception of the situation by trying to convince himself that there was no time for complaining, as it was time to work (quote 5).

Since CMMA5 was successful in reducing negative perceptions about the new system (i.e., working alone in a cubicle, as shown in quote 6), this reflected positively on his outcomes (i.e., minimising negative consequences). He was successful in increasing the benefits of using the new system to be more efficient and effective (quotes 7 and 8).

4.2.3.4. Third adaptation strategy - self-preservation

The data analysis has shown that one of the six middle managers interviewed in this case (CMMH6) was found to have an adaptation strategy of self-preservation. He assessed the new electronic system in two stages and his adaptation strategies resulted in two outcomes: (i) exit, and (ii) maximising the negative consequences of the IT event, which is a new outcome that has not previously been addressed in the CMUA model *and could be a possible element that can be added to the framework. At the beginning (when the new system was just an idea), when the new system was introduced, CMMH6 had no fears, but neither did he feel the new system would be a good opportunity, as mentioned in quote 1 in Table 27 below (i.e., neutral primary appraisal).*

Table 27: CMMH6 - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
<p><i>Neutral</i></p> <p>↓</p> <p>Threat</p>	<p>Low control over work, technology and self</p>	<p>Self-preservation</p>	<ul style="list-style-type: none"> • <i>Maximising negative consequences of the IT event (Q8).</i> • <i>Maximising negative consequences of the IT event (Q9).</i> • Exit (Q10).
<p>(Q1) <i>Thank God, I have been familiar with computing since primary school and I didn't get shocked at all about doing my job using computers. Honestly, I wasn't that enthusiastic about the system but I wasn't afraid either. At that time.</i></p> <p>↓</p> <p>(Q2) I didn't realise what we would face in future and you can see how it looks outside this office. People here in Saudi are not yet ready for such electronic services.</p>	<p>(Q3) I thought the training would be practical and comprehensive, so that I could understand it and detect any mistakes, but it wasn't like what I thought it would be (self and technology).</p> <p>(Q4) Let me talk about the system. I expected that the system would reduce the number of people who come here to meet with me face to face, but unfortunately it did not reduce the number of clients. It has even added more tasks for me (work).</p>	<p>(Q5) I only got 2 hours of training with the developers to explain the system and their plans and so on. I'm talking about myself – I had no real training, they sat with us for just 2 hours and then they disappeared. Anyway, I had to use the system once they deploy it; there is no way to serve clients without it. I actually used what I'm required to do for issuing and renewing the Commercial Registers. I do have access to other information, but I don't need to see this.</p> <p>↓</p> <p>(Q6) Developer: "There are still people who are complaining so much even while they are learning how to use the new system, they say that they don't want things to be electronic. One of the people, his name is (CMMH6) and he is complaining a lot! And nothing is pleasing him. Over the time when we deployed the new system,</p>	<p>(Q8) <i>Honestly, it should give better results, but with the slowness in the new system it didn't change anything at all. It is the same as before, or might be even worse. The Ministry of Commerce says that the new system has enhanced and improved, but for me, it is the same and we still have lots of people coming here.</i></p> <p>↓</p> <p>(Q9) <i>The manager of the CRO: "(CMMH6) is the most difficult employee. He knows how to use the new system and deals with it perfectly, but he keeps complaining about it."</i></p> <p>(Q10) I would say yes, the slowness of the system is making things hard here; you can't imagine the problems that I face with clients when I say you need to have a seat in the sitting area, they start complaining, etc. Personally, I did not face such</p>

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
<p><i>Neutral</i></p> <p>▼</p> <p>Threat</p>	Low control over work, technology and self	<p>Self-preservation</p>	<ul style="list-style-type: none"> • <i>Maximising negative consequences of the IT event (Q8).</i> • <i>Maximising negative consequences of the IT event (Q9).</i> • Exit (Q10).
		<p>(Q6 continue) he was fighting for not using it, but he has no choice, learn it or leave the Commercial Register Office. So now he is better than before but still he keeps complaining and says negative things that might affect his colleagues.”</p> <p>(Q7) The manager of the CRO: “(CMMH6) is the most difficult employee. He knows how to use the new system and deals with it now perfectly, but he keeps complaining about it.”</p>	<p>(Q10 continue) things when it was paper-based work. Moreover, with no full integration with other government departments, I would also say yes. In manual work, the client comes once with all the requirements and he or she doesn’t have to come again; for me, this is more efficient than the new system.</p>

This feeling is not referred to in the CMUA model, which makes it a newly discovered primary assessment that can be called “neutral”. Also in the beginning, CMMH6 had little control over himself, since he was unwilling to learn the new system even though he had a training session about the new Commercial Register system, as shown in quote 3 (i.e., low control over self and technology). Quote 4 shows that CMMH6 did not try to adapt himself to the work routine caused by the new system, which means, as in the model, that the participant had little control over the work (i.e., low control over work). This happened when CMMH6 was thinking that the new system was just an idea and would never be real (according to the developer representative).

With respect to adaptation strategies, CMMH6’s efforts in the first stage (after he knew that the system was a reality) were completely emotion-focused because, at some point, CMMH6 accepted using the system, since by not using it clients would not be served, but some negative ideas about the system started to take place in his mind. CMMH6 tried to attend a training session. However, this training could not persuade him to change his mind about the negative ideas he had about the new system, and he started to complain he had not received enough training. He has used the new system at the minimum level without caring about the rich information that the new system could offer him, as indicated in quote 5 (i.e., self-preservation). This resulted in his seeking to *maximise the negative consequences of the IT event (quote 8)* and then reassess the new system as a threat instead of neutral.

At the point at which CMMH6 realised what was going to happen (the implementation of the new electronic system), his primary assessment changed and he started to feel that the system was a threat to him. CMMH6 argued that people are not yet ready for this type of electronic system because of the culture of the society (quote 2) but, in reality, he was losing power. His control over the situation remained the same.

Regarding adaptation strategies, the moment after CMMH6 knew that the new system was real, he was completely against using the new electronic system in the Commercial Register Office because it would reduce some of the power he was enjoying with the old way of working (as the developer representative stated). However, since there was no choice for him, he had to use the new system or leave. It was very important for him not to be replaced or relocated (quote 6). According to the developer at the Commercial Register Office, CMMH6 was able to use the new system perfectly after a while; however, he did this with some complaining about the usage, which indicates that CMMH6 was trying to put up barriers to using it (quotes 6 and 7) (i.e., self-preservation strategy).

In relation to the outcomes, CMMH6 continued to complain about the new system, as indicated in quote 9 (i.e., maximising the negative consequences of the IT event). CMMH6 admitted that he feels that working with a paper-based system was better than the new approach, as indicated in quote 10. This would suggest that if using the system were not mandatory, CMMH6 would escape from it and continue to use the old system (i.e., exit). CMMH6 had no choice left to him; he needed to use the new system since it is mandatory and he wanted to keep his job and not be relocated to another city or place.

4.2.4. Case summary

This case presents the qualitative findings of interviews conducted with middle managers at the Ministry of Commerce and Industry, particularly the Commercial Register Office. Six middle managers participated in this case study. Three of the middle managers engaged in a benefits maximising strategy, two of them exhibited a disturbance handling strategy, and just one middle manager engaged in a self-preservation strategy. There is evidence to suggest that three new findings can be added to the CMUA framework to enhance it: (i) a new primary assessment described as *neutral*, (ii) a new outcome

described as *seeking more IT enhancement*, and (iii) a new outcome described as maximising negative consequences.

The next section discusses case number two in the research study: the Department of Corporate Services.

4.3. Ministry of Commerce and Industry - case number two

4.3.1. Introduction

This section presents the analysis and findings of the case study conducted in the Department of Corporate Services. This department provides an electronic service that started in December 2014. The materials presented in this case study start with the case context in section 4.3.2. Then, the department context is presented in section 4.3.2.1. Following this, information about the public service under investigation is discussed in section 4.3.2.2 and the participants' profile is presented in section 4.3.2.3. The data analysis is then presented in section 4.3.3. This section includes the findings: the situation before and after the CMUA is presented in section 4.3.3.1, benefits maximising is presented in section 4.3.3.2, and disturbance handling in section 4.3.3.3. The case summary is then presented in section 4.3.4.

4.3.2. Case context

This case is also situated in the Ministry of Commerce and Industry in Saudi Arabia, which was described earlier in section 4.2.2

4.3.2.1. Department context - Department of Corporate Services

This section presents general information about the tasks for which the Department of Corporate Services is responsible. These tasks are: (i) routine work; (ii) studying other public organisations' inquiries; and (iii) participating in studies that are related to the work of the Department of Corporate Services.

The Department of Corporate Services is one of the departments within the Ministry of Commerce and Industry. There is much routine work that the department is responsible for performing regularly. This routine work is as follows:

- Routine departmental work to serve applicants who want to establish a special type of company, namely, a limited partnership, limited by shares, joint-stock, a general partnership or a limited liability company.
- Processing applications for setting up Saudi professional companies (audit firms, consultants, etc.) or multinational companies, including non-Saudi companies that have Saudi partners.
- The department is also required to refer partners who want to establish a company to the various public organisations, such as the Notary Public, the Capital Market Authority and the Commercial Register Office.
- Another of the department's responsibilities is modifying the contracts of any type of company. The department completes the applications to liquidate companies, whether there is a request from the court or it is voluntary at the company's request.
- Completing and performing mergers and acquisitions applications.
- Studying and approving requests for holding the constituent assemblies of corporations, as well as the general ordinary/non-ordinary assemblies, verifying their programmes for such assemblies and representing the ministry.
- Studying and reviewing the applications for membership of the boards of directors of joint-stock companies, then referring them to the Minister of Commerce and Industry for approval.
- Inspecting and analysing all the financial statements of joint-stock companies under Saudi corporate law.
- Inspecting and analysing all the financial statements of the Chambers of Commerce in the country.

- Reviewing and completing the steps for establishing new company requests or transformation requests by individual companies to any other type of company, or from one type of company to another, as well as taking care of all requests by established or transformed companies.

In addition to its routine work, the Department of Corporate Services responds to a large number of inquiries from other public organisations or other parties. Examples of the inquiries that the department receives are as follows:

- Responding to inquiries from the media and other countries about Saudi corporate law.
- Responding to enquiries from business people about a certain process or processes that may be unclear to them.
- Cooperating with and responding to enquiries from the Zakat and Income Authority about the financial statements of certain companies or certain regulations and terms.

The department is also responsible for participating in studies related to its work, such as:

- Discussing Saudi corporate law with related public departments and modifying the law.
- Studying and discussing disagreements that may arise between business partners and offering solutions to these disagreements.

The service under investigation in this case is the establishment of new companies. This service is discussed in detail in section 4.3.2.2. The next section discusses the interviewees' profiles.

4.3.2.2. Public service - Establishment of New Companies

This section presents the methods for establishing new companies for which the Department of Corporate Services is responsible. These two methods are: (i) the fast contracts method, and (ii) the detailed contracts method.

The Establishment of New Companies service (i.e., contracts between partners to start a new company) is provided by the Department of Corporate Services. This service was provided by all the ministry branches across Saudi Arabia. However, this service transformed to being electronic at the end of the fourth quarter of 2015. Today, clients who need this service can be served through the Internet anywhere at any time across Saudi Arabia.

There are two ways to establish new companies through the Department of Corporate Services. First, there are the fast contracts, which involve a fully-automated system with no need for any human interaction. Using this method, clients need to sign up for an account by visiting the Department of Corporate Services website. Then, they must choose the standard contract option and complete the online application without any involvement from the department's employees. After completing the online application, approved applications are referred directly to the notary to legalise the contracts. The system then directly issues an invoice for the fees (i.e., fees for publicity, membership of the Chamber of Commerce and for the Commercial Registration Certificate are all included in one invoice). The next step is that the clients need to pay these fees, whether by going to a bank branch with the reference number on the invoice or by paying the fees online. Clients can then complete any of the other required steps (e.g., being issued with a Commercial Registration Certificate. Figure 8 illustrates the process involved in this method.

The Establishment of New Companies - Fully Automated method

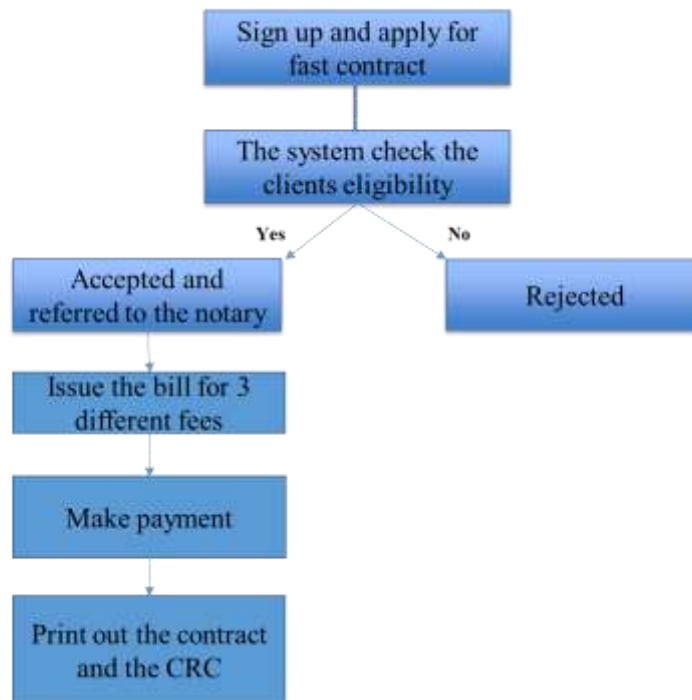


Figure 8: Processes for establishing new companies (fully automated)

The other method of establishing new companies needs human interaction to complete the processes. The department calls this method the detailed contracts method, because this kind of contract has special terms and conditions between the partners. In order to classify a contract as a detailed contract, it has to meet certain conditions, such as: (i) the contract contains foreign capital, which needs approval by the Saudi Arabian General Investment Authority; (ii) cash and non-cash capital; and (iii) activities that require licences or prior approval by other government departments (Certified Public Accountant license, Certified Financial Analyst certification, etc.).

Using the detailed contracts method, employees need to review and study all the details, such as the terms and conditions that will govern the work of the company. Then, the employee concerned makes a decision by approving and then referring the application to the notary, or rejecting it and notifying the client(s) to complete the other requirements and apply again. In this method, clients need to sign up for an online account and then log

in, choose the detailed contracts option, then complete the application. Figure 9 illustrates the processes of issuing detailed contracts.

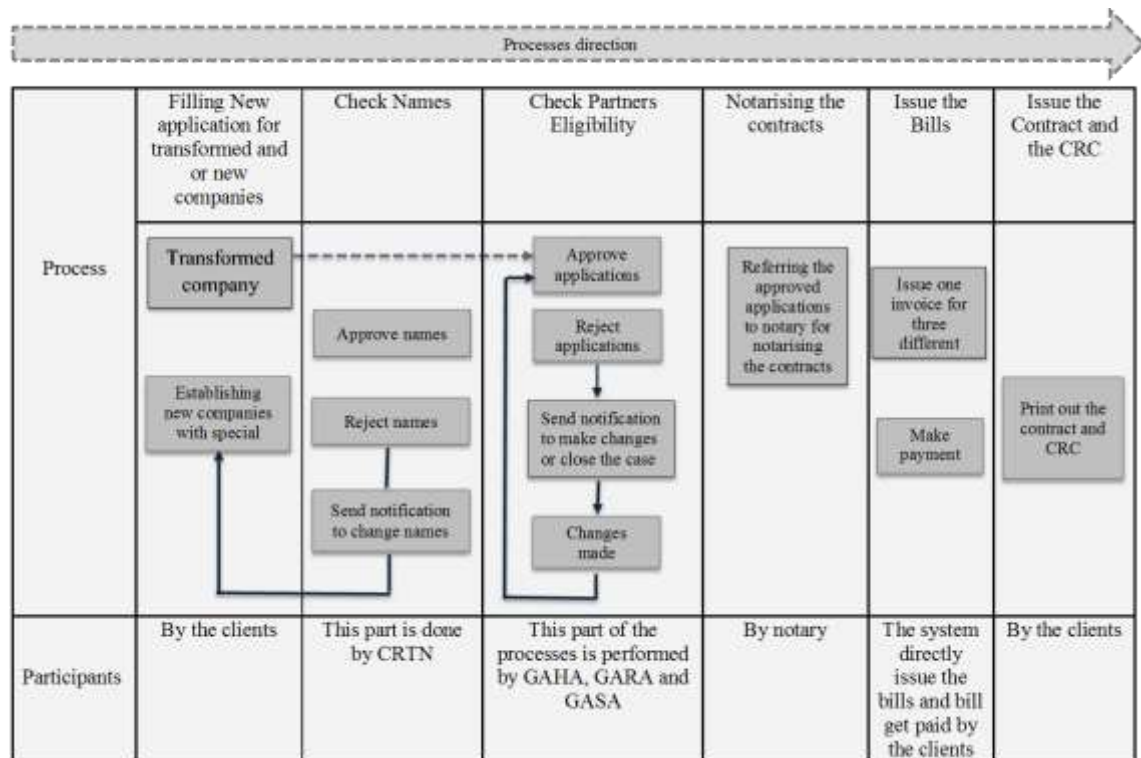


Figure 9: Processes for establishing new companies (detailed contracts)

4.3.2.3. Participants' profiles

Three participants were interviewed in the Department of Corporate Services to examine their adaptation strategies when a disruptive IT event (i.e., an e-government application) occurred in their workplace. The participants were from different managerial levels and all were considered middle managers, in agreement with the definition in section 2.7.4.

Each participant was asked to evaluate his IT capability before the implementation of the new system by choosing from a 1-5 scale (see Table 19 in section 4.2.2.3), where 1 refers to extremely low knowledge about how to use technology tools and 5 refers to high knowledge of using technology tools. GAHA and GARA scaled themselves as knowledgeable in using technology tools (computers, software, etc.) before implementing the new electronic system, whereas GASA scaled himself as having low knowledge.

Two of the participants (GAHA and GARA) were working in the private sector before joining the Ministry of Commerce and Industry and had, respectively, 4 and 3 years' experience working in government. The third middle manager (GASA) had 14 years' work experience in the government.

Table 28: Participants' profiles

Code	Unit	Education level	IT capability Scale 1-5	Experience	Use of the system and tasks
GAHA	Department of Corporate Services	Master's degree	4	4 years	Yes, to review applications for establishing new companies' "contracts".
GARA		Bachelor's degree	4	3 years	Yes, to review and study applications and to communicate with clients.
GASA		2-year degree	2	14 years	Yes, to review and study applications of existing companies that want to modify their contracts.

4.3.3. Analysis of the second case study – Department of Corporate Services

This section presents an analysis of three middle managers who work in the Department of Corporate Services. The analysis of the data is guided by the CMUA. Each participant is analysed separately and classified by the appropriate adaptation strategy as discussed in the CMUA.

The data analysis of the three middle managers uncovered two adaptation strategies:

- Benefits maximising
- Disturbance handling

4.3.3.1. Before and after the CMUA

This section discusses the roles of the participants both before and after the implementation of the new system for establishing new companies. This section also presents the processes for establishing new companies before and after the implementation of the new system.

All the jobs that the middle managers performed in the Department of Corporate Services were completely paper-based before implementing the new system. The tasks they perform in this department are as follows: (i) establishing new companies; (ii) transforming existing individual companies; and (iii) modifying new contracts. Before implementing the new system, the middle managers in this department did not use computers in their work, except for writing communication letters to other departments both inside and outside the Ministry of Commerce and Industry.

All three middle managers who were interviewed had similar roles before and after the implementation of the new system, but of course had different ways of performing their roles (computerising the work). All three middle managers expressed the opinion that their roles after the implementation of the new system were better than before; although the number of applications is greater than before, this is not a great concern for any of them. The number of applications they receive now is much larger than with the old system (paper-based applications). According to GARA, the work after implementing the new system was much easier. He stated: *“There is a lot that has been changed to a better way and definitely my role now is absolutely much easier than before. I do everything electronically without seeing the clients in front of me and wasting my time explaining everything to them. The new system has saved both my time and the clients’ time”*.

The processes of establishing new companies were, according to the participants, lengthy and took a great deal of effort. The integrated system has helped all the participants to

reduce the time they spend processing applications, since a lot of requirements have been cancelled. Before the system was implemented, the processes were as follows:

- Clients completed an application, then provided all the required documents (which might take days).
- Everything in the application was reviewed (e.g., the terms, conditions and other requirements).
- The clients were sent to the notary to make their contract legal, and all the partners were required to attend with the notary.
- Clients returned to the ministry to obtain a letter for publishing the contracts in new papers.
- Capital was deposited into the company bank account and the bank certificate brought to prove this to the ministry.
- The contract was then issued.

GARA stated: *“The processes were so long and it took days to finish just one application. However, with this new electronic service, the amount of time that I spend reviewing one application has reduced a lot”*. Figures 8 and 9 above illustrate the process after implementing the new system.

Table 29: Before and after the CMUA (DCS)

	Role of the person		The process	
	Before implementing the new system	After implementing the new system	Before implementing the new system	After implementing the new system
Middle managers in the Department of Corporate Services	Two of the middle managers interviewed were responsible for reviewing, studying and then approving new companies' contracts. The third middle manager was responsible for modifying the contracts after the establishment.	All three middle managers had the same responsibilities, but, as they stated, they had much easier roles after the implementation of the new system.	The three middle managers mentioned that the processes before implementing the new electronic system were very long and needed persistent efforts to perform just one contract.	All the interviewees stated that the processes after implementing the new system were much faster and a lot of requirements had been cancelled; there was also no need to meet clients anymore.

4.3.3.2. First adaptation strategy - benefits maximising

This section presents the analysis of the data for two of the middle managers in the Department of Corporate Services (GAHA and GARA). These two participants were trying to obtain the most benefits (a benefits maximising strategy) from the new system deployed recently in their workplace. Two outcomes resulted from the data analysis. The first outcome already exists in the CMUA: increased efficiency and effectiveness. The second outcome is new and has not previously been presented in the CMUA: *seeking more enhancement*.

The data analysis shows that one middle manager who exhibited a benefits maximising strategy was GAHA. He welcomed the new system ever since he heard about it (quote 1 as shown in Table 30 below) in the meeting with the minister and other employees in the ministry, which occurred in the middle of 2013. He was supportive of the new system

reducing the errors that he and other middle managers made when reviewing contract terms and other requirements, as mentioned in quote 2. He also expressed the importance of the new system and how it had been needed for a long time, as indicated in quote 3 (i.e., opportunity).

Table 30: GAHA - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work, technology and self	Benefits maximising	<ul style="list-style-type: none"> Increased efficiency and effectiveness (Q8 and Q9). <i>Seeking more enhancement (Q10).</i>
<p>(Q1) I was so happy at that time; it is a step forward for me personally and for this department.</p> <p>(Q2) Honestly, I was supportive of this idea because it will solve the human errors in the contracts, which was a common mistake in our work here.</p> <p>(Q3) It is really something that we have needed for a long time.</p>	<p>(Q4) It is very easy to learn it if you want to. I heard from the developers that reading the manual is more than enough to handle the new system, so it wasn't even an issue for me (self and technology).</p> <p>(Q5) I felt this system would change the work here to be better and more professional, and this is what happened later on. The technology has changed a lot in my work, in a positive way. Now I can allocate the right time for all the tasks that I'm in charge of, but before the system it was so messy that employees and clients were always coming here to my office to ask questions if there was something unclear for them. I would say 90% of that has gone, which is fantastic (work).</p>	<p>(Q6) There was no difficulty at all; I was one of the team that was meeting with the developer almost every couple of days to discuss our needs in the new system. Before launching the new system, I was also responsible for testing the demo version, which gave me more vision of how it works. I was testing it every time, even when I was at home, to make sure all was good before we ran the actual system. As you see, that was a great opportunity to learn the new system.</p> <p>(Q7) The new system helped me to manage this unit very well and focus on the most important things, now I can check where each application is and in which stage and who is performing this application.</p>	<p>(Q8) My performance is 100% better than before. Also, the performance of the employees here is now greater than before. This is a good achievement for me personally, and for the unit as a whole. I can say the top management are happy about our achievement.</p> <p>(Q9) The system absolutely helped me to be much faster and more accurate, there is no doubt on this.</p> <p><i>(Q10) I'm looking forward to the day that all the services we provide here are online.</i></p>

GAHA had a lot of control over the situation (i.e., the IT event, which in this case is the newly implemented system for establishing new companies), as shown in quotes 4 and 5 in Table 30. GAHA had a good degree of control over himself and the technology, since he had the confidence to learn the new system and to use it. He also had good control over the work, since he believed the new system would change the way he worked so that it would look very professional.

GAHA's adaptation strategies were mostly problem-focused and his goal was to achieve the maximum advantages provided by the new system (i.e., benefits maximising). His strategies towards adaptation were focused on technology and self. GAHA learned the new system quickly, since he was familiar with the system and tested the demonstration version a lot before deploying the new system to the public, as shown in quote 6. GAHA's adaptation strategies were also oriented towards the work. The new system has assisted GAHA to manage and control the department he is working in better than before, as indicated in quote 7.

The data analysis shows that GAHA's outcomes were able to increase his effectiveness and efficiency and he asked for more enhancements. As quotes 8 and 9 show, the new system has helped GAHA to increase his effectiveness (i.e., by being more accurate than before the new system) and to increase his efficiency (i.e., by being much faster than before the new system). Overall, GAHA was completely satisfied with his work performance and that of the Department of Corporate Services as a whole. *GAHA was also considering more development and asking for more enhancement to the system, since he wanted all the services provided by the department to be performed through the new system, as indicated in quote 10 (i.e., seeking more enhancement). This outcome has not been included in the CMUA model before.*

Another middle manager who exhibited a benefits maximising strategy was GARA. He positively assessed the newly implemented system in the department. He was very happy

when he heard about the new system and asked a great deal about when the ministry was going to start implementing it. He felt that the new system would help him in his work and reduce the number of clients who met every day in his workplace (see quote 1 in Table 31 below).

Table 31: GARA - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work, technology and self	Benefits maximising	<ul style="list-style-type: none"> • Increased efficiency and effectiveness (Q7 and Q8). • <i>Seeking more enhancements</i> (Q9 and Q10).
<p>(Q1) I was so happy and I kept asking when we were going to implement the new electronic system, in every meeting with my manager or with the top management here in the ministry, because I knew this new system would make my life here easier. I don't need to meet with people all day long.</p>	<p>(Q2) I was very eager to learn it quickly. Besides that, I was so excited when I was using the demo version, I was trying to help the developer's office here and the help desk to fix any issues very quickly so they could start it as quickly as possible (self).</p> <p>(Q3) It is actually a personal thing that I like to do my work using technology tools (e.g., tablets, smart phones and computers) and organising my files in different categories. Using the technology is not a big issue for me (technology).</p> <p>(Q4) Since day one, I knew that the system would change a lot in my work. I don't need to stay at my desk all day to meet so many people and explain everything for them; I can use my phone or my laptop to process the clients' applications, even if I'm not in the office (work).</p>	<p>(Q5) It was so easy for me to learn how it works; it wasn't that hard at all. I was also taking notes from the instructors in the training sessions just in case I forgot something. However, I'm so worried that I might make a mistake, you know it is a big responsibility, so until now I called the developers' help desk for help if there is something unclear and to let them know about some errors in the system, so they could fix it; the system is still new.</p> <p>(Q6) Day after day I feel I'm better than before because I got more and more familiar with the system. Now, I know everything about the online applications, I can recall all the sections in the application easily.</p>	<p>(Q7) The new system has reduced the number of errors a lot. Also, compared to the old way (manual applications), this new electronic service has reduced the amount of time that I spend on each application.</p> <p>(Q8) I feel the work now is better than before, and easier, even though I review and process more contracts now.</p> <p>(Q9) Since I have met many clients here, I know exactly what they want. There are some terms and conditions in the contracts that might be shortened or cancelled because clients don't even think about them. I know the clients very well—they just want the basic information, so if this happens I would say my performance would increase much more because the terms and conditions that I review will be less than before.</p> <p>(Q10) <i>I'm always asking for more improvements in the system.</i></p>

GARA had a good level of control over the new situation (i.e., technology, self and work). As quote 2 indicates, GARA had good control over himself, since he was very excited and willing to learn the new system quickly. He was also trying to discover the errors in the demonstration version so that the system could be deployed as soon as possible (i.e., high control over self). GARA was also confident about using new technology and he expressed that it was not hard to deal with it, as indicated in quote 3 (i.e., high control over technology). GARA also had inclusive control over his job, since he knew that the new system would change the way he worked and he was ready for this positive change once the ministry implemented the new system, as shown in quote 4 (i.e., high control over work).

GARA's adaptation strategies were exclusively problem-focused and directed towards himself and, overall, the situation in order to maximise the benefits from using the new system for establishing new companies (i.e., benefits maximising). GARA was keen to understand how the new system worked by attending training sessions and taking notes in order to be able to master the system. He stated that even now he called the developers and the help desk – not because he does not understand the system, but because making mistakes in companies' contracts is a great responsibility (quote 5). GARA mentioned that practising and using the new system every day made it easy to handle (quote 6).

Regarding outcomes, GARA stated that the newly established company system had increased his effectiveness (by reducing the number of errors) and efficiency (by reducing the time needed to process applications) in his job, even though the number of applications now was greater than before the implementation of the new system (quotes 7 and 8). *He also asked for more enhancements to increase his performance, as mentioned earlier (quotes 9 and 10).*

4.3.3.3. Second adaptation strategy - disturbance handling

This section presents the analysis of the data for one middle manager (GASA) who works in the Department of Corporate Services. This participant performed disturbance handling strategies and his outcomes are as follows: increased efficiency and effectiveness, seeking more enhancement, restoring personal, emotional stability, and the minimising of negative consequences.

As shown in Table 32 below, GASA was anxious when he first heard about the new system because he had only a little skill in how to use technology tools. He was even frightened of the management moving him to another city, as quote 1 indicates (i.e., threat).

Table 32: GASA - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Threat	High control over work, technology and self	Disturbance handling	<ul style="list-style-type: none"> Restoring personal and emotional stability (Q9). Minimising negative consequences (Q9). Increased efficiency and effectiveness (Q10 and Q11). <i>Seeking more enhancement (Q12).</i>
<p>(Q1) I was a bit scared because I'm not that good with computers and software; I just have a little skill in how to use, for example, Microsoft Word, but nothing else. So, between the decision and the implementation, I was a bit anxious because I started to hear rumours that some of us, especially those who don't have good skills, would be relocated to another city and this is something I don't want.</p> <p>(Q2) I know that the technology is something good to use but I was still worried since I don't have enough skills to handle it.</p>	<p>(Q3) After all these assurances from my brother and my boss [they convinced him if he attended the training that the ministry was planning to run he would be fine dealing with computers], I was somehow a bit relieved that if I attended the training classes, I would be fine (self).</p> <p>(Q4) Using the system is such a learning process. When you practise the new system more and more, it will become much easier with time (technology).</p> <p>(Q5) I knew the whole routine of my work would change to a better way, but as I said, I was a bit worried about how complex the new system was going to be (work).</p>	<p>(Q6) The fears from changing the work style or the fears from using new things is like when you were little and your parents bought you your first bicycle—you know that it is going to be fun but you still have some fears about riding it because you don't know how to handle it.</p> <p>(Q7) The difficulty was just at the beginning and it wasn't about how hard the new system was; the difficulty was about the fact that I didn't know what I was going to face. However, after a while, everything went well. There was some concern about how I would learn it. I might not understand it, but after a while with training and practice, it became easy to use.</p> <p>(Q8) The system is easy, so easy to use and to learn as well, but at the beginning I was a bit nervous about the new system. However, when I started to use it and with the training, I felt I</p>	<p>(Q9) I asked my brother, who works with Saudi Customs and faced the same thing, he told me how he survived and how he is now the right hand for his boss, so I was telling myself I can do the same.</p> <p>(Q10) Now I can process more applications than before; the system even helped me to manage my time very well so now I can have a little break to make coffee or tea.</p> <p>(Q11) The system, as I mentioned before, has shortened the process a lot. As a result, my performance would definitely increase since the number of processed applications is greater than before.</p> <p>(Q12) <i>There are some things we still do manually in the office because the system is not fully automated yet. These manual tasks (e.g., the transformation letter from individual</i></p>

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Threat	High control over work, technology and self	Disturbance handling	<ul style="list-style-type: none"> • Restoring personal and emotional stability (Q9). • Minimising negative consequences (Q9). • Increased efficiency and effectiveness (Q10 and Q11). • <i>Seeking more enhancement (Q12).</i>
		(Q8 continue) could handle it. Honestly, I had been very worried about something easy. It is all about the words that I heard here and there. I started to hear that the system was difficult and complicated, but that wasn't right at all.	(Q12 continue) company to partnership company; clients need this letter to provide it to other public departments) need to be electronic because a lot of clients come here to the office to request this service. Once this service is added to the new system, I would say the performance for the department would increase, not just for me, because a lot of clients come here and interrupt us from processing online applications to request this letter.

GASA knew that the technology could improve the work but he was still afraid (quote 2). However, he had a good degree of control over self, technology and work (i.e., high control over the situation). Quote 3 indicates that GASA was influenced by his brother's and his boss's affirmation that if he took the training session, he would master the new system easily, so he felt relieved and then he started to change his fears (i.e., high control over self). He knew that the more he practised, the easier it would be to deal with the new system (quote 4) (i.e., high control over technology). GASA also knew that the new system would completely change the way he worked for the better, as indicated in quote 5 (i.e., high control over work).

GASA's adaptation strategies were both emotion- and problem-focused. GASA's emotion-focused strategies concentrated on comparing the usage of the new system with riding a bicycle for the first time when he was a child, so GASA was able to reduce the negative impact (quote 6). GASA's problem-focused strategies were directed towards himself (he mainly relied on practising and attending training classes to learn the new system) and the technology (he mainly relied on reducing the negative aspects of the new system), as indicated in quotes 7 and 8, respectively.

In relation to outcomes, GASA's adaptation strategies appear to have been successful, since he asked for emotional support from his brother, who encouraged him to learn the new electronic system, which increased his confidence about learning it (quote 9); this resulted in a positive restoration of his personal emotions (i.e., restoring personal and emotional stability), then in reducing the negative effects of the newly established companies' system, as indicated in quote 9 (i.e., minimising negative consequences). As quotes 10 and 11 indicate, GASA was even able to increase his efficiency, since he processed more applications when he used the new system (i.e., efficiency). *GASA also asked for more improvement in the new system to increase his performance much more*

and to have a better environment in the workplace (quote 12) (i.e., seeking more enhancements).

4.3.4. Case summary

The qualitative analysis of the three middle managers interviewed in the Department of Corporate Services revealed that the CMUA needs to be refined and extended to cover more aspects of the outcomes of adaptation strategies, particularly when a new e-government application is implemented in public organisations. Three middle managers participated in this case study; two of them exhibited a benefits maximising strategy, while the third engaged in a disturbance handling strategy. The data revealed that one new finding in the outcome column can be added to extend the framework of the CMUA. This new outcome is described in this research study as *seeking more enhancements*. The high degree of acceptance of the new IT event from all the participants reflected very well on the overall success of this case study.

4.4. Ministry of Labour - case number three

4.4.1. Introduction

This case study examines the adaptation strategies of five of the middle managers in the Recruitment Department when a new system for issuing work visas was implemented in their workplace. For the purpose of this research, this case study illustrates the failed implementation of a system. The materials regarding this case study are presented in the following sections. The case context is discussed in section 4.4.2 and the department context is presented in section 4.4.2.1. After that, a brief summary of the public services is given in section 4.4.2.2 and the participants' profiles are presented in section 4.4.2.3. The data analysis is presented in section 4.4.3. This section includes the findings: the situation before and after the CMUA is presented in section 4.4.3.1; benefits maximising in section 4.4.3.2; and self-preservation in section 4.4.3.3. A case summary is presented in section 4.4.4.

4.4.2. Case context

This section presents general information about the Ministry of Labour in Saudi Arabia. This information starts with the ministry's goals and the tasks it performs. The e-services that are provided by different departments in the ministry are then presented.

The goal of the ministry is to organise the employment market by applying appropriate rules and regulations, developing and planning human resources, and settling labour disputes in the private sector.

The Ministry of Labour is in charge of and responsible for a number of tasks. One of the ministry's tasks is to create and guide the national policy of labour affairs that are not contrary to the constitution of the state and social justice; this leads to improvement in the living standards of the people and enhancement of the human relations between employees and employers. Another of the main responsibilities of the Ministry of Labour is planning the strategy of Saudisation in the private sector. The ministry also needs to develop and organise policies regarding work inspections and make sure that private employers are following the practices they contain. The Ministry of Labour is also in charge of cooperating with other government authorities for the implementation of the general policies of the state with regard to workers and labour affairs in Saudi Arabia. It is also responsible for representing the state in international forums with regard to developing the work environment in Saudi Arabia. A wider responsibility of the ministry is to develop and organise relations with other countries, as well as the international and regional organisations regarding labour affairs. Moreover, the ministry is responsible for maintaining a database of the Saudi labour market of both Saudi and non-Saudi employees who work in the private sector, and compiling statistics concerning unemployment and labour.

There are a number of electronic services that the Ministry of Labour provides to its clients, whether they are citizens, businesses, non-profit or public sector organisations.

The electronic services are as follows:

- Modification of occupations for non-Saudi workers.
- Issue of Saudisation certificates.
- Renewal of work permits for non-Saudi workers.
- Transferring non-Saudi workers' services to other companies.
- Registering new Saudi workers in the Saudisation programme.
- Issuing work visas for individuals.
- Issuing work visas for companies.

In this case study, the researcher intended to focus on just one of the electronic services referred to above: issuing work visas for individuals.

4.4.2.1. Department context - Recruitment Department

This section presents information about the Recruitment Department of the Ministry of Labour in Saudi Arabia, such as its location and the number of branches and employees. The responsibilities of the Recruitment Department are also presented briefly in this section.

There are 25 branches of the Recruitment Department across Saudi Arabia. For example, in Riyadh, which is the capital city of Saudi Arabia, there are four branches that issue work visas for clients. Each major city in the country has more than one branch that serves the clients who want to be issued work visas to recruit non-Saudi workers. Over 300 employees run these branches at various managerial levels.

The only task that the Recruitment Department is responsible for is to issue work visas for clients after the required documents have been reviewed by authorised employees.

In this case study, the researcher focused on two offices in Riyadh: (i) the East Riyadh branch and (ii) the headquarters. The next section presents the interviewee profiles and provides a summary of them.

4.4.2.2. Public service - issuing work visas

This case covers the work visa issuance service provided by the Ministry of Labour, particularly the Recruitment Department. This service is designed for clients who want to recruit non-Saudi workers on a day-to-day basis for personal work (as nannies, farmers, nurses for elderly people, etc.).

Under the old system, clients were required to go in person to the recruitment branch for this service and needed to be eligible for a work visa. There were certain conditions for issuing work visas. For example, clients needed to (i) be married or separated but not single; (ii) have sufficient financial capability; (iii) pay the required fees; and (iv) complete an application. Recruitment Department employees could then issue a visa.

After a long time providing these services in the conventional way (paper-based applications), the Ministry of Labour decided to implement a new system to develop this service to keep pace with the government transformation that was under development throughout Saudi Arabia. The new system is called “MUSANED” and was implemented at the end of the second quarter of 2014. The new system is not fully automated; it needs human interaction to complete the process for issuing work visas. Under the new system, clients are no longer required to visit the Recruitment Department branches. The new process for issuing work visas using the MUSANED system is illustrated in Figure 10.

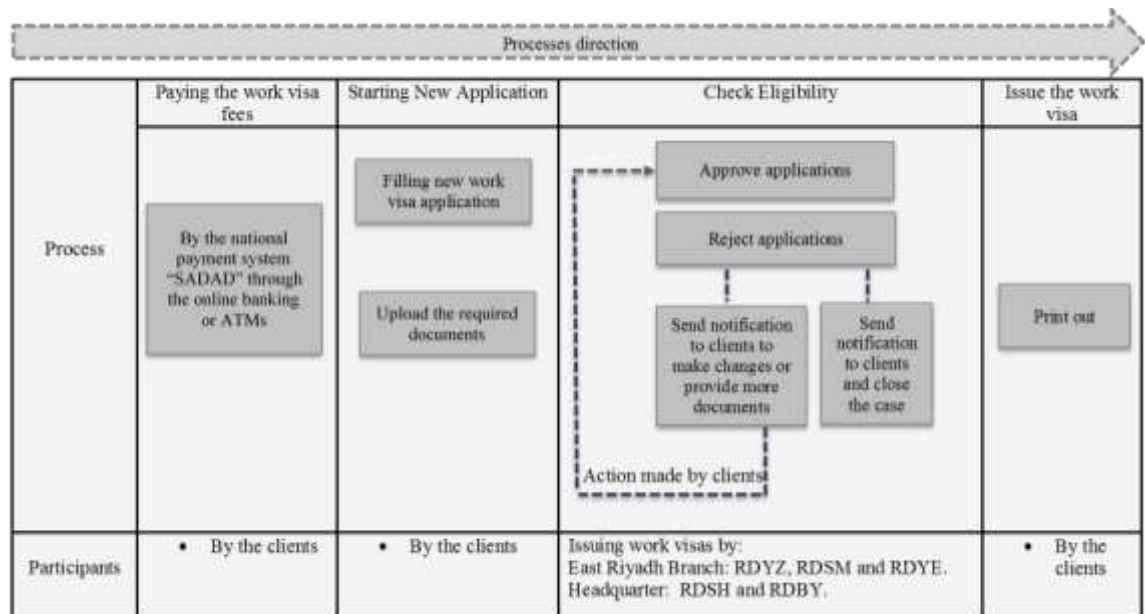


Figure 10: Process for issuing work visas using the MUSANED system

Using the new service, clients need to sign up first and be issued an account on the MUSANED website. Then, before starting to complete the application to be issued with a new visa, the client needs to pay the fees through the national payment system. After completing the application, the client has to upload all the necessary documents and then submit the application. Once the application is submitted, an authorised employee distributes the applications to various other employees for processing. Authorised employees need to review certain documents:

- Family ID card;
- National ID card;
- Salary identification of employees or 6 months' financial statements for self-employed business people; and
- The application itself.

The authorised employee then gives a decision based on the above documents. There are three possible outcomes:

- The application is approved.
- The application is rejected and the client informed why via the electronic system and the case is closed.
- The case is rejected and a notification sent to the client to change or provide more evidence.

If the application is approved, the client can then print out the work visa from anywhere at any time by logging in to her/his account on the MUSANED system website.

4.4.2.3. Participants' profiles - Recruitment Department

In this case study, five middle managers in the Recruitment Department were interviewed in order to examine their adaptation strategies when a new information technology event was introduced in their workplace. The five middle managers chosen for interview were from different branches and considered to be at the middle manager level (in agreement with the definition in section 2.7.4).

In order to elicit some information regarding their IT ability, all the interviewees were asked to evaluate themselves using a scale from 1-5, where 1 means extremely low knowledge of how to handle technology tools and 5 means high knowledge of how to use technology tools. With regard to the participants' IT capability, most of them scaled themselves as "knowledgeable", except one participant who scaled himself as having medium knowledge. The participants' perception of their IT capability is shown in Table 33 later in this section.

Table 33 also shows some information regarding the interviewees' details, where 'code' corresponds to the participants and 'unit' is the division in which they work. 'Experience' corresponds to how long the participants had worked in the Recruitment Department. Three of the participants worked in the East Riyadh Branch and the other two in the headquarters. Regarding experience, all the participants had worked in the Recruitment

Department since they were hired by the Ministry of Labour and the “experience” column in Table 33 below shows how many years they had worked in the department. The experience of the participants varied from six years to more than 15 years. All the participants used the new system (i.e., MUSANED) every day to process applications. One of the developer account managers was also interviewed to validate some of the data gathered and to increase their accuracy.

Table 33: Participants' profiles - Recruitment Department

Code	Unit	Education level	IT capability Scale 1-5	Experience	Use of the system and tasks
RDYZ	Recruitment Department – East Riyadh Branch	2-year degree	4	15 years	Yes, to issue work visas.
RDSM	Recruitment Department – East Riyadh Branch	2-year degree	4	11 years	Yes, to issue work visas.
RDYE	Recruitment Department – East Riyadh Branch	2-year degree	4	16 years	Yes, to issue work visa and monitor the employees.
RDSH	Recruitment Department - Headquarters	Bachelor's degree	4	6 years	Yes, to issue work visas, monitor employees and access statistical information.
RDBY	Recruitment Department - Headquarters	Bachelor's degree	3	7 years	Yes, to issue work visas.
TAKAM	Developer	N/A	N/A	N/A	N/A

4.4.3. Analysis of the third case - Recruitment Department

This section presents an analysis of the five middle managers interviewed for this case study to show their adaptation strategies and how they adapted themselves to using the newly implemented work visa system. First, section 4.4.3.1 presents and discusses the extension to the CMUA that was observed from the data analysis of the situation before and after the implementation of the new system. This analysis is guided by the CMUA to examine the adaptation strategies of the participants. The analysis also resulted in two adaptation strategies:

- Benefits satisficing; and
- Self-preservation.

The two strategies above are presented in sections 4.4.3.2 and 4.4.3.3, respectively.

4.4.3.1. Before and after the CMUA

This section presents the roles of the middle managers in the Ministry of Labour before and after the implementation of the new system (MUSANED). The change in the processes before and after the new system was introduced and how the middle managers felt about it are also presented in this section.

The work in the Recruitment Department before implementing the new system (MUSANED) involved mostly paper-based applications. The middle managers who were interviewed dealt with paper applications to serve clients who wanted to recruit non-Saudi workers. The tasks for all the participants before and after the implementation were to study and review new work visa applications and then make a decision to approve or reject the application. For the purposes of this research, the middle managers were asked about their perceptions of the situation before and after the new system was introduced. The data analysis shows two different perceptions: (i) positive and (ii) negative.

The perception of two of the middle managers (RDBY and RDSH) regarding the new system was entirely positive, since it would allow them to take care of the other programme with which they were engaged (i.e., Saudisation). Moreover, the new system gave them the opportunity of not having to meet clients face to face, which had been annoying for them. According to these two middle managers, the work became easier when they used the new system, even though the number of applications increased dramatically. One of these middle managers stated: *“In the new system, MUSANED, especially the second version, which was completely electronic, I don’t need to touch any paper or meet with clients, which made my role to issue the work visas much better than*

before. Moreover, there was no need for archiving, this was a great feature, at least for me”.

On the other hand, the perception of the other three middle managers (RDYZ, RDSM and RDYE) was completely against the new system both before and after the implementation. According to the developer representative, the reduction in the power that those middle managers had enjoyed under the old way of working was the main reason for their being against the new electronic system. The developer representative stated: *“They might think that they will lose some of their influence and respect in the society”*. All three middle managers agreed that the new system made their work worse than using the old system and complained about this a lot during the interviews. One of these middle managers (RDYE) stated: *“Frankly speaking, my roles related to the work visas were harder under the new system. The new system was hard to handle with all the problems in it. One of the hardest things was when something happened in the system, all the employees come here and start complaining about it. This was a work distraction”*.

The process under the old system was fully manual. All the required documents had to be printed out and included with the applications, whereas, under the new system, clients need to sign in on the website and upload all the necessary documents, then send the application through the system. The documents required under both the old and the new systems are the same. Clients need to pay the fees and then complete the application. They need to include a number of documents with the application, such as a copy of their national ID and the family ID, and either a bank statement to demonstrate their financial proficiency or an identification letter from their employers stating their salary. The five managers were also asked about their perceptions regarding the process for the applications. A positive perception was held by RDBY and RDSH, since the new system made the process faster and easier for them. RDSH stated that, *“under the new system, there is no need for the clients to come, which makes it much easier for both the clients*

and myself and it is faster to process the applications”. A negative perception was held by the other participants in the Recruitment Department who were interviewed (RDYZ, RDSM and RDYE). The data show that these middle managers found the new system to be full of problems and this made the process longer than the old one because of the technical issues in the new system. They kept complaining about the new system, even though there was evidence (as mentioned earlier by RDBY and RDSH) that it made the process easier. One of the three middle managers (RDYZ) stated: *“we have faced many challenges and problems in the new system, which made it hard to deal with and to process the applications”*.

Table 34: Before and after the CMUA (RD)

Participants	The role of the person		The process	
	Before implementing the new system	After implementing the new system	Before implementing the new system	After implementing the new system
Middle managers in the Recruitment Department	All the middle managers interviewed were responsible for issuing work visas in the department. Two of them had a negative perception of the old system, since it made their roles harder, while the other three middle managers' perception was positive.	All the middle managers interviewed had similar responsibilities. Only two participating middle managers had a positive perception. The other three had a negative perception and mentioned that their roles under the new system were harder.	According to the participating middle managers, the processes were very long under the old system. The data show that all the middle managers had a negative perception of the processes.	According to two of the middle managers interviewed, the processes after the implementation of the new system were faster and better, since they no longer needed to meet clients or carry out archiving, which led to their more positive perception. The other three middle managers had a negative perception, since, as they stated, the system was not yet ready to be deployed.

4.4.3.2. First adaptation strategy - benefits maximising

The analysis of the data revealed that two of the five participants from the Recruitment Department (RDSH and RDBY) were trying to maximise the benefits of using the new work visa system (MUSANED). The evidence for their attempts to obtain the greatest possible benefit from the system is presented in this section. The outcomes for both middle managers consist of increased efficiency and effectiveness (which already exist in the CMUA) and seeking more enhancement (which has not been mentioned in the CMUA).

One of the middle managers who exhibited a benefits maximising strategy was RDSH. With regard to the primary assessment, RDSH welcomed the new system and explained its importance for the work of the Recruitment Department. He also mentioned that he was not like some of his colleagues, who were against the new system (quote 1 in Table 35 below). Then he explained how he had engaged with the system ever since it was an idea, and predicted that the system would be a good way to work, as indicated in quote 2 (i.e., opportunity).

Table 35: RDSH - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work, technology and self	Benefit maximising	<ul style="list-style-type: none"> • Increased efficiency and effectiveness (Q9, Q10 and Q11). • <i>Seeking more enhancement</i> (Q12).
<p>(Q1) Honestly, the idea of the new visa system was great. It was really a big step for the work here and I hoped they wouldn't stop it. I'm not like some other people who didn't like it at all – since they heard about it, they started to complain. The new system was helpful, at least we stopped meeting with clients face to face and archiving.</p> <p>(Q2) I knew it was the right way to do work. I was asked to be one of the team that meets with developers at least once every week, so once I started to meet with them I got the idea of how the system will be designed, so all the worry is gone. I lived with the new system from since it was an idea until it became real. That is why I know the potential of the system. It would offer us better and easy work.</p>	<p>(Q3) There was some difficulty in the first 2 months, but I got over this difficulty very quickly. Also, the usage of the new system was so easy for me (self and technology).</p> <p>(Q4) The new system has changed the work here a lot. For example, it is faster than now and gives me the opportunity to take care of other things (e.g., Saudisation programme).</p>	<p>(Q5) Very easy and was very similar to the old system. Just at the beginning it was a little bit strange because they changed the interface of the pages, but after a while you start to be familiar with it and it was very easy to adapt to it quickly.</p> <p>(Q6) At first, it was uncomfortable that there was so much printing and scanning the documents, but the second stage of the system was perfect. I didn't face any problem using it at all – just sometimes the system is down or under maintenance, so you need to wait until they fix it.</p> <p>(Q7) The replication is not an issue at all, once you became very skilled in using the new system it is easy to detect the replication. Let's assume the client submitted three applications by mistake, as an employee, I will process all of them and if the client doesn't want them all he/she can come here and cancel the ones he/she doesn't need anymore.</p> <p>(Q8) Developer: "RDSH was so active during the meetings to develop MUSANED, he was testing the demo version all the time to make sure it was alright and ready to be launched. He also detected an important error in the system".</p>	<p>(Q9) The last version of the system was fantastic, it takes just 2-3 minutes to process one application while now it takes at least 15 minutes to do so now.</p> <p>(Q10) The system made the environment here much better since it reduced the number of applicants who come here to this place. Without the new system I would say half of my time now is talking with clients and explaining things for them.</p> <p>(Q11) The system helped me to be faster, not meeting with clients and no more archiving. These benefits are very important for me.</p> <p>(Q12) <i>The system needs to be improved more, there was no cancelling option of the work visa on the system, so a lot of clients come here to cancel their work visa. If they add this service, it would be great. I'm looking for the day that our clients can apply for the work visa without any interaction from us (a fully automated system) so we can take care of the Saudisation issues, which are more important.</i></p>

RDSH had good control over himself and the technology, since he was able to handle the problem he faced when he was using the new system. His ability to use it without any difficulty is shown in quote 3 (i.e., high control over self and technology). He also had good control over the work (quote 4), since he felt that the new system changed his work and he could find time for the other tasks for which he was responsible (i.e., control over work).

With respect to adaptation strategies, RDSH's were mainly problem-focused and towards maximising the benefit from the new MUSANED system (i.e., benefits maximising). RDSH adapted to the system with no trouble at all. His adaptation strategies addressed himself and the technology. He was able to understand quickly since the new system is similar to the system he was working on (the current system) and he was able to address some of the difficulty he faced (quotes 5 and 6). RDSH was completely comfortable with the MUSANED system, even though there was replication of some clients' applications, which indicates that he was able to deal with the increased number of applications. (quote 7). As the developer mentioned, RDSH was very helpful during the meetings to develop the new system and was eager to launch the new system as soon as possible to change the way he worked (quote 8).

Regarding the outcomes, RDSH was able to increase his performance greatly compared with the old system (i.e., increased efficiency and effectiveness) and the new system helped to change the work environment for the better, as indicated in quotes 9, 10 and 11. *He also asked for more enhancement to the new system in order to concentrate on important tasks, as he explained in quote 12.*

Another middle manager who exhibited a benefits maximising strategy was RDBY. In relation to his primary and secondary assessments, RDBY assessed the new work visa system (MUSANED) positively, since he agreed with the Ministry of Labour's vision to transfer most of the services to an electronic format (quote 1 in Table 36 below). He also

admitted that working with the new system would be a good experience, as shown in quote 2 (i.e., opportunity).

Table 36: RDBY - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work, technology and self	Benefits maximising	<ul style="list-style-type: none"> • Increased efficiency and effectiveness (Q8 and Q9). • <i>Seeking more enhancement (Q10).</i>
<p>(Q1) I agree with the ministry vision that all the services need to be electronic; it would help both the employees and the clients at the same time. Also, when the system was implemented and I started to use it, I felt the difference.</p> <p>(Q2) In general, I was thinking the new system would be a good experience since I'm not going to meet with clients and am not going to be archiving.</p>	<p>(Q3) I attended one session just to see how it worked and what changes they have made to the system. Before I attended, the session, we were told the new system, MUSANED, is quite similar to our old system. Both versions were similar to what I'm using now and easy to handle and learn (self and technology).</p> <p>(Q4) Of course I need to do other tasks, but the main task that I do is issuing work visas for the clients, which was easier to perform with MUSANED since it changed the process to be easier. In respect to the work routine, the new system changed a lot of things here, and there is no more meeting with clients (work).</p>	<p>(Q5) MUSANED was well improved and meant that there was no need to print and scan the documents; it was completely electronic and I didn't find any difficulty of using it at all. It was easy to handle since it was similar to our old system. However, there were some technical issues that made the work slow sometimes, but overall it is easy.</p> <p>(Q6) The new system, MUSANED, helped me so much regarding the archiving and not meeting the clients face to face. It organises my work and the whole situation here.</p> <p>(Q7) Some of the employees here were so annoyed because they process extra applications that happened by mistake, but for me it wasn't an issue at all because they don't take much time to process. By the way, it is easy to find the replication and fix it once you get used to the new system.</p>	<p>(Q8) It has shortened the time of processing the applications. Also, having no more paper on my disk has organised my time.</p> <p>(Q9) If you need any information regarding statistics (e.g., demography of the foreign workers, etc.), pressing one button can provide useful information. Before, I needed to contact the Ministry of Interior to have such information, so it is faster to find any information that I need.</p> <p><i>(Q10) If they improve it to be a fully automated system like the Passport Department system, it would be great because this would reduce the number of applications we process, which would reduce the workload. Once the system is fully automated, I can assure you that there will be no errors or mistakes at all.</i></p>

Quote 3 in Table 36 shows that RDBY had good control over himself and the technology, since he was confident that he could learn and then handle the new system and use it easily (i.e., control over self and technology). The new system changed the work environment for the better and made it easier, since there was no need to meet clients, as mentioned by RDBY in quote 4 (i.e., control over work).

In the matter of adaptation strategies, RDBY was mainly performing problem-focused acts oriented towards himself and the environment in the workplace, so that he could maximise the benefits from the new work visa system. In quote 5, RDBY was able to adapt to the new system very quickly, even though there were some technical issues with it. The new MUSANED system changed RDBY's work routine and the whole situation, as indicated in quote 6. RDBY was fully in favour of the new system, unlike his colleagues, which indicates that he was very pleased with using it (quote 7).

Concerning the outcomes, RDBY indicated that the new system abbreviated the process of issuing work visas, so he could produce more applications and thus reduce the time spent finding information, as mentioned in quotes 8 and 9 (i.e., increased efficiency and effectiveness). *Moreover, RDBY hoped the new system could be developed and be fully automated, which would help to reduce the rate of errors, as indicated in quote 10 (i.e., seeking more enhancement).*

4.4.3.3. Second adaptation strategy – self-preservation

Examination of the data from the Recruitment Department shows that three of the middle managers who participated (RDYZ, RDSM and RDYE) were performing self-preservation strategies and were very disappointed with the new work visa system. The analysis shows that these participants succeeded in stopping working on the electronic system, which resulted in exit, as presented in the CMUA. All three of the middle managers who exhibited a self-preservation strategy experienced two outcomes: (i) *maximising the negative consequences* and (ii) exit. The data analysis shows that two

of these middle managers also experienced a third outcome: *decreased efficiency and effectiveness*. The two outcomes identified here (*maximising the negative consequences* and *decreased efficiency and effectiveness*) are not currently catered for in the CMUA.

As referred to above, one of the middle manager who showed a self-preservation strategy was RDYZ. With regard to his appraisal of the new system, RDYZ initially assessed the new work visa system (MUSANED) negatively (i.e., threat). He was hoping the new system would work perfectly, but this went contrary to expectations, as shown in quote 1 in Table 37 below.

Table 37: RDYZ - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Threat	Low control over work, technology and self	Self-preservation	<ul style="list-style-type: none"> • <i>Maximising the negative consequences</i> (Q8 and Q9). • <i>Decreased efficiency and effectiveness</i> (Q10 and Q11). • Exit (Q12).
<p>(Q1) At the beginning, I was optimistic about the new system because it would make the work here easier for many reasons, such as no need to meet with clients anymore and no archiving. It would also be good for the clients as well, but the problem was that MUSANED wasn't ready to be deployed. The new system didn't work as I had hoped; it was completely negative.</p>	<p>(Q2) At the moment, I thought that the new system would improve the situation in the office, but I was wrong. I told them ever since I was meeting with them that we need a fully-automated system like the ABSHER system, otherwise the new system will change nothing here but it would make it worse (self and work).</p> <p>(Q3) If the new system will be as is, it is going to be hard to work with until they fix what we told them was wrong (technology).</p>	<p>(Q4) I told their representative (the developer) many times to solve the problems in the system and all that we heard was just to be patient and that they would take care of everything, so I started not to notify the developer team about what I faced while I was using the new system, as it is their responsibility.</p> <p>(Q5) They were supposed to stop the system during the weekend, and you can't imagine how many applications the system received during the weekend. I would say it was double what I usually receive in the weekdays.</p> <p>(Q6) I didn't attend the training session with the developer that I was assigned to. It might be because that session wasn't so much helpful, at least not for me because I had many meetings with the developer before launching the new system. They just introduced the new system to the employees; for me, if you can deal with the old system, you can handle the new one.</p> <p>(Q7) The developer: "RDYZ and some other employees did not commit very well when we were meeting with ministry employees and when they attend the meeting they just distract from what we need to focus on. Now they are complaining about little issues".</p>	<p>(Q8) <i>The developer: "Some of the employees did not commit very well when we were meeting with ministry employees and when they attend the meeting they just distract from what we need to focus on. Now they are complaining about little issues".</i></p> <p>(Q9) <i>All of us were trying to solve problems on the system while we were supposed to review applications, rather than solving technical issues. Also, as I explained earlier, if they fixed the system very well as we told them, it would be very helpful and everyone here could do better work. Otherwise, it will make the work worse.</i></p> <p>(Q10) <i>I need to check each application to see if there is replication or not; that is really a waste of time and effort.</i></p> <p>(Q11) <i>The new system was supposed to increase my performance and reduce the number of mistakes, but it didn't do that.</i></p> <p>(Q12) The current system (the paper-based system) is better, no doubt about that, despite the fact that there are disadvantages to it, such as meeting with clients face to face and archiving. Overall, the new system needs to be fixed.</p>

RDYZ had low control over the situation since the environment in the workplace did not improve and he started to complain even before the system was implemented, as indicated in quote 2 (i.e., low control over self and work). RDYZ also had low control over the technology, since he did not make any effort to master the new technology (quote 3).

In terms of adaptation strategies, RDYZ was mainly taking an emotion-focused approach. He was trying not to be active in his work by not notifying the developers about issues he or his colleagues faced while using the new system. He thought that it was not his responsibility and that the developers were supposed to detect issues by themselves (quotes 4 and 5). He also tried to avoid using the system for weekend applications. RDYZ did not want to attend the training session because his opinion was that both systems were similar – this indicates that RDYZ was trying to escape even learning the system (quote 6). RDYZ did not take the new system seriously and he was absent many times from meetings with the developers, as indicated in quote 7 (i.e., self-preservation).

With regard to outcomes, the developer representative explained in quote 8 how RDYZ complained a lot about the new system simply because of routine issues (i.e., technical issues, as shown in quote 9). This indicates that RDYZ was maximising the negative consequences of using the new system. RDYZ felt that the new work visa system decreased his performance and did not help him at all in doing better work (quotes 10 and 11). This outcome can be referred to as “decreased efficiency and effectiveness”. RDYZ also explained that using the old system was better for him than the new one, as seen in quote 12 (i.e., exit).

Another middle manager who exhibited self-preservation was RDSM. He negatively assessed the new work visa system. He mentions in quote 1 in Table 38 below that the system was not what he thought it would be. He also thought that there was no need to implement a new system, as indicated in quote 2 (i.e. threat).

Table 38: RDSM - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Threat	Low control over self, work and technology	Self-preservation	<ul style="list-style-type: none"> • <i>Decreased efficiency and effectiveness (Q9).</i> • <i>Maximising the negative consequences (Q10).</i> • <i>Exit (Q11).</i>
<p>(Q1) I thought that the system would be like the Passport Department's electronic system, "ABSHER", but unfortunately the one we got was awful, not like what I was expecting.</p> <p>(Q2) Honestly, about one month before they deployed the new system, I was wondering why they were going to change the system.</p>	<p>(Q3) I don't think that the session was important since both systems are similar. If they send us a little manual, it would be enough (self).</p> <p>(Q4) Because it was required to work with the new system, every day I can't finish my work if I don't use it. You can't imagine how the work was with the new system. It changed my work to be worse than what I believed would happen (work).</p> <p>(Q5) People are usually scared of learning new things and changing their routine; this is a fact (technology).</p>	<p>(Q6) It is my job – I need to do it; manually or electronically, it doesn't matter.</p> <p>(Q7) I was contacting them mostly every day regarding the technical issues but they didn't listen to me or to my friends here. Then I decided not to say anything about it because it is a waste of time and a headache for me. Why should I work for the developers when it is their job?</p> <p>(Q8) The developer: "RDSM was against the new system ever since it was an idea. He might think that he will lose some of his influence and respect in society".</p>	<p><i>(Q9) The system was supposed to enhance the work here, including my performance, but the difficulty we faced didn't make it easy at all.</i></p> <p><i>(Q10) I remember that the ministry and the developers were saying to us, "Please be patient, the system is new and needs time to be improved. Just wait for a while and everything will be alright". But they didn't do anything at all. All that we have heard was just promises.</i></p> <p>(Q11) My way of doing my job now (the old system) is better. It is faster than the new system, even though it is paper-based applications. Paper-based applications don't mean that I don't use our internal system [i.e., the ministry's electronic system], I still use technology to process the applications.</p>

RDSM had low control over the situation when the new IT event occurred. RDSM had low control over himself, since he was not eager to attend the training session (quote 3). Quote 4 indicates that RDSM had low autonomy over his work and he needed to use the system all the time. He also mentioned that the system made his work worse (i.e., low control over work). In quote 5, RDSM expressed his feelings about the technology and showed that he felt everyone is scared to change or learn new techniques (i.e., low control over technology).

In relation to adaptation strategies, RDSM's were exclusively emotion-focused efforts. First, RDSM tried to convince himself that this was his job and he needed to do it, with the new system or without it. This is called passive acceptance (quote 6). Then, RDSM started to distance himself and to get away from the new system by not being active in the work. For example, if he found or faced any technical issues, he would not notify the help desk or the developers so that they could address it (quote 7). The developer representative asserted that some of the employees, including RDSM, were trying to criticise the new system, since it might reduce their power (quote 8). As a result, it can be seen that RDSM was performing self-preservation strategies.

Regarding outcomes, RDSM's performance did not improve because of the new system, as indicated in quote 9 (i.e., decreased efficiency and effectiveness). In quote 10, he starts to make excuses and blames the ministry and the developers for the new system because it was not improved properly (i.e., maximising the negative consequences). These two outcomes have not been included in the CMUA. Finally, RDSM asserted that working with the old system (the current system) is much better than the new one, as shown in quote 11 (i.e., exit).

The data revealed that one of the middle managers assessed the new system in two different stages: once as neutral and then as a threat. This middle manager (RDYE) can be seen to have performed a self-preservation strategy. RDYE did not assess the new

system either negatively or positively at the beginning (when the system was just an idea), as indicated in quotes 1 and 2. He felt that the IT event was normal for him, since both systems are the same (i.e., neutral). This is a new primary assessment that has not been included in the CMUA. With regard to the secondary assessment, RDYE had low control over self, technology and work. RDYE could not adapt to the new system, since it was hard to handle and contained a number of technical issues, as indicated in quote 4 in Table 39 below. He also had low control over work (quote 5).

In relation to an adaptation strategy, RDYE mainly relied on emotion-focused efforts. Quote 6 reveals an activity similar to what is called a “passive acceptance act” in psychology (Lazarus and Folkman, 1984), since RDYE felt, with both systems, that this was his job and he needed to do it. RDYE’s adaptation strategies then moved to avoiding the system and distancing himself from it by making suggestions, such as implementing an appointment system would be enough and there was no need for the new system, as indicated in quote 7 (i.e., self-preservation adaptation strategies). This adaptation effort resulted in RDYE maximising the negative consequences of the IT event, as indicated in quote 9 (*i.e., maximising the negative consequences of the IT event*), since RDYE felt that *the system was not helping him a great deal as it always had problems and the new system was not smart enough to find any replication in the applications.*

After that (and up to the point at which this middle manager realised the new system was going to be implemented), RDYE reassessed the new electronic system as a threat, since he was fully against it in quote 3. His secondary assessment remained the same as the first assessment of the new system when it was just an idea. With regard to RDYE’s adaptation strategy, the developer representative asserted that RDYE was one of the employees that tried to slow the implementation process by not cooperating with them, as shown in quote 8 (i.e., self-preservation adaptation strategies).

Table 39: RDYE - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
<p><i>Neutral</i></p> <p>↓</p> <p>Threat</p>	<p>Low control over self, work and technology</p>	<p>Self-preservation</p>	<ul style="list-style-type: none"> • <i>Maximising the negative consequences of the IT event (Q9).</i> • <i>Maximising the negative consequences of the IT event (Q10).</i> • <i>Exit (Q11).</i>
<p>(Q1) <i>Once I heard about the new system, at that time my feeling was completely normal. I wasn't overwhelmed because they told us it would be the same system we are working on now.</i></p> <p>(Q2) <i>I knew that both systems [the current system and the MUSANED system] would be so similar there would be no difference, except that there would be a change in some fields in the system interface, and moving them to different places.</i></p> <p>↓</p> <p>(Q3) <i>The new system is totally awkward. It is not what I thought about at all.</i></p>	<p>(Q4) The new system was hard to handle with all the problems in it; we told them that before starting to use it. Also, the usage of the system as I mentioned before was really annoying – you can't imagine how the situation was. All the employees were complaining about the problems with it, even the clients came here and complained about it when one of the employees made an error in their applications by mistake (self and technology).</p> <p>(Q5) The system was good and gave some information, but to perform applications it wasn't effective at all; a lot of applications were left every day without being processed since the system is always down (the situation in the work).</p>	<p>(Q6) If they really decide to implement a new system that is totally fine for me, and if they change their mind about it I will be fine as well. It doesn't make any difference (passive acceptance).</p> <p>(Q7) We tried with the management to implement an appointment system and keep our work as is. We work better now, there is no need to change anything because we faced a lot of problems with MUSANED [the new system].</p> <p>↓</p> <p>(Q8) The developer: "He was one of the employees that I was meeting with. He wasn't serious about the new system and he didn't attend our weekly meeting very often. He might be thinking the system will never be real".</p>	<p>(Q9) <i>The system was so slow and always under maintenance, which was so annoying. Also, the system wasn't smart enough to detect the replication of applications and that was unacceptable and a waste of time.</i></p> <p>↓</p> <p>(Q10) <i>When one of the employees make a mistake that can't be corrected through the online system, you can't imagine what will happen later. The clients come here and start to raise their voice to us and complaining, etc. That wasn't good at all.</i></p> <p>(Q11) The new system would increase my performance if it was working perfectly without any technical issues, but unfortunately this didn't happen. Using the old system is much better, with no errors. In other words, if you make an error you can solve it right away while the client is in front of you.</p>

Concerning the outcomes (after he realised that the new system was real), RDYE complained about the system because the employees could not correct mistakes they made in an application during the review process, as indicated in quote 10 (i.e., maximising the negative consequences). In quote 11, RDYE admits that using the old system (the current system) was better for him, since errors could be solved immediately (i.e., exit).

4.4.4. Case summary

The qualitative analysis of the five interviews conducted in the Ministry of Labour, particularly the Recruitment Department, revealed that the CMUA can be refined. Most of the middle managers interviewed in this case study were fully against the new electronic system and showed very high resistance.

The data revealed four findings in this case study that are not mentioned in the CMUA. One of these findings is the new primary assessment described in this research study as *neutral*. The other three findings are in the category of outcomes: (i) *seeking more IT enhancements*, (ii) *maximising negative consequences*, and (iii) *decreased efficiency and effectiveness*.

The following section presents the analysis of the fourth case in this research.

4.5. General Directorate of Passports - case number four

4.5.1. Introduction

The fourth case study investigates the adaptation strategies of the middle managers in the Passport Department - Riyadh branch - when a new IT event was introduced in their workplace. This case study is categorised in this research as a “hands-off” system, since the system implemented is fully automated. The materials regarding this case study are presented in the following sections. First, the case context is presented in section 4.5.2 and provides information about the General Directorate of Passports. The context of the division that provides the electronic service is presented in section 4.5.2.1. Section 4.5.2.2

presents the public service offered by the department, which is the issuing/renewal of Saudi passports, and the participants' profiles are discussed in section 4.5.2.3. The analysis of the case study is presented in section 4.5.3. The data analysis includes two results: (i) before and after the CMUA, presented in section 4.5.3.1; and (ii) benefits maximising, which is presented in section 4.5.3.2. A case summary is presented in section 4.5.4.

4.5.2. Case context

This section presents information regarding the General Directorate of Passports, such as its location and the number of employees. This section also provides information about the tasks for which the Directorate is responsible.

The General Directorate of Passports is one of the departments of the Ministry of Interior. It was established after the Kingdom of Saudi Arabia was unified and the department started to provide services to pilgrims in 1925. The General Directorate of Passports was part of the Civil Affairs Agency until the Saudi government decided to separate them in 1976. The headquarters of the Directorate are located in Riyadh. The Directorate has 12,000 employees in all its branches and the ports. The General Directorate of Passports is responsible for a number of tasks, as follows:

- Receiving applications to issue passports for citizens who meet the conditions.
- Controlling the Saudi borders and ports (e.g., airports and seaports) in terms of immigration issues for non-Saudi expatriates and Saudi citizens who want to enter or leave the Kingdom of Saudi Arabia.
- Issuing residence permits for non-Saudi expatriates who meet the conditions for working and staying in the Kingdom of Saudi Arabia.
- Collaborating with other government departments in terms of the procedures associated with the General Directorate of Passports.

- Continuing to follow up the immigration status of non-Saudi expatriates and whether they are resident under the law of the residence system, and those who have entered the Kingdom of Saudi Arabia using interim visas, such as short stay and pilgrim visas.
- Educating citizens and expatriates on travel and immigration law and informing them of new conditions.
- Controlling and managing the Passport Department branches across the Kingdom of Saudi Arabia.
- Receiving non-Saudi expatriates applications for re-entry visas and final exit visas and issuing visas for those meeting the conditions.

The General Directorate of Passports provides a number of electronic services in its branches. In this case, the researcher focused on one branch (Riyadh) and one electronic service: issuing Saudi passports to citizens.

The next section presents a brief summary of the department context (Passport Department - Riyadh branch).

4.5.2.1. Department context: Passport Department - Riyadh branch

This section presents general information concerning the Riyadh branch of the Passport Department. It covers the main tasks, responsibilities and services the branch provides.

The Riyadh branch was the only one in Riyadh Province before the General Directorate of Passports decided to open several other passport branches in the province. All the services provided by the Riyadh branch involved paper-based work, which was all handled manually by the employees. Today, all the services provided by the branch are electronic and there is no human interaction (a hands-off system), other than printing documents. The branch now serves more than 4 million people living in Riyadh. Before implementing the new system, the branch had more than 400 employees to carry out the work and serve clients but, after the new system (ABSHER) was introduced, more than

half the employees were relocated to the borders or ports. The branch is responsible for providing a number of services to citizens and expatriates. These responsibilities are all fulfilled electronically and the branch issues the following:

- Passports for citizens and their dependants.
- Residence permits for non-Saudi expatriates and their dependants.
- Re-entry, final exit and interim visas.
- Travel permits for those who are under 21 years old.

In this case study, the researcher intended to concentrate on one electronic service: issuing passports to citizens and their dependants.

The next section presents information regarding the service to illustrate the differences in the situation before and after the implementation of the new system (ABSHER).

4.5.2.2. Public service - issuing Saudi passports

This section presents the service under investigation: issuing passports to citizens. It covers how this service was provided by the department before and after the implementation of the new system.

Any Saudi citizen wanting to travel abroad needs to be issued with a passport by one of any of the Passport Department branches across Saudi Arabia. Before implementing the new electronic system, citizens were required to apply for a passport manually, which involved driving to the nearest Passport Department office. A number of documents needed to be completed and provided in order to be issued with a passport, such as a passport application form, a copy of the national ID, two recent colour photographs, a copy of the family ID if the passport was for dependants, the payment of outstanding traffic tickets (i.e., fines that haven't been paid), paying the fees at the bank into the account of the Ministry of Interior, and, for those who wanted to renew theirs, producing the old passport. After preparing all these documents, citizens needed to wait in a long

queue to be served, particularly in the larger cities. The process took at least 2-3 days, after which time citizens could return to the branch and collect their issued passport. These procedures improved slightly with the introduction of the national online payment system (SADAD) and citizens no longer needed to drive to a bank to pay traffic tickets and passport fees. This old method of issuing passports still exists, although only for dependants who are 15 years old or under.

After implementing the new online system (ABSHER) at the end of the third quarter of 2014, the whole process became electronic. The system is integrated with the National Information Centre (NIC), so there is no need to provide documents to have a passport issued or renewed. The system uses photographs that are stored in the NIC system for citizens to use, unless individuals want to change their photograph. The new passport system is hands-off, as there is no need for employees to operate it other than to print the passport. Having a passport issued through the online system (ABSHER) is mandatory for all citizens, except for dependants who are 15 years old and younger. Figure 11 illustrates the process for issuing or renewing a passport.

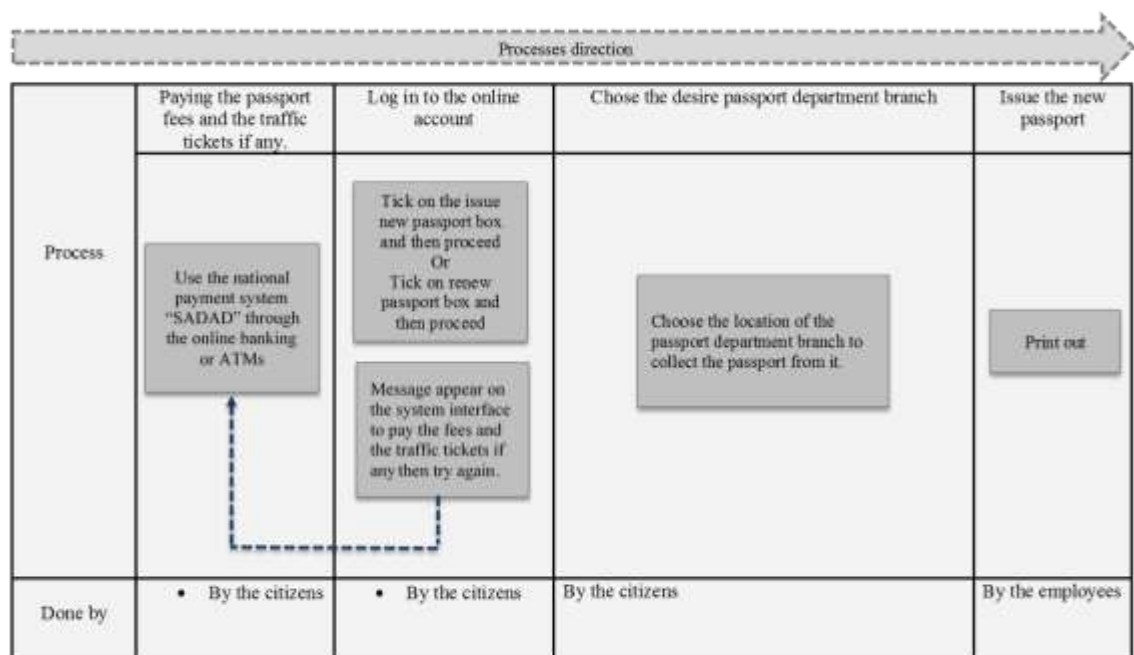


Figure 11: Passport process through the ABSHER system

To have a passport issued or renewed, applicants need to have an online account on the system website in order to take the first step in the process. The applicant then needs to pay passport fees and traffic tickets, if any, to move forward to the next step. Then, the applicant needs to tick the correct box to select having the passport issued or renewed and clicks on “Proceed”. The next step is that the applicant needs to choose which branch from which to collect the passport. After that, the employees of the assigned branches receive a list of the passports that need to be printed and made ready to be collected by applicants.

4.5.2.3. Participants’ profiles

In this study, five managers in the Passport Department - Riyadh branch - were interviewed in order to examine their adaptation strategies. These participants were from different managerial levels but all were considered middle managers in accordance with the definition in section 2.7.4.

All the participants were asked about their IT capability before the implementation of the new system for issuing and printing passports by evaluating themselves using a scale from 1 to 5, in which 1 means extremely low knowledge of how to handle technology and 5 means a high level of knowledge of how to use technology tools (see Table 19 in section 4.2.2.3).

Table 40 shows the interviewees’ details, in which ‘code’ corresponds to the participants, and the ‘unit’ is the division in which they worked. The ‘using of the system’ category corresponds to the participants using the new system in their daily routine. ‘Experience’ corresponds to how long the participants had worked in the Passport Department - Riyadh branch. Furthermore, concerning their experience, all the participants had worked mainly within government, particularly in the Passport Department. All the participants worked in the same place: the Saudi Passport Unit. None of the middle managers used the new online system at all, since it is fully automated. However, all the middle managers

interviewed had participated in the design of the processes for the new online services. There was also a need to interview one of the developer representatives and entry-level employee to enrich the data as much as possible and to make the data more accurate.

Table 40: Participants' profiles - Passport Department

Code	Unit	Education level	IT capability Scale 1-5	Experience	Use of the system and tasks
PDMR	Passport Department	Postgraduate	4	20 years	No, managing the Saudi Passport Unit
PDMO	Passport Department	Bachelor's degree	4	16 years	No, deputy of the Saudi Passport Unit and Head of Reception
PDFM	Passport Department	Bachelor's degree	4	10 years	No, Deputy Manager of the printing room
PDBO	Passport Department	Bachelor's degree	4	14 years	No, Manager of the printing room
PDAS	Passport Department	Bachelor's degree	3	12 years	Yes, system admin/IT in the Saudi Passport Unit
PDAK	Entry-level employee/Passport Department	N/A	N/A	N/A	N/A
PDBS	IT staff/Passport Department	N/A	N/A	N/A	N/A

4.5.3. Analysis of the fourth case study - Passport Department - Riyadh branch

This section presents an analysis of the interviews with the five middle managers who participated in the study. All these middle managers worked in the Saudi Passport Unit and the analysis is guided by the CMUA. The data analysed show that all five of the middle managers felt they had benefited from benefits maximising strategies and this resulted in two outcomes: (i) increased efficiency and effectiveness; and (ii) seeking more enhancement.

4.5.3.1. Before and after the CMUA

This section presents the roles, both before and after, of the middle managers in the Passport Department - Riyadh branch - concerning the implementation of the new online

passport system (ABSHER). It also presents the perceptions of these middle managers regarding the processes before and after the implementation of the new online system.

The roles of the middle managers in the Passport Department are to supervise the operation-level workers in issuing passports and travel permits for dependants, as well as printing the passports. Two of these middle managers (PDMA and PDBA) are responsible for signing each application before issuing a passport. The work in the Passport Department in the Riyadh branch had previously been fully manual. The perceptions of all the middle manager study participants in the Passport Department in the Riyadh branch were completely positive in terms of how the new online system made their roles much easier. The new system is fully automated and the middle managers did not need to be involved during the issuance processes, apart from some cases that cannot be served through the new ABSHER system. All the middle managers complained during the interviews about the way they did their work before the new system. One of these middle managers (PDMA) stated:

Before the system, I was responsible for signing each application and each travel permit for those under 21 years old. It was my job and I needed to do it without any complaints but honestly it was very hard. Can you imagine, we were serving at least 1,000 applicants every day and in the high season more than 1,200 applicants. We were suffering here before ABSHER [the new system], sometimes, especially in the summer, I can't even breath well because of the crowds here, it wasn't easy to work in such a situation.

The new online system reduced the manual operations by at least 85% and this was a favourable matter for all the employees, according to all the middle managers who participated in the study. One of the participants (PDMA) stated:

The new online system is a gift from God, it made my work much better and easier. Now I don't do that, the ABSHER system serves them very well. So, the number of citizens is reduced, which means the workload has reduced as well and this is amazing.

The processes for issuing or renewing passports previously took a long time and required a lot of effort from the employees. Moreover, the processes were entirely manual and

used paper-based applications, which meant that it took a long time for a passport to be issued or renewed. The perception of all the middle managers interviewed regarding the processes before the implementation of the new system was negative. Citizens needed to provide a number of documents, such as a copy of their ID, the family card, they had to pay fees and traffic tickets, and bring photographs with them. One of the participants stated:

Previously, citizens had to spend a whole day just to get their passports. There were long queues and the citizens used to come personally to apply for passports for themselves and for their dependants. The waiting rooms here were full of people. The processes were so long before implementing the new system, it takes so much time because there were different stages and in each stage we need to check the information. That was taking a lot of effort.

However, after the implementation of the online system, the perception of the middle managers regarding the processes changed to being positive. All the middle managers interviewed were happy with the new system because it shortened the processes for issuing/renewing passports and did not require their involvement. For instance, one of the participants (PDAS) reported:

Now ABSHER is doing the job of the first employee who checks the documents and gives the printing order to the other employee. The system checks the ID card, the fees payment and everything, so the role of the first employee is diminished, or probably there is no need for this role anymore. The application goes directly from the customer to the printing employee through the system. And the interaction between customers and the first employee on the counter has ended, almost ended. This new process has saved our effort and time, it also increases our production greatly.

The perceptions of the middle managers before and after the CMUA are shown in Table 41 below.

Table 41: Before and after the CMUA (PD)

Participants	The role of the person		The process	
	Before implementing the new system	After implementing the new system	Before implementing the new system	After implementing the new system
Middle managers in the Passport Department - Riyadh branch	All the middle managers who participated worked at the Saudi Passport Unit in different places (e.g., the reception desk, IT room and printing room). All of them expressed that they were facing a hard time doing their work since it was manual.	All the middle managers interviewed had a positive perception after implementing the new system (ABSHER), since it made their work easier and reduced their workload.	The data show that all the middle managers interviewed had negative perceptions regarding the old processes, since they were very long and needed lots of effort.	All the middle managers interviewed had a positive perception in terms of the processes after the implementation of the new online system, since it shortened the time needed and did not require them to be part of the processes.

4.5.3.2. Adaptation strategy - benefits maximising

The data analysis in this case shows that all the middle managers interviewed (PDMR, PDMO, PDFM, PDBO and PDAS) in the Passport Department - Riyadh branch - exhibited benefits maximising strategies. The data analysis shows that all of them had the same two outcomes: (i) increased efficiency and effectiveness; and (ii) *seeking more enhancement*, which is considered a new outcome not referred to in the CMUA and could be added to it.

One of the middle managers who exhibited a benefits maximising strategy was PDMR. Regarding his primary and secondary assessments, PDMR welcomed the new online system and was proud once he heard about it, since he knew the benefits he would gain from the new system in managing and supervising the Saudi Passport Unit well, as indicated in quotes 1 and 2 in Table 42 below (i.e., opportunity).

Table 42: PDMR - coping model of user adaptation ((the italics font depict the probable new elements of the CMUA))

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work and self	Benefit maximising	<ul style="list-style-type: none"> • Increased efficiency and effectiveness (Q7, Q8 and Q9). • <i>Seeking more enhancement (Q10).</i>
<p>(Q1) I liked the idea so much and I was so excited once I heard about it. Personally, I support any idea towards technology, because I knew the benefit that we will get from it. Look at the online banking now, it made our life easier and saved so much effort and time for the banks. Also, we need to reach our customers and not the opposite.</p> <p>(Q2) I was proud once they announced that, because it's part of my work.</p>	<p>(Q3) The new system will greatly facilitate the work here and will make the whole environment better for me since I will know how many applicants we would serve next morning, so we can move some employees from the reception to the printing room or the opposite.</p>	<p>(Q4) It helped me a lot in my work. Managing the Saudi Passport Unit as a whole (it includes the reception disk, printing room and the technology room and the delivery room) was so difficult and completely exhausting. The new online system has improved my way to supervise and monitor the operations here without any difficulty.</p> <p>(Q5) The new online system lets me know how many applicants will be here the next morning and how many passports my unit will produce next morning. This gave me the opportunity to manage this place well and better than before.</p> <p>(Q6) No I don't use the system at all to process passports, I just use it for getting reports, giving some authority to some employees. Getting reports from the system is so easy. It just requires that you have basic computer skills.</p>	<p>(Q7) The number of passports we issue every day here is more than 2,500 passports, while before our capacity in the best-case scenario was no more than 1,500.</p> <p>(Q8) The numbers of applicants we were serving every day before the system here in the branches is reduced by at least 75% to 85%.</p> <p>(Q9) The mistake rate now is zero when it comes to the online system (ABSHER), there is no way to compare this to the manual system. In the manual system, you might have spelling mistakes, etc.</p> <p>(Q10) <i>I hope we solve their issue and add them in the system (the dependants). When this happens, I would say the whole front desk will disappear. This will be a big jump for us, I hope they implement it and add it in the system soon.</i></p>

The data analysis shows that PDMR had a high level of control over work and self, since the system made the work more efficient (i.e., knowing the number of applicants to be served the next morning) and he was certain that the system would be good for him. The data found no evidence of whether he had high/low control over the technology (quote 3).

PDMR's adaptation strategies were mainly problem-focused and were oriented towards work and self. The new online system (ABSHER) assisted PDMR in managing and supervising the Saudi Passport Unit so that the work of the branch improved, as indicated in quotes 4 and 5. He was also able to receive reports from the system, which was something he had never experienced before, as stated in quote 6 (i.e., benefits maximising).

Regarding outcomes, the new online system allowed PDMR to increase the efficiency and effectiveness of the whole unit and even to ask for more enhancement of the new system. The ABSHER system allowed the unit to increase production greatly compared with the previous situation of using the manual approach (quote 7). The new online system has greatly reduced the number of applicants who come to the branch, which is reflected in better work accuracy, as indicated in quotes 8 and 9 (i.e., increased efficiency and effectiveness). *PDMR is also considering more enhancement of the ABSHER system, since he wanted to add cases that cannot be served by the new system, such as dependants who do not have a national ID, which means they do not have photographs stored in the Social Affairs system that is integrated with ABSHER, as shown in quote 10 in Table 42 above (i.e., seeking more enhancement).* The CMUA model does not include this new outcome.

Another middle manager interviewed who exhibited benefits maximising strategies was PDMO. He regarded the new system positively once he heard about it and felt it was a significant achievement for the Passport Department (see quote 1 in Table 43 below). He

also welcomed the new system because it would help a great deal in the workplace, as indicated in quote 2 (i.e., opportunity). PDMO had a good degree of control over the situation. He had strong control over the work, since he felt that the system would change the way they worked in the Saudi Passport Unit, as stated in quote 3 (i.e., high control over work). He also had a lot of control over the technology, since he had a positive influence on how the system processes would function, as indicated in quote 4 (i.e., high control over technology).

Table 43: PDMO - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work and technology	Benefits maximising	<ul style="list-style-type: none"> Increased efficiency and effectiveness (Q8). <i>Seeking more enhancement (Q9).</i>
<p>(Q1) It was a great feeling and when I heard the details about it from the developers, I was very happy. I really considered the new online system [ABSHER] as a leap forward since it was an idea.</p> <p>(Q2) Since I was attending the meeting with the developers, I knew the potential of the online system and what it can offer for us.</p>	<p>(Q3) I was saying this new system will make us well organised in our work. Now I can know the number of people who are going to come the next morning because everyone who wants to come here in the branch needs to get an appointment from the online system before he/she comes.</p> <p>(Q4) The new system has been developed based on our knowledge in the Passport Department.</p>	<p>(Q5) The new system allowed me to manage my employees better so that I can use them to do other tasks. It has benefited me personally in the way I work and it reflected on my mood as well.</p> <p>(Q6) We don't use paper applications now except for some cases. Before the new system, we had a big archive room here and the employees were always asking for more space and we don't have that space, the online system [ABSHER] has helped us so much on this issue. It has an electronic archiving system.</p> <p>(Q7) I don't use the new system at all, it is a fully automated system, I have nothing to do with it. That doesn't mean we don't do anything here as officers, my colleagues and I were giving the developers some comments and suggestions on how the processes should be, and they have taken our comments into account and modified the processes exactly as we suggested.</p>	<p>(Q8) Now we produce almost double what we used to produce and the workload is reduced a lot. Also, No mistakes at all in the online system, it is a good, secure, quick system and a constantly developed system.</p> <p><i>(Q9) I would say adding the dependants who are less than 15 years old and by the way they are working on this issue to add it in the system, so no need for parents or guardians to come here for their dependants anymore, it is just a matter of time. This would reduce the number of applicants who come to the branch by at least 95%.</i></p>

PDMO's adaptation strategies were entirely problem-focused and oriented towards work, self and technology. The new online system allowed him to supervise the reception desk better than before, which meant his efforts were oriented towards the work as he could organise tasks for his employees. His adaptation efforts were also oriented towards self, since he developed new management behaviour and skills using information technology (quote 5). The new system also allowed him to manage the workplace space, since the employees do not need space for archiving paper applications, as indicated in quote 6. PDMO's adaptation strategies were oriented towards the technology, since he and his colleagues were able to modify the processes and allow the developers to change the processes based on their knowledge, as stated in quote 7 (i.e., benefits maximising).

Concerning outcomes, the new system allowed PDMO to increase the productivity of the reception desk and change the mood of all the employees, including himself, for the better. Moreover, the workload after the new online system has been reduced significantly compared with before the implementation, as stated in quote 8 (i.e., increased efficiency and effectiveness). *PDMO has asked for enhancement to the system to make the work in the Saudi Passport Unit even easier, as indicated in quote 9 (i.e., seeking more enhancement).*

One more middle manager who exhibited a benefits maximising strategy was PDFM. He welcomed the new system ever since he heard about it because he was hoping to have a passport branch without any applicants, as stated in quote 1 in Table 44 below (i.e., opportunity).

Table 44: PDFM - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work	Benefits maximising	<ul style="list-style-type: none"> • Increased efficiency and effectiveness (Q5 and Q6). • <i>Seeking more enhancement (Q7).</i>
<p>(Q1) I thought it was an amazing idea and that was right. When I first heard about the new system [ABSHER], I was saying finally, this is what we want, we always wanted an office without people coming to it. I was so happy and very supportive, not just me, all of us here.</p>	<p>(Q2) I was sure this system would help us so much here in the passport branch, especially in the printing room. When citizens use the online system, that would minimise the number of operations we perform here in the printing room every day and this will enhance our way to manage this room well.</p>	<p>(Q3) ABSHER has changed so many things here in my work. People can now be served from their home, they don't need to come here, this makes life here in the branch easier. This helped me to supervise my employees here and manage my time in the work very well. My time was so messy before the implementation of the new system.</p> <p>(Q4) No, I don't use the new system to process the applications. The ABSHER system is just between the citizens and the system itself. There is no need for me to do anything during the process except for some cases, such as dependants. We need to do that manually. Anyway, my colleagues and I were part of the new system development since we attended the meetings with the developers to discuss and draw up the processes for issuing and printing the passports.</p>	<p>(Q5) The new system helped us with not checking each application before we print the passport. We were printing 1,000-1,500 manually every day before the new system, while now we just print 100-150 passport manually. This is a great help. Also, now we produce 2,500-3,000 passports every day.</p> <p>(Q6) Before the new system, mistakes rarely happened but yes, that is true, we were making mistakes. However, after ABSHER, the rate of mistakes is close to zero.</p> <p><i>(Q7) The possibility of having the service for dependants. If we have this function in the system, that would make the work here much easier than now. This will impact the whole thing here positively.</i></p>

PDFM had a high degree of control over work because the new system (ABSHER) changed and enhanced the way they operate the printing room, as stated in quote 2.

PDFM's adaptation strategies were mainly problem-focused and oriented towards work and technology, and on trying to gain the most benefit from ABSHER. PDFM's strategies to adapt to ABSHER in his work were very successful, since the new system has allowed him to manage the printing room and his time much more efficiently (quote 3). PDFM's adaptation strategies were also directed to technology, since he was one of the team members to meet the developers to modify and reengineer the processes for the Passport Department, as stated in quote 4 (i.e., benefits maximising).

Concerning outcomes, the new system allowed PDFM and the printing room as a whole to increase their performance significantly, since they could now produce double (i.e., increased efficiency) what they could before the new system, as shown in quote 5. ABSHER also greatly reduced the rate of mistakes, as indicated in quote 6 (i.e., increased effectiveness). *PDFM also asked for more enhancement to ABSHER by hoping that the developers could add dependants and change the photograph and spelling functions, as stated in quote 7 (i.e., seeking more enhancement).*

Another middle manager who exhibited benefits maximising adaptation strategies in the Passport Department - Riyadh branch - was PDBO. He assessed the ABSHER system positively, since he felt it was a very good idea, as shown in quote 1 in Table 45 below (i.e., opportunity). He felt that he had a high level of control over the situation, particularly work and self. He had control over work, since he felt the system would improve the tasks they performed in the printing room. He also had a high level of control over self, since he felt that he would adapt to the new system easily, as indicated in quote 2 (i.e., high control over the situation).

Table 45: PDBO - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work and self	Benefits maximising	<ul style="list-style-type: none"> Increased efficiency and effectiveness (Q5 and Q6). <i>Seeking more enhancement (Q7).</i>
(Q1) When I heard about the new system, I wasn't afraid at all to be moved somewhere else but the opposite, I was completely happy and enthusiastic. The idea itself is great and this would reduce the exhaustion that I have faced since I moved here to the Passport Department.	(Q2) I work here and I know how it looked at that time, it was so crowded here in the lobby and outside the branch, the traffic outside the branch was horrible. I was sure with the new system this would be gone and the whole situation was going to be very adaptable and our tasks here would be well organised and better than the old system.	<p>(Q3) The new system allowed me to know a lot of information about the tasks we need to do tomorrow, and this makes the work here easier for me, especially for managing the employees in the printing room. This information lets me balance between the tasks we are required to do every day in the printing room.</p> <p>(Q4) Our team has done a tremendous job, when we were meeting with the developers to transfer the services to the electronic manner and make the processes of issuing/renewing and printing the passports as easy as we can.</p>	<p>(Q5) We were producing around 1,000-1,200 passports every day before the new system but now we issue 2,500-3,000 passports every day, and guess what, with less effort and errors. The system helped to increase the branch production as a whole, not even just our branch, the whole branches across the country. Also, the new system improves the whole thing here in the printing room, even my skills for managing the tasks.</p> <p>(Q6) The new system reduced the number of citizens who come here to the branch by at least 60%-70% and that helped us to reduce the mistake rate a lot.</p> <p><i>(Q7) Absolutely not! The new technology is much better than the traditional way and I look forward to the day they add the dependants into the system as well as changing the photo and spelling services.</i></p>

PDBO's adaptation strategies were problem-focused and directed to work and technology. The new online system helped PDBO to organise the printing room and manage it well (quote 3). Moreover, PDBO was able to modify, change and suggest how the processes should operate and this allowed him to reduce the processes involved in printing the passports as much as he could to make them easier, as stated in quote 4 (i.e., benefits maximising).

Regarding outcomes, PDBO felt that the system provided significant improvements in the printing room as a whole (i.e., increased production) and in his skills for managing the work, as stated in quote 5. He also believed that the new online system had lowered the percentage of mistakes made, since the new system reduced the number of operations they carried out, as indicated in quote 6 (i.e., increased efficiency and effectiveness). *PDBO has also asked for more enhancement to the new online system to make the work environment even better, as shown in quote 7 (i.e., seeking more enhancement).* This has resulted in a new outcome that has not so far been addressed in the CMUA and could be added to it.

Another middle manager interviewed who exhibited a benefits maximising strategy was PDAS. As with the other middle managers in the Passport Department, PDAS positively assessed the new online system (ABSHER) and felt very happy and excited about the idea when he heard about it, as stated in quotes 1 and 2 in Table 46 below (i.e., opportunity). PDAS had a high level of control over work, since he felt that the new online system was going to assist him to do his job more efficiently, as shown in quote 3 (i.e., high control over work).

Table 46: PDAS - coping model of user adaptation (the italics font depict the probable new elements of the CMUA)

Assessment		Adaptation strategies	Outcomes
Primary assessment	Secondary assessment		
Opportunity	High control over work	Benefits maximising	<ul style="list-style-type: none"> • Increased efficiency and effectiveness (Q6 and Q7). • <i>Seeking more enhancement</i> (Q8).
<p>(Q1) Ever since it was an idea and just words, I was so excited. I was telling myself, I'm part of this organisation and we deserve to work in a peaceful environment. I thought it's something we needed for a long time.</p> <p>(Q2) I was so happy and this is what I was dreaming of, a fundamental change that would make the work here better, not just for the employees, but even for the citizens.</p>	<p>(Q3) I graduated from the Computer Science Department and I knew what the technology can do for this place. I was sure the new online system would help me a lot here in my work and that it would ease things for all of the employees.</p>	<p>(Q4) This new system allowed me to change the way I work here and everything in the Passport Unit. In the past, I was asked a lot by the commander to help on the front desk but now this never happens again.</p> <p>(Q5) It wasn't very easy work to transfer the procedures to being electronic, my colleagues and I worked hard to achieve this.</p>	<p>(Q6) With the new system [ABSHER] we are able to produce more than 2,500-3,000 passports every day, which is, I think, a great achievement.</p> <p>(Q7) The ABSHER system has reduced the mistakes to no mistakes at all.</p> <p>(Q8) <i>The system and the website are excellent and easy to use by the applicants, but we need to add some services (add dependants, changing photos and changing English spelling). This would add a big improvement to the system. We already sent our comments to the NIC and ELM Company (the developers) and I hope to have these services soon.</i></p>

Concerning adaptation strategies, PDAS exhibited a benefits maximising approach that was directed towards work and technology. The ABSHER system allowed PDAS to change the way he worked and to focus on his own tasks, rather than being at the reception desk helping to monitor employees (see quote 4 in Table 46 above). Moreover, PDAS and his colleagues were able to participate in meetings with the developers, draw up procedures for issuing/renewing passports and then choose the best functions to help them, as shown in quote 5 (i.e., benefits maximising).

In relation to outcomes, the new system allowed the Saudi Passport Unit to increase its performance almost twofold, as indicated in quote 6 (i.e., increased efficiency) and to reduce the number of mistakes to zero, as stated in quote 7 (i.e., increased effectiveness). PDAS also asked for further enhancement to the system (quote 8) in order to achieve a building that applicants would not need to visit (i.e., *seeking more enhancement*). This outcome is new, as mentioned earlier in this section.

4.5.4. Case summary

The data analysis of the five interviews with middle managers conducted in the Passport Department - Riyadh branch - revealed that the CMUA needs to be improved. Surprisingly, all the middle managers who participated in this case study exhibited a benefits maximising strategy and were willing to reap the most from the advantages the new system offers.

The data revealed a finding in this case that is not included in the CMUA. This new finding is a new outcome, described in this research study as *seeking more IT enhancements*.

Having presented the analysis of the four case studies, the next chapter presents the within-case analysis conducted for this research study.

CHAPTER FIVE: WITHIN-CASE ANALYSIS

5.1. Introduction

Chapter four presented the results of the analysis of the four different case studies included in this research. This chapter presents and discusses the findings of the study. Section 5.2 presents the characteristics of the four case studies and the reasons for giving each case a unique name. A discussion of the within-case analysis is then presented in section 5.3 and contains a discussion of each of the case studies conducted in this research.

The within-case analysis first includes discussion of the Commercial Register Office, which is presented in section 5.3.1. Then, the adaptation strategies and the reasons identified for them are presented in sections 5.3.1.1, 5.3.1.2 and 5.3.1.3. The conclusion of the discussion is presented in section 5.3.2.

The next section presents an analysis of the Department of Corporate Services (5.3.3). This section includes discussion of two adaptation strategies: benefits maximising (5.3.3.1) and disturbance handling (5.3.3.2). The conclusion is presented in section 5.3.4.

After that, the analysis of the Recruitment Department is presented in section 5.3.5, followed by the two adaptation strategies identified (5.3.5.1 and 5.3.5.2). The conclusion of the analysis is presented in section 5.3.6.

The final section in this part is the discussion of the fourth case analysis, which involves the Passport Department, which is presented in section 5.3.7. Section 5.3.7.1 presents the only adaptation strategy recognised in this case study: benefits maximising. The conclusion of the discussion is presented in section 5.3.8.

5.2. Characterising and understanding the four case studies

This section presents a brief explanation of how each case study is characterised in order to show the differences between the cases and to clarify the reasons for naming each individual case.

It is first necessary to understand the mechanisms of middle managers' interactions with new online systems being implemented in their workplace. The CMUA model is an appropriate basis for describing these mechanisms. The current study is considered the first to investigate e-government initiatives using this model. In order to conduct this investigation, it was important for this study to choose different cases with varying environments and characteristics to enrich the outcomes of the study as much as possible. The researcher initially considered nine cases. Four of these were selected based on the following reasons: (i) recently implemented e-government initiatives; and (ii) managers who were interested in the proposed study, which meant a high degree of accessibility to the data needed, as described in the methodology chapter in section 3.5.2. Each of the four cases selected were given a unique name based on their characteristics. These cases are:

- Commercial Register Office
- Department of Corporate Services
- Recruitment Department
- Passport Department

Figure 12 below shows the cases with their unique names and status (i.e., successful adaptation and unsuccessful adaptation).

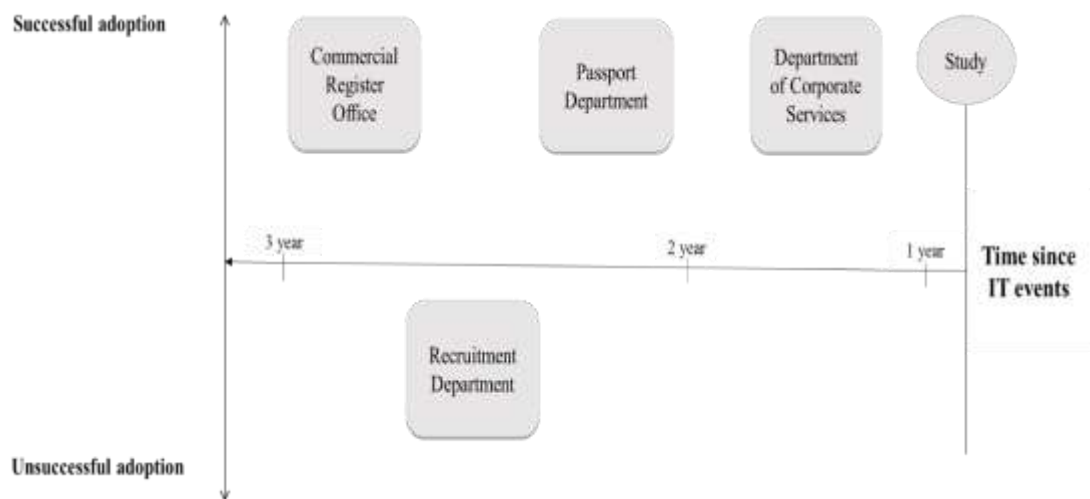


Figure 12: Case characteristics

First, the system implemented in the Commercial Register Office is referred to in this study as a “*the most distantly implemented system*”, since it was the first e-government initiative application implemented in the Ministry of Commerce and Industry. This application was implemented in the fourth quarter of 2014. The system was also the first and oldest system implemented of the nine systems mentioned in section 3.5.2 in Table 10. According to the Office Manager, the system is mandatory and must be used by all the middle managers in the Commercial Register Office. The system is considered to have been successfully implemented, since it has helped most of the middle managers in the Commercial Register Office increase their performance. The new online system is still running and serves all the people across Saudi Arabia extremely efficiently.

The new e-government system implemented in the Department of Corporate Services has been named the “*the least distantly implemented system*” in this study, since it was the most recently implemented of all the nine systems initially considered (as mentioned in Table 10 in section 3.5.2). “The Establishment of New Companies” system was implemented in the fourth quarter of 2015 and the gap between this study and its implementation was less than three months.

The third case, that of the Recruitment Department, is referred to in this study as the “*unsuccessfully adapted system*”, since the Ministry of Labour decided to stop running the system using its own employees and gave it to the developer to run. Most of the middle managers interviewed in this case were unhappy about using the new online system (MUSANED) and felt that it was a distraction. The Ministry of Labour tried to improve the new online system to meet the needs of the middle managers but, ultimately, the top managers decided to stop working on the new system and allow the developer to run it, so the role of the ministry in this issue is simply to act as a regulator.

The fourth case in this research was conducted in the Passport Department - Riyadh branch. This case study is referred to in this research as the “*hands-off system*” because none of the middle managers in the department touch the system at all. The procedures are operated entirely between the applicants and the online system. The employees are not involved during the processes of issuing/renewing Saudi passports, apart from printing operations, which have become much easier in comparison with the old method of printing.

In the next four sections, the researcher describes the within-case analysis for each case. Each case study is discussed rigorously. These sections also identify what this study found that is not currently catered for in the CMUA, and highlight aspects about which this study found the CMUA to be silent.

5.3. Within-case analysis

This section presents an analysis of all four cases studied in this research. It presents a detailed narrative of the dynamic of the middle managers’ adaptation strategies when they faced a new IT event in their workplace. This discussion also shows the strong relationship between the adaptation strategies followed and the success or otherwise of the adoption of the new systems in all four cases. In each case, several new elements were

identified, particularly in the primary assessment stage and the outcomes. The discussion covers each adaptation strategy identified, followed by a conclusion for each case study.

5.3.1. Discussion of the Commercial Register Office case study

In this section, the researcher considers all the responses in this case and then examines the similarities and differences between them in relation to all the middle managers interviewed. This section also discusses why the new electronic system was successfully adopted. Moreover, the researcher discusses the reasons for the middle managers interviewed having certain primary assessments, secondary assessments, and adaptation strategies and then why they achieved certain outcomes. These individuals are then grouped according to their adaptation strategies and discussed separately in the following sections. The conclusion of the discussion of this case study is then presented.

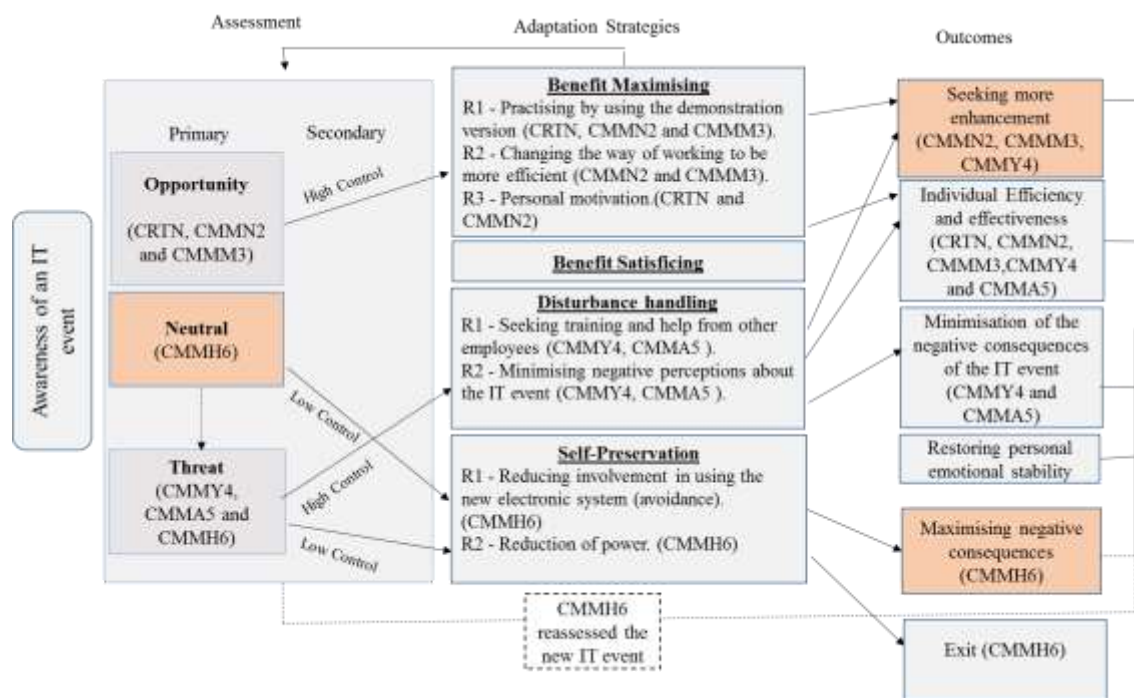


Figure 13: Findings from the Commercial Register Office (CRO)

The pink squares depict the new elements of the CMUA that were uncovered in the literature. The codes in the primary assessment squares refer to specific middle managers who provided the data in the interviews.

Figure 13 maps all the information about the behaviours (as well as reasons for such behaviours) of the middle managers in the Commercial Register Office interviewed in

this study. The implementation of the new online system in the Commercial Register Office is deemed to have been successful, as there were more middle managers who engaged in benefits maximising and disturbance handling strategies than those who engaged in a self-preservation strategy. As shown in Figure 13 above, all the middle managers who exhibited benefits maximising were able to increase their performance, as well as those who exhibited a disturbance handling strategy. This situation is reflected overall in the level of success of the new system implementation. There were six middle managers who participated in this case study and all exhibited different adaptation strategies: three of them engaged in benefits maximising strategies for a number of reasons, two exhibited a disturbance handling strategy for different reasons, and one middle manager exhibited self-preservation strategies, again for different reasons. These strategies are all based on initial and secondary assessments of the IT event, which in this case was the implementation of a new online system to issue Commercial Registration Certificates. Outcomes have been indicated in this case study for each of the middle managers based on the strategies they used to adapt to the new electronic system.

The next sections present each of the adaptation strategies exhibited by the participants, starting with the first strategy (benefits maximising), as well as briefly discussing the different reasons for their individual adaptation strategy.

5.3.1.1. Benefits maximising - Commercial Register Office

In the Commercial Register Office case study, three of the six middle managers interviewed exhibited benefits maximising strategies for different reasons. The discussion of the primary and secondary assessments the managers made is presented in this section. The reasons that led them to engage in benefits maximising strategies are also presented in this section. A new form of initial assessment is identified in this section (i.e., *neutral*). The new outcomes that have been discovered in this case are also presented (i.e., *seeking more enhancement* and *maximising negative consequences*). Figure 13 in section 5.3.1

above shows the middle managers who were trying to gain the most benefit from the newly implemented online system and the reasons they were trying to do so.

In relation to the primary and secondary assessments, it can be seen from Figure 13 that three middle managers considered the new e-government online system implemented recently in their workplace as an opportunity. After the interpretation of the data, particularly before and after the CMUA, it was revealed that the main factors that led these middle managers to see the new online system as a chance for them and an opportunity to benefit from it were (i) their experience of using technology and (ii) the modern education they had received, or both (for more information, see sections 4.2.2.3 and 4.2.3). All three middle managers (CRTN, CMMN2 and CMMM3) believed that technology was a chance to improve the way they worked and make it easier for them to manage their time, tasks and so on. The data interpreted also revealed that good training and experience of using technology (before the IT event) were a significant reason for these middle managers having a high degree of control over the situation, as it was easy for them to learn the new technology without any problems.

Regarding adaptation strategies, these middle managers were very serious about learning the new system as quickly as they could by practising and using the demonstration system to reap the greatest possible benefits that could be offered by the new Commercial Register online system. This seems to be the most common reason that led them to engage in a benefits maximising strategy. Practising the new online system before its deployment would also prevent these middle managers from making mistakes, which is considered a major responsibility in the public service sector. Noticeably, there were another two reasons that seemed to be less common than the first. CMMN2 and CMMM3 found that the system had changed the way they were working for the better, since they used to undergo stages of paperwork with the client in order to issue a certificate. With the online system, however, they no longer need to do this. On the other hand, CRTN did not

mention this reason because he still worked the same way, as he needed to approve names with both the old internal system and the new online system. With regard to the third reason, CRTN and CMMN2 were driven by self-motivation to absorb the most benefit from the online system, while there was no self-motivation reason found that led CMMM3 to engage in a benefits maximising strategy.

In relation to outcomes, *notably, two of the middle managers (CMMN2 and CMMM3) in this case asked for more enhancement and development of the new system, which is considered a new outcome that could enhance the framework.* The reasons that led the middle managers in this case to engage in a benefits maximising strategy also allowed them to increase their efficiency and effectiveness. After analysing the data, the researcher attributes this choice of strategy to two factors: (i) the modern education the two middle managers had received, and (ii) their young age compared with the other middle manager (CRTN). It is a common observation that young employees are more eager to use complex technology and absorb new enhancement and development of that technology than older employees (CRTN). The next section presents the second adaptation strategy identified: disturbance handling.

5.3.1.2. Disturbance handling - Commercial Register Office

The disturbance handling strategy in this case study was exhibited by two middle managers. There are two reasons that led them to engage in this strategy to adapt to the new online system. Figure 13 in section 5.3.1 shows who these middle managers are and the reasons that led them to engage in a disturbance handling strategy. This section also discuss a new finding that emerged in this case study.

With regard to their primary and secondary assessments, CMMY4 and CMMA5 saw the new online system as a threat, as shown in Figure 13. The researcher explains this negative emotion regarding the new system as a result of the lack of modern education these two middle managers have received, as shown in Figure 13 in section 5.3.1. The

lack of prior experience of using technology tools in the workplace also plays a significant role in the first perception of a new IT event, as indicated in quote 1 in Table 25 in section 4.2.3.3. These observations were made after interpreting the situation before and after the CMUA. Moreover, the middle managers' confidence and enthusiasm in learning the new online system led them to obtain good control over the situation.

In relation to their adaptation strategy, there are many reasons that led the two middle managers to engage in disturbance handling, but there were two reasons that both had in common: (i) seeking training and help from other employees, and (ii) minimising the negative perceptions of the IT event. The two reasons rely heavily on these two middle managers lacking experience in the use of technology tools. This shows the importance of analysing the situation before and after the CMUA. The researcher attributes the success of minimising the negative consequences to the eagerness and self-motivation of both managers to master the new online system and their understanding that the Ministry of Commerce is also part of society and needs to follow certain trends in the country. Regarding the second reason they had in common, both middle managers were trying to attend training sessions to increase their ability to deal with the newly implemented online system. They also asked their colleagues for help when they needed an explanation of any parts of the new system. This also relates to their lack of experience.

Regarding outcomes, both middle managers were able to minimise negative consequences and even increase their efficiency and effectiveness. These middle managers also asked for more enhancement of the new online system to increase their performance further, even if this made the electronic system more complex. The data analysis attributes the positive results to the high control over the situation (self, technology and the work environment) both middle managers showed. The researcher found two reasons for these outcomes: (i) the keenness that the two middle managers

showed to adapt to the new electronic system; and (ii) the investment in training that was provided to the employees by the Commercial Register Office.

The next section presents the third adaptation strategy identified: self-preservation.

5.3.1.3. Self-preservation - Commercial Register Office

In the Commercial Register Office, just one middle manager exhibited a self-preservation strategy for a different reason. Figure 13 in section 5.3.1 shows the reasons that led CMMH6 to engage in a self-preservation strategy. It also presents new findings that were discovered in this case: (i) *neutral* and (ii) *maximising negative consequences*.

Initially, CMMH6 did not feel threatened by the new online system but nor did he feel that the system was an opportunity. He was situated in the middle of the primary assessment (i.e., between threat and opportunity), *which in this study is termed “neutral”, as mentioned in section 4.2.3.4. This is quite interesting, since this primary assessment does not currently exist in the CMUA.* The researcher attributes this new primary assessment to the self-deception that had influenced CMMH6. The situation can be explained by CMMH6 not feeling threatened when the new system was introduced due to his being experienced enough in using technology but, at the same time, he did not expect the new system would add any value in terms of increasing his skills or performance. CMMH6 had low control over the situation because he was not sufficiently eager to learn the newly implemented electronic system compared with his colleagues at the Commercial Registry Office.

After reassessing the new electronic system, CMMH6's adaptation strategies were completely against the new online system, although all the other middle managers in the same organisation fully supported the idea of the new system and felt it would help them in their workplace. Regarding the first reason, CMMH6 did not make any serious efforts to adapt to the new online system; he was simply trying to avoid using it. However, since

he had no other choice except to use the new system, he did that at the minimum level of usage (i.e., underutilisation). In relation to the second reason, the situation in the Register Office before implementing the new system was messy, and applicants were rarely served without difficulty. For example, any applicants who wanted a service from the Register Office needed to start queuing very early in the morning, from at least 05:00 to 05:30 am, as mentioned by many of the middle managers interviewed (apart from CMMH6), so knowing someone inside the Register Office would clear the difficulty of being served the same day. CMMH6 was one of the employees who enjoyed power gained from the old system. It is absolutely normal that he would resist the new online system and try to avoid it.

Regarding CMMH6's outcomes, *a new outcome that could be added to the framework (i.e. CMUA) has been discovered after analysing the data. This new outcome is referred to in this study as "maximising negative consequences"*. This phenomenon is attributed by the researcher to the idea that CMMH6 would have suffered from a reduction in the power that he had enjoyed under the old way of working. His other possible outcome was to exit from the new system, which supports the CMUA model that when someone exhibits a self-preservation strategy, she/he might escape from the situation.

The next section presents the conclusion of the within-case analysis of this case study.

5.3.2. Case study conclusion

Based on the data analysis presented in this case, it is evident that the CMUA has a deficit and needs to be extended to cover shortcomings, particularly when applying the model to study newly implemented e-government applications. It is also evident that the shift of power was a key driver that impact the adaptation strategy mechanism.

It is clearly important to understand how employees assess a new IT event, since it has a significant impact on their coping efforts and, eventually, their performance, which might

affect the overall success of the new electronic system. The researcher refers to the good level of success in adopting the newly implemented system as a result of the middle managers' adaptation strategies in this case. Evidence has already emerged that links the positive adaptation strategies of middle managers to positive results in the implementation of a new online system. The middle managers were directed first by their primary and secondary assessments and then by their serious efforts to be engaged with the adaptation strategies, as presented in Figure 13.

It is highly useful to analyse the situation before and after the implementation of a new system, namely, the evolution of (i) the roles of the middle managers, and (ii) the service processes. A number of the interviewees stated that they had easier roles and better processes after the implementation of the new system. For instance, one of the participants mentioned: *“My role now is easier than before since the new system has been implemented, the new system also has completely changed the processes of issuing Commercial Registration Certificates to be fast and better”*. (See section 4.2.3.1 for more details.)

Regarding the primary and secondary assessments, the data revealed that, at the beginning, three of the five middle managers in this case felt that the new system would be a positive opportunity for them, while some of the other middle managers saw it as a threat. Surprisingly, one of the middle managers saw the new electronic system as neutral at the beginning (when the new system was just an idea). However, this participant later regarded the new electronic system as a threat (i.e., at the point when this middle manager realised that the new electronic system was going to be a reality). It is obvious that all the middle managers, particularly those who had a high degree of control over the situation (i.e., task, self, technology), and even those who saw the new electronic system as a threat, were able to cope positively and to increase their performance. Not just that, they even

asked for more enhancement of the new system so that they could stop serving clients face to face (for some cases), even if the new system became more complex.

In relation to adaptation strategies, each strategy consists of a set of reasons that are considered to be the core components of that particular strategy. These reasons are different from one adaptation strategy to another and determine which adaptation strategies the middle managers would engage. In this case, the data revealed that two reasons seem to be behind the overall positive impact of adapting to the new electronic system successfully: (i) using a demonstration version to practise the new system, and (ii) seeking training and help from colleagues. Organisations and those at the top management level should think seriously regarding these reasons to increase the overall level of success of the implementation of a new electronic system. There was no evidence found regarding one of the adaptation strategies mentioned in the CMUA, which was not observed in this case: a benefits satisficing strategy. The data showed that none of the interviewees felt that the new system was an opportunity and had low control over the situation, which leads to a benefits satisficing strategy.

This case study makes several contributions to theory. Three new elements have been discovered that might be added to the original framework. First, there is a new primary assessment discovered in this case study: “*neutral*”. This is an unusual primary assessment that emerged in this case study. There is evidence that when employees in the study assessed the new electronic system as neutral and the secondary assessment resulted in a negative evaluation (particularly the employees who lost power and had enjoyed working using the old method), those perceptions led to passive emotions and outcomes. These employees begin to be considerably harder to be managed effectively. Consequently, top management should be aware of such behaviour and find a way to change it and not underestimate the possible damage that might come from employees who complain a lot about a new electronic system (i.e., negative word of mouth).

The second outcome is *asking for more IT enhancement*. Most of the middle managers in this case study were impacted positively by the new IT event, which in this case was the introduction of online Commercial Register services. This positive impact occurred due to some of the middle managers regarding the new system as an opportunity and being willing to learn as much as they could about it. Other middle managers saw the new online system as a threat but were very successful in reappraising their feelings and further increasing their efficiency and effectiveness. All these middle managers (who exhibited benefits maximising and disturbance handling strategies) asked for more improvement, which resulted in an exceptional outcome that does not currently exist in the CMUA. The managers want their work to be easier by the addition of more services associated with their tasks, particularly the services that clients can do online without meeting them face to face. Top management could learn a lesson from this, in that providing tools with which to practise a new electronic system will positively impact middle managers' performance. Moreover, top management should encourage employees to be self-motivated by providing the right environment for them (promotions, listening to them closely, etc.).

Regarding the third outcome, the data also showed that the reduction of power that some employees had been enjoying under the old way of working might increase the level of IT resistance and could result in a new outcome that could be added to original framework: *maximising negative consequences*. As mentioned earlier, when users assessed the new IT event as neutral and the secondary assessment resulted in a negative appraisal (particularly for employees who lost some power and had enjoyed working using the old method), those perceptions led to passive emotions, such as those employees becoming much harder to deal with. It should be taken into consideration that the reduction of power which middle managers might feel because of the new electronic system, can be a harmful for the implementation processes since there will be a high level of resistance that might hinder the project to be successful. Markus (1983) explains that

internal users are mostly inclined to resist using a new technology when their power is threatened by the new information system implementation. One solution to avoid such IT implementation resistance is top management support to the lower level managers (Markus 1983). Top management and organisations could address this issue by targeting these middle managers and providing them with more support, such as personalised training, particularly for the psychological health of their employees.

Finally, the data from this case study also showed that the high level of acceptance and satisfaction with the new system among middle managers contributed significantly to its successful implementation. One participant noted: *“Now it’s much better, easy work and less errors. It used to be so busy before the system was launched, it was so exhausting even though the number of applications is greater than before”*.

The next section presents a discussion of the case study involving the Department of Corporate Services.

5.3.3. Discussion of the Department of Corporate Services case study

This section analyses the findings from the Department of Corporate Services case study. All the responses from the participating middle managers are presented (i.e., similarities and differences). This section discusses why the new system was adopted successfully. It also discusses why the participating middle managers might have had certain primary and secondary assessments and adaptation strategies that led to the outcomes. The participating middle managers are then grouped according to their adaptation strategies and discussed separately in the following section. The conclusion of the discussion of this case study is then presented.

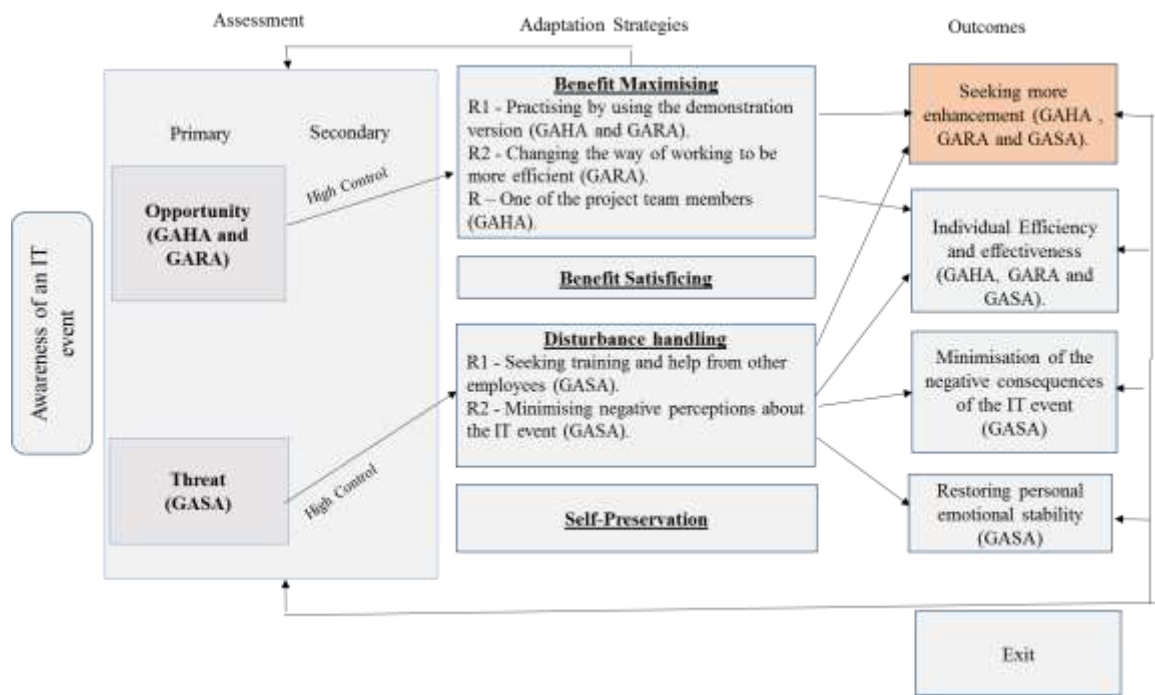


Figure 14: Findings from the Department of Corporate Services case study (DCS)

The pink squares depict the new elements of the CMUA that were uncovered in the literature. The codes in the primary assessment squares refer to the middle managers interviewed.

Figure 14 shows the whole picture of the case study, starting with the initial and secondary assessments for each of the participating middle managers. The next column shows the reasons that led them to engage in certain adaptation strategies. The outcomes associated with each adaptation strategy are presented on the left of the figure.

Three middle managers participated in this case study: two engaged in benefits maximising and the other exhibited a disturbance handling strategy. All three middle managers were able to increase their performance, which reflected positively on the level of success of the newly implemented system. Successful implementation was also due to the eagerness to use the new system the three middle managers showed once it was introduced to them.

The next section presents each adaptation strategy the middle managers engaged in, starting with benefits maximising.

5.3.3.1. Benefits maximising - Department of Corporate Services

Two middle managers in the Department of Corporate Services (GAHA and GARA) engaged in a benefits maximising strategy. This section presents a discussion of the two managers' initial and secondary assessments and why they regarded the new online system as an opportunity. The reasons that drove them to engage in a benefits maximising strategy are also discussed in this section. A discussion of the outcomes is then presented, as a new outcome emerged in this case study: *seeking more IT enhancement*.

Regarding their primary and secondary assessments, Figure 14 in section 5.3.3 shows that GAHA and GARA considered the new online system as an opportunity. In particular, the data interpreted from before the CMUA show that both middle managers were very experienced in using technology tools and keen to learn the new system as quickly as they could, as they were driven by the belief that using the technology would make their work easier. The researcher relates the positive assessments of the new electronic system by both middle managers (i.e., their initial and secondary assessments) to the more modern education they received in comparison with the other middle managers.

Regarding the adaptation strategy, as illustrated in Figure 14, practising the new online system seems to be a common reason in this case for exhibiting benefits maximising strategies. Both middle managers practised the demonstration version voluntarily, which reflects their eagerness to master it as quickly as they could in order to change the current way of working. For example, the new online system allowed GAHA to manage and monitor his employees and to concentrate on more important matters in his workplace. This meant that the new system changed the way he was working for the better. GARA did not mention this reason but this might be because he was only responsible for issuing contracts for new companies and had no other responsibilities upon which he needed to concentrate. A third reason was mentioned by GAHA: he was part of the development process, since he was more experienced in the processes and procedures of establishing

new companies. This gave him a vision of what the new system could offer him in order to facilitate his work and make it much easier.

Concerning the outcome, the strategy the two middle managers used to adapt to the new electronic system allowed them to increase their performance; not only was this the case, but both of them *asked for more enhancement of the new electronic system*, which is deemed to be a new outcome that could be added to the CMUA. The interpretation of the data reveals that the solid modern education base they received was one of the reasons that led them to interact positively with the newly implemented system. There is another reason the researcher considers a cause for the managers' ability to adapt positively to the new system, which is the enthusiasm of both middle managers to change the way they worked for the better.

The next section presents a discussion of the other adaptation strategy exhibited in the Department of Corporate Services.

5.3.3.2. Disturbance handling - Department of Corporate Services

In this case study, one middle manager engaged in a disturbance handling strategy (GASA). There were two reasons for his engaging in this adaptation strategy. New findings were found in this case study, particularly with regard to the outcomes.

With respect to his primary and the secondary assessments, GASA evaluated the new electronic system as a threat. This can be attributed to his lack of experience in using technology in the workplace and, unlike the other middle managers who participated in this case study, who were younger than GASA, he had not received a modern education. The researcher observed that age plays a very important role when it comes to the use of technology. However, GASA was very enthusiastic to learn the new electronic system and was confident that his abilities would enable him to do so (secondary assessment).

Concerning his adaptation strategy, there are two reasons that led GASA to be engaged in disturbance handling, as illustrated in Figure 14. GASA was driven by self-motivation to minimise the negative consequences of the new electronic system, since he believed that technology is an important element to have in the workplace. The data analysis revealed that there is a strong relationship between a lack of experience in using technology and older employees. Seeking training was one of the approaches to covering the shortcomings in his ability to learn the new electronic system and led GASA to use a disturbance handling strategy.

In relation to the outcomes, GASA was able to minimise the perceived threat of the new system and restore his feeling of stability. His adaptation efforts also helped him to increase his performance and even ask for more development of the new technology, as was the case with the two middle managers who exhibited a benefits maximising strategy. The data analysis attributed these outcomes to the high control over self, technology and the work environment GASA showed.

The conclusion of this case study is presented next.

5.3.4. Case study conclusion

The data revealed that there was a strong interrelationship between the positive adoption of a new IT system in the public sector and the adaptation strategies followed by the middle managers.

In this case study, the data detected a need to analyse the situation before and after the implementation of the new electronic system, particularly the roles of the middle managers and the processes the service offered. All the participants in this case agreed that the processes were now much easier than before. One of the participants stated: *“There is no way to compare the processes of this modern system with that outdated system”*. The roles of the middle managers were also viewed as being better than before,

as stated by one of the participants: *“Definitely, there is a lot that has been changed to be better than before, my role now is much easier than before. I do everything electronically without seeing the clients in front to explain everything for them. The new system has saved both my time and the clients’ time”*. (See section 4.3.3.1 for more details.)

Regarding the primary and secondary assessments in this case study, the new electronic system is considered to have been successfully adopted, since most of the middle managers in the department regarded it as an opportunity (two out of three middle managers) and were willing to reap the maximum benefit the new system could offer them. Even the middle manager who initially saw the new system as a threat was able to increase his performance and, furthermore, ask for more enhancement of the new system, which is considered an exceptional outcome. All three middle managers had high control over the situation (i.e., self, work and technology), which might be why they adapted to the new system positively.

In relation to adaptation strategies, using a particular strategy depends on the primary and secondary assessments and the efforts associated with them (reasons). Three reasons were the basis for two of the middle managers (GAHA and GARA) using a benefits maximising strategy. One of these reasons, which should be taken into consideration by those at the top management level and by organisations, is the provision of a demonstration version of the new electronic system in order to maximise the potential benefit of the new system. There were also two reasons that led another middle manager (GASA) to exhibit a disturbance handling strategy. Practitioners should pay a great deal of attention to encouraging employees (the users of the system) to share their knowledge of a new electronic system and help each other to gain positive outcomes. There was no evidence of the two other adaptation strategies (i.e., benefits satisficing and self-preservation) in the framework in this case study.

One new finding emerged in this case study, particularly in the outcomes section. This new outcome is referred to as “*seeking more IT enhancement*”. Exceptionally, all the middle managers in this case asked for more enhancement, even if this made the newly implemented system more complex. This was because they wanted the work to be easier for them, particularly if the enhancement to the new electronic system stopped clients going to the department and meeting them face to face, which is (in some cases) not something to be desired by these middle managers. Overall, those at the top management level, organisations and designers could benefit from this case by concentrating on improving the work environment by designing a new electronic system that also covers the types of specific cases that clients cannot fulfil online and need to meet employees face to face to be served manually and in person.

The high acceptance of the new system among the participants in the department means the successful implementation of the system. One of the interviewees (GARA) stated:

There is a lot has been changed to a better way and definitely the work now is much easier than before. I do everything electronically without seeing the clients in front of me and wasting my time explaining everything for them. The new system has saved both my time and the clients' time. This is absolutely something we would have needed to use from a long time.

The next section presents a discussion of the third case: the Recruitment Department in the Ministry of Labour.

5.3.5. Discussion of the Recruitment Department

This section presents a discussion of the findings for this case study. The researcher considers all the responses from the middle managers in this case, then examines the similarities and differences between them. The researcher then studies why the middle managers made certain primary and secondary assessments and followed a particular adaptation strategy, and then why they might have arrived at certain outcomes. The

middle managers are then grouped according to their adaptation strategy (as in the previous section) and the findings presented in the following section.

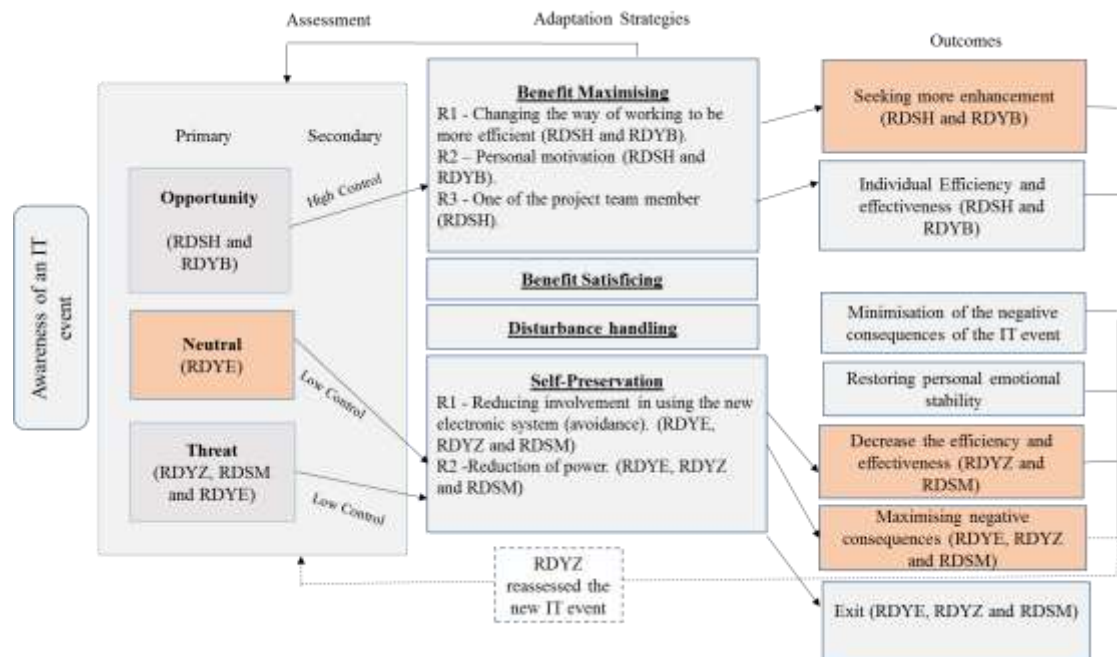


Figure 15: Findings from the Recruitment Department Services case study (RD)

The pink squares depict the new elements of the CMUA that were uncovered in the literature. The codes in the primary assessment squares refer to the middle managers interviewed.

Figure 15 above shows information about the behaviours of the middle managers interviewed in the Recruitment Department. Five middle managers participated in this study and each exhibited a different adaptation strategy: two of them engaged in benefits maximising strategies for a number of reasons, and the other three exhibited a self-preservation strategy for further different reasons.

As shown in Figure 15, all the middle managers who exhibited a benefits maximising strategy were able to increase their performance. However, the middle managers who practised a self-preservation strategy impacted negatively on the new online system, since they were completely against it. This situation reflected overall on the level of success of the new system's implementation. Outcomes have been indicated in this case study for each of the middle managers based on the strategies they used to adapt to the new electronic system.

The next sections present each adaptation strategy exhibited by the participants, starting with the first: benefits maximising.

5.3.5.1. Benefits maximising - Recruitment Department

There were two middle managers in the Recruitment Department who engaged in a benefits maximising strategy: RDSH and RDYB. This section presents their primary and secondary assessments of the situation. The reasons that led these middle managers to practise a certain adaptation strategy are also presented. This section then presents a discussion of the outcomes, as well as the new outcomes that emerged from this case study and might be added to the framework.

With regard to primary and secondary assessments, Figure 15 shows that the two middle managers referred to above (RDSH and RDYB) considered the new electronic system in their workplace as an opportunity for them. The data analysis reveals that the reason that led them to be excited about the new electronic system was that they would no longer be required to meet customers face to face, a situation that has been wanted for a long time. Both middle managers had high control over the situation, which led them to engage in a benefits maximising strategy.

Concerning their adaptation strategies, the first reason seems to have been one that led both middle managers (RDSH and RDYB) to practise a benefits maximising strategy. Both were working hard to prove that the new system was a good tool and could change the way of working in the Recruitment Department. Both agreed that the new electronic system made the work easier than before (paper-based applications). However, despite their efforts to demonstrate the importance of the new electronic system, it was not adopted successfully in this case; other middle managers were fully against its implementation. The second common reason for both middle managers engaging in a benefits maximising strategy was that they were driven by self-motivation. The researcher attributes this to their keenness to develop their skills and look more professional. There

is one more reason that seems significant, which led one of these middle managers to exhibit benefits maximising, as shown in Figure 15 above. RDSH was very familiar with the new system, since he was one of the project team members to develop the new electronic MUSANED system. He knew the potential of the new system and how it would make life easier in the Recruitment Department.

In relation to outcomes, both middle managers (RDSH and RDYB) increased their performance and, furthermore, asked for more enhancement of the new system, which is considered a new finding. The researcher found that these middle managers were younger than the others, which suggests they had received a more modern education.

The next section presents a discussion of the other adaptation strategy exhibited in the Recruitment Department: self-preservation.

5.3.5.2. Self-preservation - Recruitment Department

In the Recruitment Department, three of the five middle managers interviewed engaged in a self-preservation strategy: RDYZ, RDSM and RDYE. The primary and secondary assessments of the three middle managers are presented and discussed in this section. Many reasons drove the middle managers to engage in this particular adaptation strategy, as shown in Figure 15 above. These reasons are discussed in this section. The outcomes are also presented in this section. Four new findings (i.e., *neutral*, *seeking more IT enhancement*, *decreased efficiency and effectiveness*, and *maximising negative consequences*) that emerged from this case study are also presented in this section.

In relation to their primary and secondary assessments, two of the three middle managers (RDYZ and RDSM) regarded the new electronic system as a threat, since they claimed that the system would make the work in the department more complex. The data interpretation suggests that these two employees were older when compared with the others, which might be one of the reasons that led them to assess the new system as a

threat. Another reason, which was mentioned by the developer, was that these two users lost the great amount of power they enjoyed before the new electronic system was implemented and this could explain why they were against it. The other middle manager (RDYE) initially assessed the new system as *neutral, which is considered a new finding in this case study*, since he did not feel the system was either a threat or an opportunity. The interpretation of the data, particularly before and after the CMUA, reveals that RDYE was situated in the middle between threat and opportunity and assessed the new system as *neutral*, since he was very experienced in using the internal system. The internal system was quite similar to the new system, other than a few changes. However, after a while, RDYE reassessed the new electronic system as a threat. All three middle managers had low control over the situation, since they were very unhappy about the new system and wanted neither to use it nor to change the environment by using it (RDYZ and RDSM) or cared anything about it (RDYE).

With regard to adaptation strategies, since all three middle managers were, in reality, against the new system, this situation led them to exhibit a self-preservation strategy. There were two common reasons that led them to engage in this strategy. First, they tried to avoid using the new system as much as they could to demonstrate and deliver their idea about the new system causing disruption to their work. The second reason was that the new system caused them a reduction in the power they were pleased to hold under the old working system (i.e. as reported by the developer representative).

Concerning outcomes, two of the middle managers (RDYZ and RDSM) claimed that the new electronic system was the reason for a decrease in their performance and that they would manage better without it (*decreased efficiency and effectiveness*). All three middle managers (RDYE, RDYZ and RDSM) complained a great deal about the new electronic system and *maximised the negative consequences* of using it (e.g., they frequently stated that the system was slow when it was actually running normally). This is a new outcome

that emerged from this case study and might be added to the CMUA. The middle managers also suggested a number of reasons for returning to work using the old system and they successfully achieved that. The Ministry of Labour decided to stop running the new system internally and gave it to the developer (a third party) to run, which means that MUSANED was unsuccessfully adopted. One of the respondents (the developer representative) mentioned:

Due to the high resistance from the Recruitment Department employees who were assigned to run the MUSANED system, the Ministry has taken a clear decision to stop running the system and let our employees run it. The ministry were blaming us on that but we proved to them the problem came from somewhere else. For example, the performance of one girl from our company mostly equals the performance of a number of the ministry's employees.

5.3.6. Case study conclusion

It is clear from the above discussion that the new electronic MUSANED system could not be adopted successfully in the Recruitment Department, since most of the middle managers (i.e. RDYZ, RDSM and RDYE) did not welcome it and did not want to adapt to it positively. They created obstacles to stop themselves having to use the new electronic system. It is evident in this case study the key factor that didn't let these middle managers to engage positively with new electronic system has been the reduction of power they felt comparing to the old way of work. This led the Ministry of Labour to make the decision to give the new system to a third party to run.

Most of the middle managers in this case study thought that their roles were harder under the new system compared with the old way of working. One of the middle managers (RDYZ) stated:

The new electronic system is better in one particular issue, which is that no need to meet with clients face to face, but if the new system will be as is, it is going to be hard to work with, until they fix what we told them. I need to check each application if there is replication or not, that was really a waste of time and effort.

See section 4.4.3.1 for more details about the above response.

In relation to the primary and secondary assessments undertaken, the data revealed that most of the middle managers regarded the new electronic online system as a threat (one of them assessed it at the beginning when the system was just an idea as *neutral*; he later came to see it as a threat when he realised the new system was a reality). All of these middle managers had low control over the situation, since they were unwilling to learn, use the new electronic system or change the way they had worked before the implementation. This undoubtedly had a negative impact on their adaptation strategies and, consequently, their outcomes. This is considered an example of early resistance and those at the top management of organisations should address this form of behaviour. They should act appropriately as soon as possible to decrease the level of resistance (e.g., by fully explaining the benefits of implementing a new electronic system to the employees). Ignoring this behaviour could provoke an escalation in resistance, which costs a great deal of time and money.

The self-preservation strategy in this case consisted of two main elements: reducing involvement in using the new electronic system and a reduction in or loss of power. Both factors are related to each other. These two factors are considered the most common reasons that led the middle managers in this case to practise a self-preservation strategy. Both reasons explain the negative behaviour pattern the managers used in their attempts to stop working with the new electronic system and return to the old method. They were successful in their efforts, since the ministry gave the new system to a third party to run on their behalf. It seems the reduction of power the middle managers have felt, extremely impacted the implementation of the new electronic system by increasing the level of resistance. Markus (1983) states that “strength of resistance would appear to be strongly related to size of the loss and its perceived importance” (p. 442). In keeping with the work of Beaudry and Pinsonneault (2005), this research triangulated its findings by using data from interviews with the developers’ representatives. According to the developer

representative losing power was the major reason to resist using the new system.. This finding has important implications for those at the top management level in an organisation. They need to identify users' behaviours towards a new system early and confront the risk by communicating frankly with their employees (those who see the new system as a threat) to reduce and mitigate it before the implementation starts in order to ensure successful adaptation.

Three more elements that emerged from this case study that might be added to the original framework: one in the primary assessment column and the other two in the outcome column. There is evidence that a new form of primary assessment lies between the original primary assessments given in the CMUA framework. This new primary assessment is described in this case study as *neutral*. The data revealed that, after a while, the middle manager who initially assessed the new IT event as neutral then started to regard the same IT event as a threat. This should raise a red flag for top management, due to an initial assessment of a new IT event by employees as *neutral* when they have low control over the situation, as this could later result in a high level of resistance. This finding (neutral with low control over the situation) might also provide an initial sign of resistance to a new IT event, so those at the top management level and their organisation should attempt to address this issue early in the implementation process.

Regarding the new elements in the outcome column, the second element is *maximising negative consequences*. Some of the middle managers in this case study impacted negatively on the new electronic system implemented recently in their workplace (i.e., MUSANED), as discussed earlier. This resulted in these middle managers maximising the negative consequences of everything that occurred, even small issues relating to the new electronic system that could have been solved immediately (i.e., they constantly complained). This led to the third new outcome identified in this case study, which can

be described as *decreased efficiency and effectiveness*. This might be a further enhancement to the CMUA.

High acceptance of the system by the users means successful implementation. In this case study, since most of the middle managers were against the new system, this meant low acceptance of the new information technology event, which led to unsuccessful implementation. One of the participants (RDYE) stated:

My way of doing my job now (the old system) is better, it is faster than the new system even though it is paper-based application. Paper-based applications doesn't mean I don't use our internal system [i.e., the ministry electronic system], I still use technology to process the applications.

Overall, the lesson that should be learned from this case study is that solving issues associated with a negative assessment by middle managers of an IT event at the beginning is important, particularly middle managers who have low control over the situation. Top management could communicate openly with employees to illuminate the benefits that the new electronic system would offer and let them share their ideas and suggestions about it. They could also offer their employees training, particularly psychological sessions to eliminate their fears regarding loss of power.

The next section presents a discussion of the Passport Department, whose system is labelled as being hands-off.

5.3.7. Discussion of the Passport Department case study

This section presents a discussion of the findings of this case study. All the responses from the five middle managers who participated in the research are examined and then all the similarities and differences between the responses are extracted. This section also discusses why the middle managers made certain primary and secondary assessments, the adaptation strategy they employed, and the outcomes. The case study is then concluded.

Figure 16 below illustrates information gathered about the middle managers who participated.

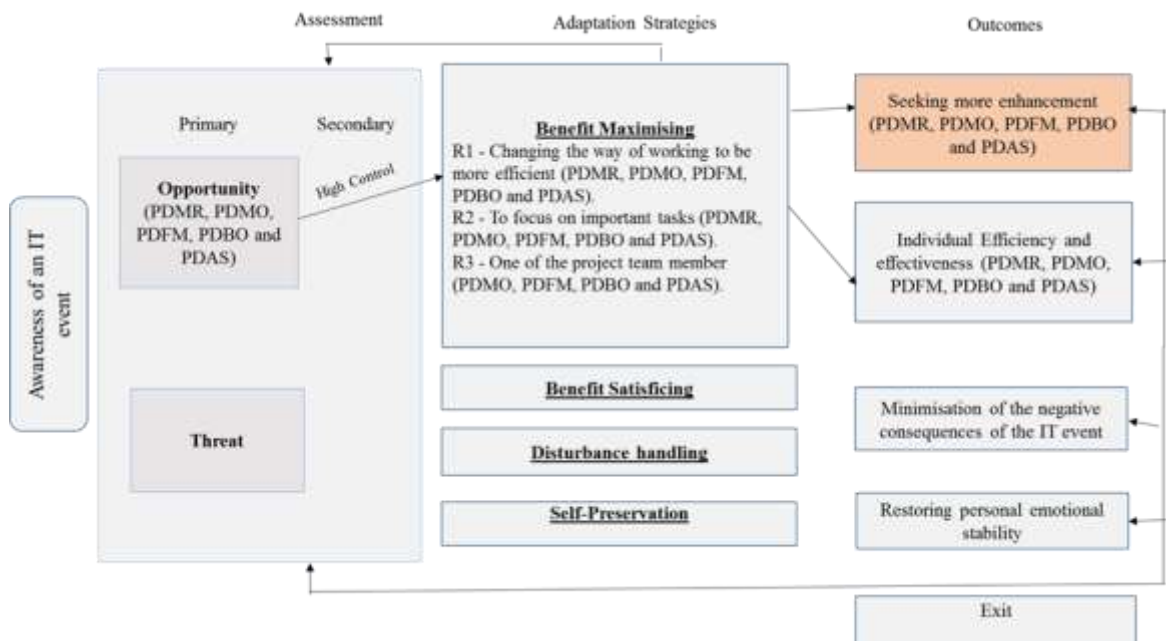


Figure 16: Findings from the Passport Department case study (PD)

The pink squares depict the new elements of the CMUA that were uncovered in the literature. The codes in the primary assessment squares refer to the middle managers interviewed.

Five middle managers participated in this case study. All five middle managers were very happy and excited about the new system that was implemented recently in their workplace. The new online system (ABSHER) is deemed to have been successfully adopted, since all the middle managers were trying to gain the most benefit from it and exhibited a benefits maximising strategy. From Figure 16, it can be seen that all five middle managers increased their efficiency and effectiveness and even asked for more enhancement to the ABSHER system, which reflected positively in the level of adoption success.

The next section presents the only adaptation strategy exhibited in the Passport Department: benefits maximising.

5.3.7.1. Benefits maximising - Passport Department

The five middle managers in the Passport Department who participated in the research (PDMR, PDMO, PDFM, PDBO and PDAS) exhibited a benefits maximising strategy. This section discusses their primary and secondary assessments and the reasons that led these middle managers to practise a certain adaptation strategy. A discussion of the outcomes is also presented in this section, as well as the new outcomes that emerged from this case study that could be a potential enhancement to the CMUA.

In relation to their primary and secondary assessments, the data analysis of the situation before the introduction of the new system showed that the five middle managers were suffering in their work environment and from the whole situation. All of them mentioned that meeting clients face to face was the most bothersome thing for them, so once they heard about the new system, they were very happy and excited about it and assessed the new system as an opportunity for them to change the unwanted situation they were facing. Their high acceptance and keenness to change the overall situation drove them to have a high degree of control over work, self, and technology.

Concerning the adaptation strategy, since all the middle managers assessed the new IT event as an opportunity and they had high control over the situation, their adaptation strategy was then to gain the most benefit from the new ABSHER system. There are three common reasons (efforts) that led most of them to engage in a benefits maximising strategy, as shown in Figure 16 above. First, the new online system allowed all the middle managers who participated to change the way they worked for the better. For example, they no longer needed to meet clients and explain everything to them. The second reason seems to be the most common for engaging in benefits maximising in the Passport Department. Following the introduction of the new online system, all the middle managers were allowed to concentrate on the more important tasks in their job, which was reflected in their performance. Third, all the middle managers (except PDMR) were

part of the development team that met the developer to work on the new ABSHER system. PDMR was not part of the developing team since he was at a higher managerial level than the other middle managers. This gave the middle managers (except PDMR) the ability to identify the most important characteristics of the new electronic system and to learn the features that could be of help to them.

Regarding outcomes, all the middle managers interviewed mentioned that their performance was greater than before, as the department now produced many more passports with less effort. They also asked for more enhancements to ABSHER, as shown in Figure 16. This finding is not currently catered for in the CMUA.

The conclusion to the Passport Department case study is presented in the next section.

5.3.8. Case study conclusion

The new passport electronic system was deemed to have been successfully adopted since all the middle managers who participated in this study were excited about it (they saw it as an opportunity) and their efforts were designed to gain the greatest benefit they could from it. The Passport Department case study demonstrates that when most or all the middle managers feel positively about a new IT event and have high control over the situation, this is a major sign that the new electronic system is going to be successfully adopted by the organisation.

It is useful to analyse the situation before and after the CMUA, particularly in terms of the participants' roles and the processes relating to the services undertaken. One of the participant middle managers (PDMR) stated:

There is no way to compare my roles before the new system and after the implementation of it. Managing this place was so difficult before the new system. Also, the processes were taking a long time and effort but now we don't do anything in the matter of issuing/renewing passports, we are not involved during the processes, it is all between the applicants and the online system. We just print the passports and the printing processes got even better.

See section 4.5.3.1 for more details about similar types of response.

The data revealed that because the new electronic system is fully automated and the interviewees were very excited about it, the only strategy that was exhibited by the middle managers in this case was benefits maximising. There were three reasons that led these middle managers to pursue a benefits maximising strategy, as shown in Figure 16. These reasons were the basis for increasing the level of success of the new system being adopted. The reason all the middle managers agreed upon was that the new system had completely changed the way they worked by not having to meet clients, since they had been suffering from that requirement. After the system was introduced, they also devoted most their time to taking care of other tasks that had been taking such a lot of time (the new system helped them to organise their time more effectively). This result prompts a suggestion to those at the top management level in an organisation that, when they decide to implement a new electronic system, they should make the system fully automated, to ensure successful adaptation to it by the employees, then overall successful adoption of the new system by the organisation as a whole.

The middle managers' primary and secondary assessments and their coping strategies were reflected positively in their outcomes. Surprisingly, all the middle managers in this case were able to increase their performance much more than before with less effort. Moreover, they even asked for more enhancement to the new system, which resulted in a new outcome that can be added to the CMUA. Consequently, those at the top management level of an organisation should aim to concentrate on fully automating a new electronic system in any public service to increase employees' performance.

The data also revealed that the high level of acceptance and satisfaction with ABSHER among the participating middle managers contributed significantly to its successful implementation. One of the middle managers interviewed (PDBO) stated:

I work here and I know how it looks, it was so crowded here in the lobby and outside the branch, the traffic outside the branch was horrible. The new system is absolutely helpful, it helps the employees to have a better work environment

and reduce the workload and the stress associated with it. Our performance is greater than before, and guess what, with less effort.

The next chapter presents the discussion and the conclusion to this research study.

CHAPTER SIX: DISCUSSION AND CONCLUSION

6.1. Introduction

This chapter presents the discussion and overall conclusions of this research study. The chapter starts by presenting a cross-case analysis (section 6.2). The answers to research questions one, two and three are presented in sections 6.2.1, 6.2.2 and 6.2.3, respectively. The chapter then presents the contributions to theory this research study offers in section 6.3 and discusses the contributions to practice in section 6.4. The chapter concludes by presenting the limitations of this research study in section 6.5 and opportunities for future research in section 6.6.

6.2. Discussion of research findings: cross-case analysis

This section provides an analysis of the data across the four case studies to explore the adaptation strategies of public sector middle managers faced with an IT event and the impact of these strategies on the success of IS implementation in the public sector. To do this, three research questions were formulated. Each research question is discussed separately and sequentially. In the cross-case analysis, the researcher has integrated the first and second research questions with the third to provide a comprehensive explanation. Figure 17 below shows how the research questions are divided in terms of the CMUA framework.

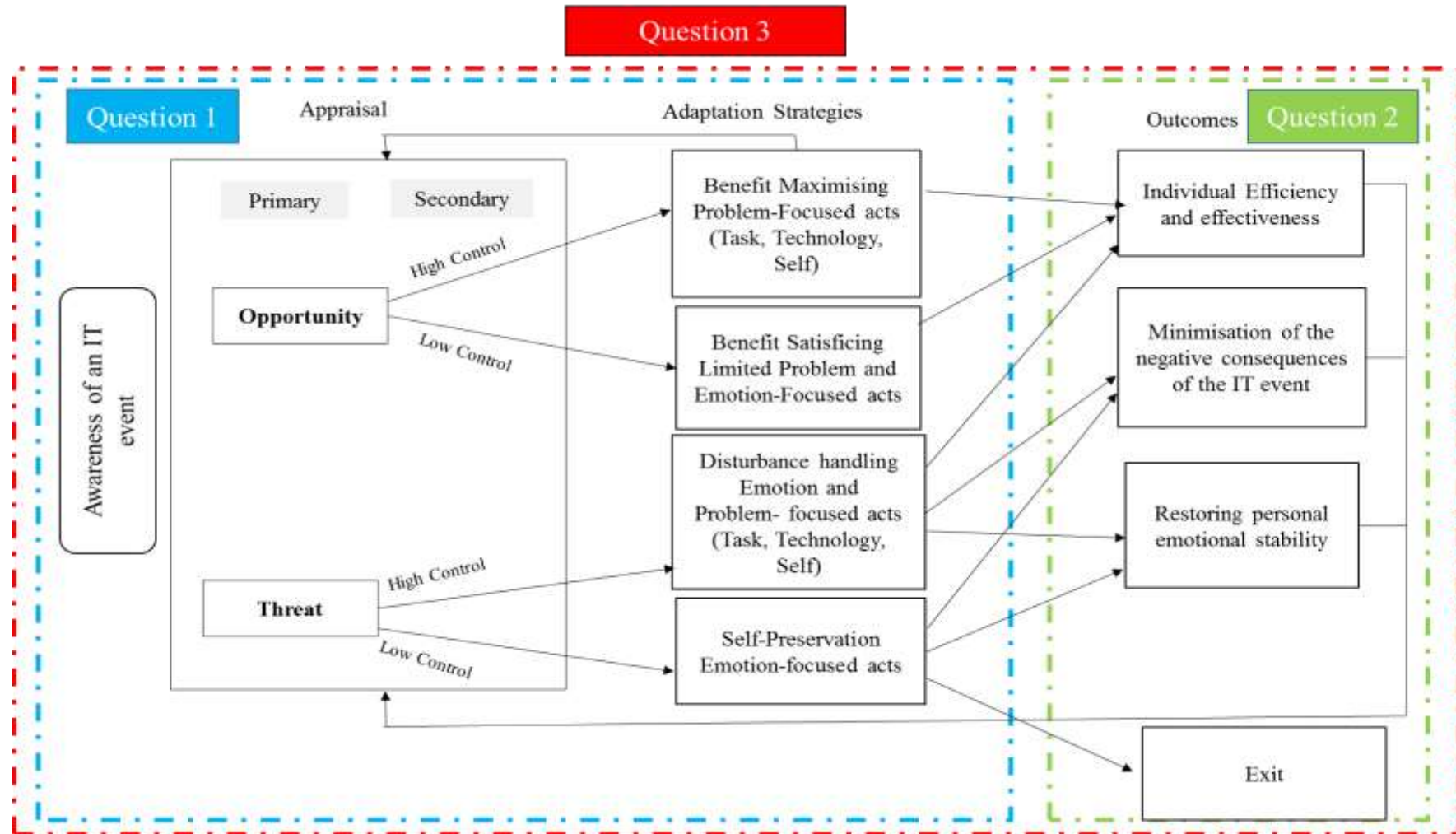


Figure 17: Presentation of the three research questions in regards of the framework

From Figure 17 above, research question one (section 6.2.1) is concerned with the first and second columns: (i) primary and secondary assessments, and (ii) adaptation strategies. Research question two (section 6.2.2) is associated with the third column in the diagram above and relates to the outcomes of the middle managers. Research question three (section 6.2.3) addresses the extension proposed to the CMUA.

The next section presents the answers to the first research question addressed in this study.

6.2.1. Research question one

In response to the lack of existing knowledge regarding the adaptation strategies of public sector middle managers when they face a new IT event, research question one of this study addressed the following:

To understand how public sector middle managers adapt to new IS projects that are implemented in their organisations, using the coping model of user adaptation (CMUA) as an analytical lens.

To discuss and outline the findings relating to research question one, there is a need to integrate the analysis of the situation before the CMUA, the primary and secondary assessments made, and the adaptation strategies in the discussion.

The majority of the middle managers from all four cases initially assessed the new electronic systems as an opportunity. The other middle managers assessed the new electronic systems as a threat or as *neutral* as shown in Figure 20 in section 6.2.3.

Situation before the CMUA (awareness of an IT event)

There are indications from all four case studies that there is an inverse relationship between the primary assessments of the middle managers and two other factors: the first is their experience of using IT, the second is whether the middle managers had received a modern education. Analysing the situation before the CMUA (i.e., awareness of the IT event) revealed that most of the middle managers (from all four cases) who had strong

experience using IT tools and had also received a modern education usually assessed the new IT event as an opportunity. Conversely, those middle managers who did not fulfil these two criteria usually assessed the new IT event as a threat or as *neutral*, as shown in the participants' profiles in chapter four (particularly in sections 4.2.2.3, 4.3.2.3, 4.4.2.3 and 4.5.2.3). This finding has not been demonstrated or discussed in previous studies.

Primary and secondary assessments

Regarding the primary assessment, the cross-case analysis revealed that 63% (12/19) of the middle managers initially assessed the new electronic system as an opportunity. As shown in Figure 18 below, the percentages of the middle managers who assessed the new electronic system as an opportunity are relatively high for the three cases that successfully adopted a new electronic systems (i.e., CRO, DCS and PD). On the other hand, it is lower in the fourth case (RD), which was unsuccessful in adopting a new electronic system, as already explained in the within-case analysis, due to more of the middle managers interviewed by the researcher being against the new electronic system. This suggests that a modern education and good experience of using IT play significant roles in assessing a new IT event at the beginning.

The data also reveal that, exceptionally, 100% of the middle managers in the Passport Department positively assessed the new electronic system at the beginning. This might be because the well-designed electronic system does not require intervention from them, except for some of the easy cases (see section 4.5.3 for more details). Of the middle managers from all the cases, 26% assessed the newly implemented electronic system as a threat. These middle managers were all less well educated than the other middle managers, as indicated from their profiles in Tables 20, 28 and 33 in chapter four. They had received a less modern education, since they were slightly older than the other middle managers who participated in this study.

Exceptionally, of the middle managers who participated from two different cases (the Commercial Register Office and the Recruitment Department), 11% (2/19) assessed the newly implemented electronic systems as *neutral* because they did not regard the new electronic system as either an opportunity or a threat (this new finding needs more research to be validated). The IS literature has focused on and directed attention to the challenges and difficulties that older employees face when new and modern information technology is introduced into their workplace (Lee et al., 2011; Tams et al., 2014). Ziefle and Bay (2005) assert in their study that older employees cannot interact effectively with modern technology because they received their education in a period in which technologies were not as complex as they are currently.

It is very important for those at the top management level in the public sector to pay more attention when choosing the right individuals for a task. Specifically, middle managers who have received a modern education and have sufficient experience using IT will be able to operate a new electronic systems recently implemented in their workplace. This would increase the number of users who might positively assess a new electronic system as an opportunity, which would have a positive impact on the implementation overall. Moreover, organisations could learn a lesson from the Passport Department case study that designing good systems that do not need intervention from the internal employees (in this study, the middle managers) would increase the likelihood of employees initially assessing the new system positively.

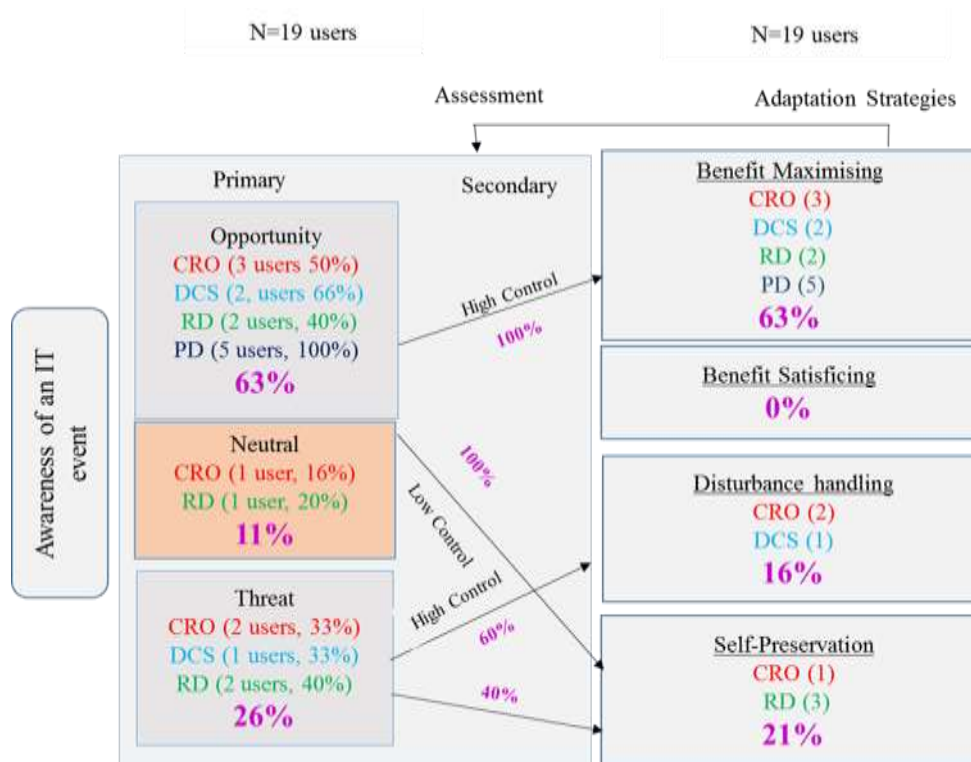


Figure 18: Primary and secondary assessments and the adaptation strategies following from all four cases studied

Regarding secondary assessments, the cross-case analysis indicates that the more control over the situation middle managers had, the more likely it was that they exhibited positive adaptation strategies. The data from all the cases reveal that middle managers with higher control were influenced by their willingness to learn the new electronic system, change the routines of working, and showed an ability to master the new IT event (for more details, see sections 4.2.3.2, 4.2.3.3, 4.3.3.2, 4.3.3.3, 4.4.3.2 and 4.5.3.1). The data reveal that all the middle managers (100%) who assessed the new system as an opportunity had a high degree of control over the situation. Exceptionally, none of them had low control, which might have led them to a benefits satisficing adaptation strategy, as illustrated in Figure 18 above. All the participants who had high control over the situation agreed with the reason for adapting to new systems, which was that the new electronic systems were easy to handle, learn and suitable for their work duties, and could be modified to match most of the new processes (for more details, see sections 5.3.1, 5.3.3, 5.3.5 and 5.3.7).

In contrast, the cross-case analysis reveals that middle managers with low control exhibited a negative adaptation strategy (i.e., self-preservation), since they were mostly unwilling to change their work routine, as discussed in sections 5.3.1.3 and 5.3.5.2.

Adaptation strategies

In relation to adaptation strategies, the data reveal that adapting to an IT event using a particular strategy depends on the primary and secondary assessments, as well as the reasons associated with them. The cross-case analysis reveals that most of the middle managers that participated in this study (63%) exhibited a benefits maximising strategy, even in the Recruitment Department, which is deemed to have been unsuccessful in adopting a new electronic system. There are common reasons that relate to positive adaptation strategies and explain how the middle managers in all the cases adapted to the new electronic system in their workplace. The cross-case analysis reveals that there were two reasons common to all the cases that positively impacted the middle managers. These reasons allowed the middle managers who exhibited a benefits maximising strategy to reap the most advantages the new electronic systems offered. These reasons are as follows:

- (i) Using a demonstration version to practise the new system.
- (ii) Changing the way of working to be more efficient (e.g., no longer having to meet clients face to face, which saved the middle managers time and effort and allowed them to concentrate on other tasks).

Those at the top management level in the public sector should perhaps consider these two reasons as a priority in order to heighten the possibility of positive adaptation by middle managers to a new system under development.

Of the middle managers from all the cases, 16% (three, from two different cases) exhibited a disturbance handling strategy, as shown in Figure 18. These three middle

managers had assessed the new IT event as a threat. However, since they were willing to learn and to change the way they worked, they positively adapted to the new electronic systems and ultimately increased their performance (this is discussed in detail in the next section; see also sections 4.2.3.3 and 4.3.3.3). The cross-case analysis reveals one reason common to the two middle managers who exhibited a disturbance handling strategy: seeking training and help from colleagues (for more information, see sections 5.3.1.2 and 5.3.3.2). Public organisations and their top management should encourage the exchange of knowledge and information about how to use a new electronic system and its advantages between their employees.

Of the middle managers from all the cases, 21% (four) from different cases (CRO and RD) exhibited a self-preservation strategy. There are indications that when middle managers assessed a new electronic system as neutral, they usually did not adapt positively to it. The cross-case analysis reveals that none of the four middle managers could adapt positively, since they would suffer from a reduction in the power they had been enjoying under the old way of working (for more details, see sections 4.2.3.4 and 4.4.3.3). Those at the top management level and practitioners might solve this issue by assigning these types of middle managers to a training programme that will, in particular, address the psychological aspects likely to be exhibited by middle managers following a change in working methods.

It should be noted that a benefits satisficing adaptation strategy was not identified in this study because of the working environment in the public sector in Saudi Arabia. This might be because most of the middle managers interviewed thought that the researcher would notify the top management in their organisation of their weaknesses and limited degree of control over the situation (i.e., work, self and technology) at the beginning of the implementation process. It might be that this would cause them problems in the future, so they preferred to state that they were very excited about the new electronic system. They

might also have thought that showing their weaknesses would prevent them from being promoted. The overall framework was well supported in most of the constructs, as illustrated in Figure 20 section 6.2.3.

Full details are provided under the answers to question three below to explain the new category in the primary assessment column. The next section presents the results for research question two.

6.2.2. Research question two

Having discussed adaptation strategies in the context of public sector middle managers when they face a new IT event, the discussion now addresses the second research question posed in this study:

To study how these adaptation strategies impact on the success of new IS implementations.

There are significant findings from this study with regard to adaptation strategies and their impacts on the level of success in adopting new electronic systems in public sector organisations. Middle managers in the public sector are quite likely to be critical factors that drive the successful implementation of new IT, as discussed in section 2.7.4. Thus, it is very important to study the way they adapt (i.e., the mechanisms they use) and interact with new IT events in their workplace. The CMUA is the basis in this study for understanding the mechanisms of middle managers' adaptation strategies.

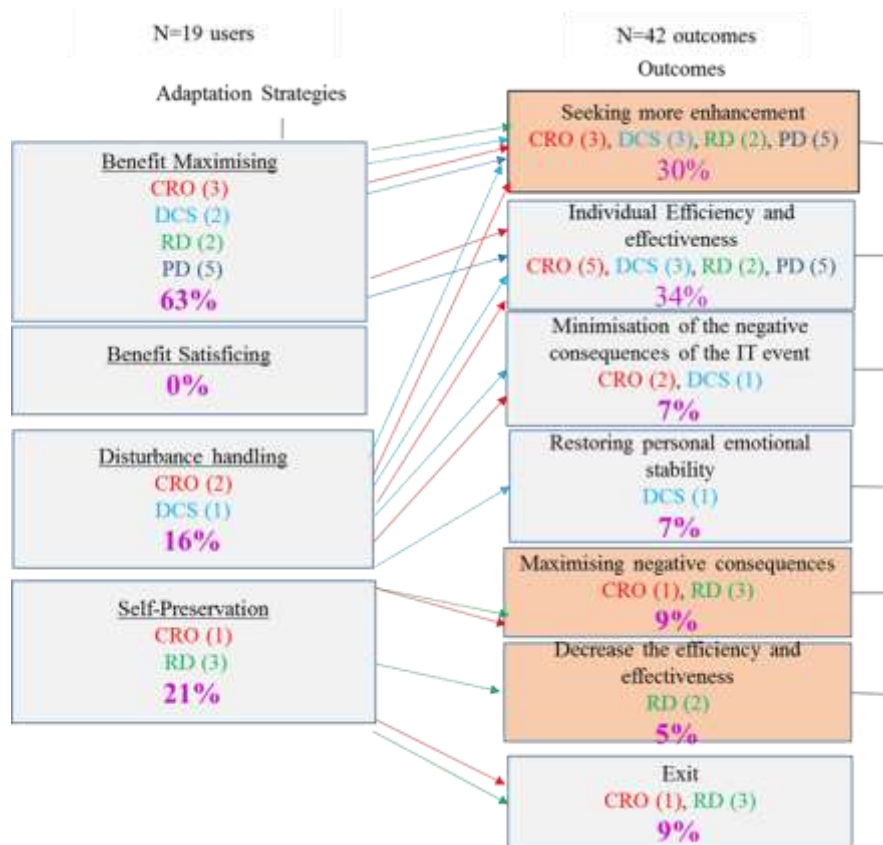


Figure 19: Adaptation strategies and resulting outcomes

The data in Figure 19 reveal that most of the middle managers, in all the cases, who exhibited benefits maximising and disturbance handling strategies were able to increase their efficiency and effectiveness (34% of the total outcomes), as was reflected positively overall in the level of success of the newly implemented systems. All these middle managers had some factors in common that enabled them to have positive outcomes. The first factor was that most of them had a modern education, which made them more knowledgeable about what advantages electronic systems can offer. The second factor is their willingness to improve their skills by learning, using and changing the way they worked (for more information, see sections 4.2.3.2, 4.2.3.3, 4.3.3.2, 4.3.3.3, 4.4.3.2 and 4.5.3.1). Moreover, they also asked for more enhancement of the new electronic systems, even if the systems became more complex, but on condition that the enhancement would stop clients coming to the organisation's building. For example, in the Passport Department, all the middle managers interviewed had asked for more improvements to

the new system in order to stop clients from going to the department building, by, for example, adding dependants who are under a certain age to the new electronic system. Thus, the dependants' parents or legal guardians would not then need to complete paper applications and meet them face to face, which takes a lot of time and effort from these middle managers, as discussed in section 4.5.3.2.

The data also indicate that the high level of acceptance and satisfaction with a new system among middle managers contributed significantly to its successful implementation and adoption. For example, three of the organisations investigated in this study (the Commercial Register Office, the Department of Corporate Services and the Passport Department) successfully implemented and adopted their new electronic systems, since the majority of the participants in these organisations (i.e., middle managers) showed high acceptance and were highly satisfied with the new systems, which was reflected in their ability to adapt positively to them (see sections 4.2.4, 4.3.4 and 4.4.4). Overall, organisations can benefit from encouraging their employees to absorb the most benefit from new electronic systems in order to increase their operational efficiency and effectiveness, which leads to the successful adoption of new electronic systems by organisations. This would be of benefit and save a great deal of money and effort for the organisations concerned, since e-government projects are very expensive and take a lot of time to design, as mentioned in section 3.5.1. Organisations can do this by offering a demonstration version on which to practise the new electronic system and encourage middle managers to share knowledge with those in their department about the new system and the benefits it offers.

On the other hand, as a result of the high level of resistance to operating a new electronic system, middle managers, particularly those in the case of the Recruitment Department, were able to stop using it. Of the middle managers who exhibited self-preservation, all of them were fully against the new electronic system and wanted to escape from the situation

(for example, by stopping using the new system, even if that was going to cause their organisation to lose a great deal of money). As already explained, the Recruitment Department's new electronic system is deemed to have been unsuccessfully adopted. It emerged that many of the middle managers the researcher interviewed were fully opposed to the new electronic system. Thus, the Ministry of Labour decided to suspend the project for a period of time and give it to the private sector to operate (see section 5.3.5.2 for more details).

The above findings suggest that studying the adaptation strategies of the users of electronic systems is important, in order to identify weaknesses and try to find appropriate solutions (e.g., by choosing the right users to operate the new electronic system and identifying lack of training). This confirms Markus' (2004) result, in that underutilisation of or resistance to using a new system by users is considered a critical factor that negatively impacts implementation success.

The next section discusses the third research question which explains the new element that should be added to the framework to enhance it.

6.2.3. Research question three

After discussing the adaptation strategies of the public sector middle managers interviewed and their impact on the level of success of the implementation of a new electronic system, this section outlines the finding that can be added to and extend the CMUA. The third research question in this study is:

To explore how the CMUA framework can be enhanced in light of its application to middle managers in the public sector facing a new IT event.

The researcher observed that the CMUA is discriminant. The middle managers who participated can be broken down into the different categories in the framework in terms of their primary assessment, secondary assessment, adaptation strategies and outcomes, as shown in Figure 20 below.

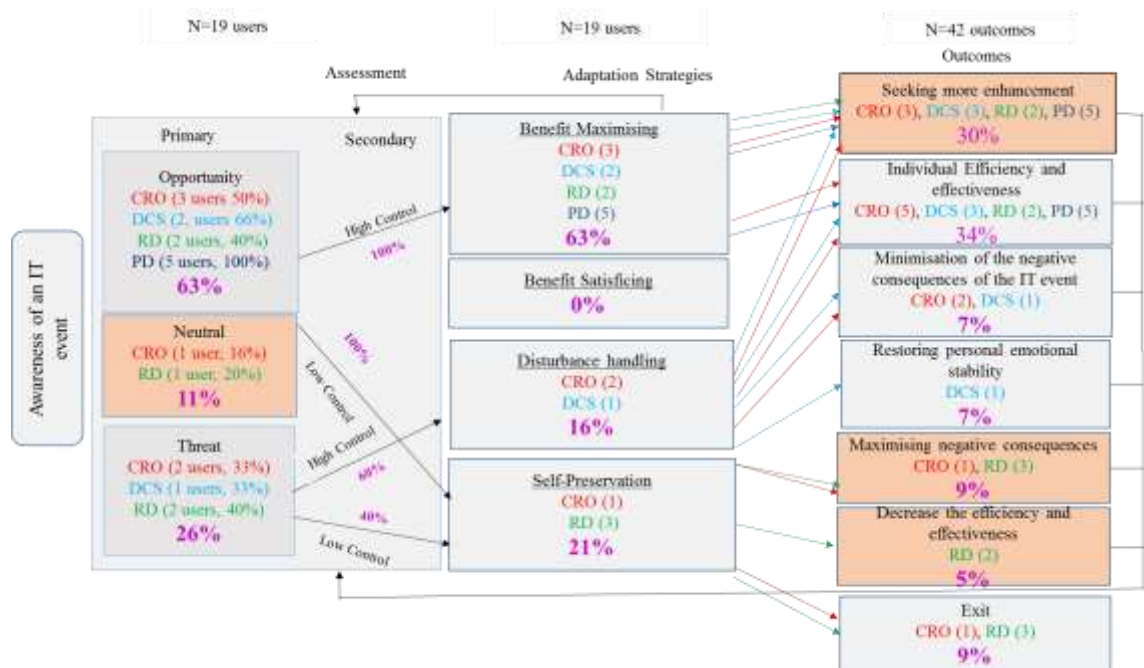


Figure 20: Aggregate data from all four case studies: CRO, DCS, RD and PD

From the above Figure, the data reveal that there is one more construct that can be added to the framework, since there were evidences in each case study for this new finding. This new emergent construct is *seeking more enhancement*.

New outcome in the framework: seeking more enhancement

The data reveals that there is one more new outcomes emerged from all the case studies conducted in this study and should be added to the framework (i.e., the CMUA). This new element is *seeking more enhancement*.

With regard to the first outcome from Figure 20 above, around one-third of the middle managers who participated in this study showed that they were not just pleased with the benefits provided by the new electronic systems, but also wanted more improvement and development to gain the greatest possible advantages to facilitate the tasks they were processing and increase their efficiency and effectiveness. Most of these middle managers agreed that the enhancements to the new systems should concentrate on stopping clients visiting the organisation's building to be served face to face (see

sections 4.2.4, 4.3.4 and 4.5.4 for more details). This can be described as *seeking more enhancement*. The cross-case analysis reveals that the more the services were automated, the easier the work for all the middle managers, which is something they prefer. This allowed them to organise their time to perform the other tasks they are required to do.

The next section discusses the contributions to theory made by this research study.

6.3. Contributions to theory

This research study has provided empirical validation for the usefulness of the Beaudry and Pinsonneault (2005) framework as an analytical lens to simply and accurately capture the adaptation strategies used by middle managers in the public sector who face a new IT event in their workplace (in this study, the new IT events were e-government initiatives). The framework is also useful for examining how various adaptation strategies affect middle managers' outcomes, as these can impact overall the success of electronic system implementation.

To contribute to theory, this research used a framework that has never been applied before in the context of e-government. This research study applied the CMUA with 19 middle managers in the public sector who faced new e-government initiatives (new IT events), while the original framework was applied with just six account managers in tow North American Banks. The middle managers who participated in this study were selected from four different departments with different environments, as described in section 5.2, while the original framework was applied in just two private sector organisations.

The researcher has taken the framework well beyond what it was designed for. The model was designed only to examine individuals' adaptation strategies (i.e., working at the individual level). In this study, the researcher applied the framework to assess the impact of adaptation strategies on the overall success of new systems implemented recently in

the public sector, particularly e-government initiatives, by analysing at the group level. The data demonstrates that the more positive adaptation strategies exhibited by middle managers reflected positively on the overall success of the e-initiatives. The researcher then analysed the data at a higher level to extract advice and recommendations for those working at the top management level of organisations.

This research study contributes to theory by analysing the situation before the primary assessment stage in the framework, which illuminated some of the factors that affect the primary assessment positively or negatively, which in turn affect the overall outcomes of the adaptation strategies.

Critically, this research study has expanded the CMUA framework created by Beaudry and Pinsonneault (2005) to examine the adaptation strategies of employees faced with a new disruptive IT event in their workplace. The aggregate data analysed from all four cases suggest one more expansion that should be added to the CMUA that can help understand much more regarding the mechanisms of the coping strategies used by middle managers at various times, including: (i) from the time they hear about a new system, (ii) during the implementation process and, (iii) after it has been deployed. The suggested expanded element revealed by the data is as follow:

- *Seeking more enhancement* (coloured green in the revised framework) is a new outcome that can be added to the framework. Most of the participants who asked for more development of a new electronic system wanted more automation to the system for two reasons: (i) to reduce the number of clients who went to the organisation's building to be served in person, and (ii) to organise their time so that they could address the other tasks they are required to do.

To illustrate the above contributions to theory, the revised framework suggested by this research study is presented below in Figure 21.

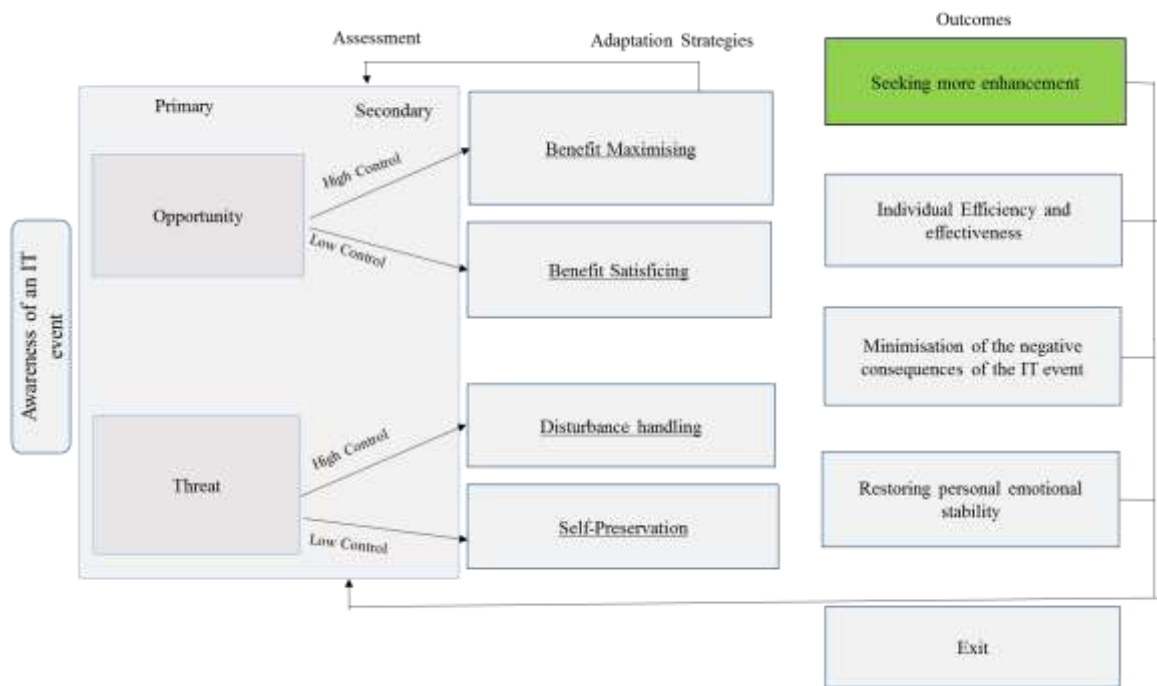


Figure 21: Revised CMUA framework

There are other elements that have been found in more than one case (see Figure 20).

These elements need further research to be tested and verified. These elements are as follows:

- A new primary assessment that lies between opportunity and threat in the first column of the framework presented in section 2.8.1. This new primary assessment is described in this research study as *neutral* (see sections 4.2.3.4 and 4.4.2.3 for more details). It can be hypothesized that there are other relationships between the new primary assessment (i.e. neutral) and the other adaptation strategies (i.e. benefit maximising, benefit satisficing and disturbance handling). These adaptation strategies were not found in this study, consequently there is a need for more research to be carried out to explore the theoretical possibilities here.
- Another new outcome that emerged from analysis of the data is described in this research study as *maximising negative consequences*.

- The last outcome to emerge from data analysis is described as *decreased efficiency and effectiveness*.

Overall, no mention was found in the framework or the literature with regard to the new element referred to above (i.e. *seeking more enhancement*). The new findings of this research study could be applicable to different contexts to widen understanding of IT user adaptation behaviours. Furthermore, this research study also contributes to theory by providing empirical knowledge to understand users' responses to new IT events recently implemented in their organisations, particularly in a culture that has never been studied before (i.e., Saudi Arabia).

The next section describes the contributions this research study makes to practice.

6.4. Contributions to practice

This research study demonstrates the benefits of studying the adaptation strategies of public sector middle managers when they face a new IT event and how the outcomes of these strategies can affect the adoption of a new electronic system in public organisations. A number of contributions to practice were identified in section 6.2 and are summarised below:

- Lesson number one: the data show, after analysing the situation before primary assessments take place (i.e., awareness of an IT event), there are two reasons that might increase the positive outcomes of the implementation of a new electronic system: (i) the extent to which middle managers have received a modern education, and (ii) middle managers' experience of dealing with IT tools. Those at the top level of management should think seriously regarding these factors by hiring the right individuals or choosing the right internal employees when implementing new systems in order to ensure successful adoption.

- Lesson number two: organisations in both the public and private sectors can learn a valuable lesson from the Passport Department case study, namely: designing fully automated systems that do not require interventions from their employees will increase the likelihood of initially assessing a new system positively, which will, ultimately, impact positively on the implementation outcomes. This would also be more efficient (e.g., more automation in the system means fewer clients to meet every day and middle managers being able to organise their time so that they can concentrate on other tasks).
- Lesson number three: this study found that some of the middle managers noticed a reduction in the power they had been enjoying under the old regime of work and they then started to maximise the negative consequences of using the new system. These middle managers ultimately wanted to escape from the new electronic system. Pinsonneault and Kraemer (1993) have proven that when information technology centralized the decisions making middle managers usually tend to resist the new technology for different reasons (e.g. fears from downsizing the number of middle managers). Losing power (Markus, 1983) and centralizing decisions making (Pinsonneault and Kraemer, 1993) seem to be the major causes of high level of resistance. In this type of situation, the top management can solve this issue by assigning middle managers to a training programme that will focus particularly on the psychological side of introducing new work practices. Top management can also openly discuss the needs of the middle managers and listen carefully to what they suggest in order to prevent any issues that might negatively affect the adoption of a new electronic system by the organisations.
- Lesson number four: top management and organisations in the public sector should consider the factors that most of the middle managers who positively adapted to new electronics systems found helpful in order to reap the most benefit from a new system.

For example, one factor in particular was the use of a demonstration version to enable the middle managers to practise the new system. Paying close attention to this factor would increase the level of success in the organisation adopting a new electronic system.

- Lesson number five: top management and organisations could also learn the benefit of encouraging the exchange of knowledge between employees about: (i) how to use new electronic systems and (ii) the advantages these systems provide plays a significant role. This would heighten the performance of some of the employees, particularly those who initially assessed the new electronic system negatively.

The following section outlines the limitations of this study.

6.5. Study limitations

All research studies are commonly constrained by a number of factors and this research study is no exception. This study can be critiqued from many perspectives. The following points present the limitations of this study.

- First, the sample size of this qualitative research study (four case studies) is small. However, the researcher argues that the selected cases and middle managers are typical (Shanks and Parr, 2003) and are representative of a larger number of cases.
- Second, an inability to meet and interview those at the top management level was another of the limitations of this study. This may have led to some shortcomings in the data collected and limit the ability to increase the validity of the findings and give more confidence to the generalisability of the results.
- Third, because of the time constraints (this research study had to be achieved within an appropriate time frame allocated for a PhD thesis), this research study focused on one context: Saudi Arabia. As a matter of course, this might raise some concerns related to the generalisability of the findings of this research study.

The next section presents some future research opportunities.

6.6. Future research opportunities

With regard to future research opportunities, the following are suggestions that arose during the conduct of this research study and might be of particular interest for future consideration.

- Future research could empirically validate the enhancements to the CMUA within e-government settings (e.g., by identifying empirical indicators for new primary appraisals and outcomes and creating reliable scales for measuring them). Further research could also empirically test the boundaries of these enhancements by examining the applicability of the extended theory to different organisational contexts and/or industries. The framework (i.e., the CMUA) deserves more empirical enhancement in the information systems field since the framework has remained unchanged from the original, which was presented in 2005. The framework needs and deserves more theoretical enhancement.
- Future research could also use interpretivist research methods to improve understanding of the CMUA. For example, in-depth studies in similar environments could look within and between cases for common patterns, events and sequences of events, leading to emergent propositions that could be compared with this study's proposed CMUA extensions. In this way, interpretive (inductive) and positivist (deductive) studies could work together to build and test theory (Dubin, 1969).
- The study reveals that a number of the middle managers who participated felt a reduction in the power they had been enjoying before the implementation of the new electronic systems in their workplace. All these middle managers wanted to escape from the situation by trying not to use the new system. This study calls for more research to continue to investigate this phenomenon to help those at the top

management level find ways to avoid this negative feeling towards new electronic systems.

- This study reveals that all the middle managers interviewed from the Passport Department engaged in a benefits maximising adaptation strategy. This finding in this study is that the greater the automation of an electronic system, the higher the acceptance by middle managers, which will impact positively on the overall success of a newly implemented system. Future research could test the impact of fully automated systems on the same and/or a different context to validate this finding.
- The Saudi Vision 2030, particularly the e-government part, can probably be extended to be more radical not just for automating processes but either radical transformation or service delivery platform such as Uber or Airbnb. This would increase the need to conduct more empirical studies to cover such ideas.

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APPENDIX: INTERVIEW GUIDE

Users' roles before and after awareness of the IT event

Questions
<ol style="list-style-type: none">1. Could you please explain what your role was before implementing the system?2. What is your role under the new system?3. What exactly has changed in your role after the new system was implemented?

The process before and after implementing the system

Questions
<ol style="list-style-type: none">4. Could you please explain the process of providing services before implementing the new system?5. What is the process under the new system?6. What are the changes in the process after implementing the system? Please explain.

Primary assessment

Questions
<ol style="list-style-type: none">7. Can you recall when you first heard about the new system? Do you remember what your thought about the idea was?8. When the system was introduced, could you please explain what was your initial feeling towards the system?

Secondary assessment

Control over...	Questions
Work	9. How often are you required to use the system in your work? And to what extent has the new system changed the way you work?
Self	10. What kind of training and support did you receive?
Technology	11. Could you please explain the system usage and features as they relate to your tasks?

Coping strategies

Questions
12. How easy to use is the new electronic system? 13. What kind of difficulty (if any) have you faced when you were trying to cope with the new system? Could you please provide specific examples? 14. How has the new electronic system helped you in your work? 15. What are the modifications you believe will increase your performance? Can you please suggest potential improvements that could be introduced?

Outcomes

Questions
16. How is the system helping you to improve your overall performance? 17. Could you please explain how the system has helped you to do better work? 18. To what extent do you think the old way of doing your job is better than doing it by using the new electronic system?