



**A Study of Adoption and Acceptance of e-Umrah System in  
Saudi Arabia: Overcoming Infrastructure Barriers and  
Limitations**

by

**Hasan Adnan Hashim**

A thesis submitted to the University of Sheffield for the

degree of Doctor of Philosophy

in

the Information School

**May 2014**

## **ABSTRACT**

Knowledge and understanding of effective e-government to business services remains limited. At the same time there is little empirical knowledge or theoretical understanding of how infrastructure works in the government to business domain. Therefore the aim of this study is to investigate infrastructure in e-government and to specifically understand the impact of infrastructure on the relationship between government and business services. The e-Umrah government information system in Saudi Arabia was selected as the context for the investigation and involved identifying the factors that play a role in shaping the existing infrastructure, understanding the barriers which impede the development of government to business infrastructure; and exploring the challenges within the infrastructure that hinder businesses in their use of e-government services. The system was developed to connect all government and business sectors which involve in the Umrah activities in Saudi Arabia for the purpose of facilitating Umrah services for the international visitors who come from all over the globe anytime during the year to the holy cities of Makkah and Madinah to perform Umrah rituals.

A mixed method approach was utilised to investigate and understand e-Umrah system. A qualitative case study and an interpretive approach were used to understand the infrastructure of the e-Umrah system. Semi-structured interviews, informed by Star and Ruhleder's (1996) eight dimensions for investigating infrastructure, were conducted with 43 Umrah companies. The data collected was then analysed based on Miles and Huberman (1994) three steps which consisted of data reduction, data display, and data reporting to establish and follow a systematic and thematic technique of data analysis. The data reduction step was based on Newman's (2006) three coding steps to prepare the information for interpretation and comparison. Prior to the main qualitative study, a preliminary quantitative study was conducted to gain information about the e-Umrah system, how it operates, and to understand the levels of adoption, usefulness and ease of use of the e-Umrah system.

The findings of the study demonstrate that the e-Umrah system's infrastructure is affected by variables within each of the eight dimensions of Star and Ruhleder (1996): built on an installed base; embeddedness; embodiment of standards; transparency; become visible upon breakdown; links with

conventions of practice; learned as part of membership and reach or scope. Additionally, these dimensions not only affect the infrastructure of the e-Umrah system but also have a relationship with each other. The main problem found in the e-Umrah system's infrastructure include a lack of integration of some entities and services thereby preventing electronic transactions from taking place and hindering effective access to the use of electronic services available.

The infrastructure framework proposed by Star and Ruhleder (1996) is based on the view that the eight dimensions have a direct and relatively fixed impact on infrastructure. This study contributed to enhancement of Star and Ruhleder's (1996) framework through the discovery that not only did the eight dimensions have an impact on infrastructure, but that each of the dimensions also had an interrelationship with each of the other dimensions. In addition, the study revealed on an adaptive framework was found to provide an in depth and intensive understanding when investigating infrastructure; thus contributing to a holistic understanding both of the framework, and of its subsequent impact on infrastructure.

Instead of focusing on one particular dimension of infrastructure, this study has adopted a more holistic approach to investigating effective e-government to business services. This holistic approach also argues that e-government should be examined from different perspectives including technological, social, political, managerial/organisational, and business aspects.

Combining all these aspects in a holistic approach to the definition and scope of e-government enables the development of a broader and contextual understanding of e-government. Rather than focusing on just one aspect of e-government and therefore narrowing it down, because effective e-government concerns not only the utilisation of information technology, but also a combination of technology with all the other dimensions of infrastructure that have been identified and investigated in the study.

## **ACKNOWLEDGMENTS**

First of all, I would like to thank God almighty for blessing me and giving me the strength, patience, and persistence for achieving this academic journey to accomplish my dream.

I would like to express my appreciation and deepest gratitude to my extraordinary supervisors Dr. Angela Lin and Dr. Jonathan Foster who advised, supported, and assisted me throughout the years of this research. Dr. Angela Lin has step-by-step guided me and provided me with infinite support and encouragement. She has always been there when I needed her invaluable feedback and everything related to accomplish this journey. Dr. Jonathan Foster has provided me with his time, effort, and the support when I needed his precious assistance and comments to help me move on and progress to a further phase. It is an honour to be one of their students.

My deepest respect and thanks goes to my parents my father Adnan Hashim and my beloved mother Thoraya Daghistani for their sacrifices, unconditional love and encouragement through their prayers. I value their endless efforts which made me who I am.

A very special appreciation and sincere gratitude goes to my beloved wife, Dr. Danya Hashem. I certainly would have accomplished nothing without her everlasting encouragement, commitment, and support. She always was there when I needed to talk to her, patient when I was stressed and gave me the time even when she was busy.

My warmest love goes to my beloved daughter Talia who was born during my PhD study and throughout the years has been a patient, loving, and caring child.

A special appreciation and thanks for my brothers, sisters, and my uncle, Ambassador Faisal Hashem and the rest of my family for their prayers and support and for having the faith in my ability to achieve my goal.

Finally, big thanks to the Saudi Cultural Bureau in London for giving me the opportunity to do this PhD by sponsoring me and supporting me financially.

I dedicate this thesis to my parents Adnan Hashim and Thoraya Daghistani who had, have, and will always enrich my life with their invaluable wisdom, kindness, and love. I am very proud to make their dream come true.

# CONTENTS

<b>Abstract.....</b>	<b>2</b>
<b>Acknowledgments.....</b>	<b>4</b>
<b>Contents.....</b>	<b>6</b>
<b>List of figures.....</b>	<b>9</b>
<b>List of tables.....</b>	<b>12</b>
<b>Chapter 1 Introduction.....</b>	<b>13</b>
1.1 Overview.....	14
1.2 Rationale.....	15
1.3 Research aims, objectives, and questions.....	18
1.4 Background of Umrah and Umrah system.....	20
1.5 Structure of the thesis.....	25
<b>Chapter 2 Literature Review.....</b>	<b>28</b>
2.1 Introduction.....	29
2.2 Ideology of e-government.....	29
2.3 e-Government concept and definition.....	31
2.3 Typologies of e-government.....	40
2.4 e-Government movement around the world.....	47
2-5 Government to Business (G2B) related research.....	56
2.6 Summary.....	69
<b>Chapter 3 Infrastructure in information systems and framework.....</b>	<b>71</b>
3.1 Introduction.....	72
3.2 Infrastructure concept in information systems IS.....	72
3.3 e-Government infrastructure.....	79
3.4 A holistic concept and framework for infrastructure.....	83
3.5 Summary.....	91

<b>Chapter 4 Methodology.....</b>	<b>93</b>
4.1 Introduction.....	94
4.2 Philosophical assumptions.....	94
4.3 Research strategy.....	99
4.4 Research design.....	107
4.5 Summary.....	134
<b>Chapter 5 Quantitative findings.....</b>	<b>136</b>
5.1 Introduction.....	137
5.2 Survey findings.....	137
5.3 Part I (user characteristics).....	143
5.4 Part II (website design).....	156
5.5 Part III (service quality).....	159
5.6 Part V (satisfaction).....	165
5.7 Part IV (e-Government adoption).....	168
5.8 Analysis of findings and further investigation.....	170
<b>Chapter 6 Results (analysis and interpretations).....</b>	<b>172</b>
6. Introduction.....	173
6.1 Dimension (1): Built on an installed base (iB).....	173
6.2 Dimension (2): Embeddedness (E).....	187
6.3 Dimension (3): Transparency (T).....	201
6.4 Dimension (4): Learned as part of membership (LPM).....	214
6.5 Dimension (5): Links with conventions of practice (LCP).....	230
6.6 Dimension (6): Reach or scope (RS).....	243
6.7 Dimension (7): Becomes visible upon breakdown (BVUB).....	254

6.8 Dimension (8): Embodiment of standards (ES).....	264
6.9 Summary.....	272
<b>Chapter 7 Discussion.....</b>	<b>274</b>
7.1 Introduction.....	275
7.2 Dimension (1) Installed base.....	277
7.3 Dimension (2) Embeddedness.....	284
7.4 Dimension (3) Embodiment of standards.....	292
7.5 Dimension (4) Become visible upon breakdown.....	296
7.6 Dimension (5) Transparency.....	301
7.7 Dimension (7) Reach or scope.....	305
7.8 Dimension (6) Links with conventions of practice.....	309
7.9 Dimension (8) Learned as part of membership.....	313
7.10 Summary.....	318
<b>Chapter 8 Conclusion.....</b>	<b>319</b>
8.1 Overview of the research trends.....	320
8.2 Research contributions.....	326
8.3 Research limitations.....	334
8.4 Future research opportunities.....	336
<b>Reference.....</b>	<b>337</b>
<b>Appendices.....</b>	<b>361</b>



## LIST OF FIGURES

<b>Figure 2.1:</b> e-Government in three perspectives.....	40
<b>Figure 2.2:</b> Source: the European commission directorate general for information society and media.....	51
<b>Figure 4.1:</b> e-Government conceptual framework (Source: Kumar et al (2007)).....	116
<b>Figure 4.2:</b> Data analysis process of the research adapted from the component of data analysis: Interactive model (Miles and Huberman (1994)).....	124
<b>Figure 4.3:</b> Open coding phase.....	125
<b>Figure 4.4:</b> Selective coding process.....	131
<b>Figure 5.1:</b> Size of company and employee dedicated to e-services.....	137
<b>Figure 5.2:</b> Computer history and computers owned.....	138
<b>Figure 5.3:</b> IT and electronic service risk.....	144
<b>Figure 5.4:</b> Privacy risk.....	144
<b>Figure 5.5:</b> Cost, speed, and risk factors of electronic services.....	145
<b>Figure 5.6:</b> Umrah companies' perception of control over electronic service.....	146
<b>Figure 5.7:</b> Electronic services level of control provided by service providers.....	146
<b>Figure 5.8:</b> Level of control provided by Umrah companies' services.....	147
<b>Figure 5.9:</b> Overall satisfaction toward IT/internet knowledge.....	151
<b>Figure 5.10:</b> Training qualifications.....	151
<b>Figure 5.11:</b> Staff classifications.....	152
<b>Figure 5.12:</b> Training programmes arrangements.....	152
<b>Figure 5.13:</b> Views on posed standards.....	153
<b>Figure 5.14:</b> Views on fulfilling government's requirements.....	154
<b>Figure 5.15:</b> Views on constant communication with government.....	154
<b>Figure 5.16:</b> Views on IT and related services support given by government.....	155
<b>Figure 5.17:</b> Views on overall support given by government.....	156

<b>Figure 5.18:</b> Usefulness of electronic services in meeting needs and objectives.....	157
<b>Figure 5.19:</b> Usefulness of electronic services applications.....	157
<b>Figure 5.20:</b> Umrah companies responses toward on the website's ease of navigation.....	158
<b>Figure 5.21:</b> Umrah companies responses on the appreciation of the design of the website.....	159
<b>Figure 5.22:</b> Views toward service quality of electronic services.....	160
<b>Figure 5.23:</b> Reason for providing electronic services/transactions.....	161
<b>Figure 5.24:</b> Views of Umrah companies toward satisfaction of the companies with the service quality of the service providers.....	161
<b>Figure 5.25:</b> Views of Umrah companies toward agreements on reliability of electronic against manual.....	162
<b>Figure 5.26:</b> Views of Umrah companies toward agreements on enjoyment of electronic service delivery.....	163
<b>Figure 5.27:</b> Reliability of services rendered online.....	163
<b>Figure 5.28:</b> Speed of online service delivery.....	164
<b>Figure 5.29:</b> Satisfaction over the rate of electronic services' use.....	164
<b>Figure 6.1:</b> Shape of current e-Umrah system's design.....	188
<b>Figure 6.2:</b> Spatial infrastructure/practice in the e-Umrah system.....	244
<b>Figure 6.3:</b> Timeline illustrate the development and lifecycle of Umrah field.....	249
<b>Figure 6.4:</b> e-Umrah system's infrastructure.....	254
<b>Figure 7.1:</b> Infrastructure and dimensions cycling: Star and Ruhleder's (1996) framework.....	275
<b>Figure 7.2:</b> Adapted conceptual framework.....	276
<b>Figure 7.3:</b> The impact of Installed base on other dimensions.....	278
<b>Figure 7.4:</b> The impact of embeddedness on other dimensions.....	286
<b>Figure 7.5:</b> The relations between embodiment of standards and other dimensions.....	293
<b>Figure 7.6:</b> The relations between become visible upon breakdown and other dimensions.....	299
<b>Figure 7.7:</b> the impact of transparency on other dimensions.....	303

<b>Figure 7.8:</b> The relations between reach or scope and other dimensions.....	308
<b>Figure 7.9:</b> The relations between Links with conventions of practice and other dimensions.....	311
<b>Figure 7.10:</b> The relations between learned as part of membership and other dimensions.....	316

## LIST OF TABLES

<b>Table 1.1:</b> Statistic of number of visitors per year visiting SA for Umrah (Source: Hajjinformation.com).....	21
<b>Table 2.1:</b> Technology perspective of e-government.....	32
<b>Table 2.2:</b> Management perspective of e-government.....	33
<b>Table 2.3:</b> e-Government definition in term of Political perspective.....	36
<b>Table 2.4:</b> Summary of e-government typologies.....	46
<b>Table 3.1:</b> Definition of information systems infrastructure.....	73
<b>Table 4.1:</b> Positioning of this research study based on philosophical assumptions.....	95
<b>Table 4.2:</b> Strength and weakness of quantitative research (Source: Johnson and Onwueguzie, 2004. P.19).....	100
<b>Table 4.3:</b> Strength and weakness of quantitative research (Source: Johnson and Onwueguzie, 2004. P.20).....	102
<b>Table 4.4:</b> Strength and weakness of mixed-methods research (Source: Johnson and Onwueguzie, 2004. P.21).....	104
<b>Table 4.5:</b> Case study types, definitions, and examples (Source: Baxter and Jack (2008: 549)).....	110
<b>Table 4.6:</b> Umrah companies respondents' information.....	119
<b>Table 4.7:</b> Service providers respondents' information.....	119
<b>Table 4.8:</b> Summary of data collected from the fieldwork.....	122
<b>Table 4.9:</b> Data reduction coding table (Dimensions, Categories and Codes).....	126
<b>Table 5.1:</b> Companies' profiles.....	139
<b>Table 5.2:</b> Umrah companies views of their IT readiness.....	149
<b>Table 5.3:</b> Umrah Companies responses on the overall satisfaction with service provider a scale of 1 to 5 with 1 being the lowest level of satisfaction and 5 the highest.....	167
<b>Table 5.4:</b> Most common factors identified by a high number of Umrah companies that have fully supported the move to e-government adoption.....	169
<b>Table 6.1:</b> Long-established practices (Umrah companies views on the services and operations conducted by e-Umrah system's entities).....	233
<b>Table 6.2:</b> Newly-established services (Umrah companies views on the practices and operations conducted in the e-Umrah system).....	235

**INTRODUCTION**

- 1.1 Overview**
- 1.2 Rationale**
- 1.3 Research aims, objectives, and questions**
- 1.4 Background of Umrah and Umrah system**
- 1.5 Structure of the thesis**

## 1.1 Overview

Since the internet emerged in the late 1980s with its technological breakthrough in service delivery, there has been a rise in the use of information and communication technologies (ICT) among all sectors (Ho, 2002). The government is one sector that works to develop its services electronically to serve other sectors such as public and private sectors (Fang, 2002). Throughout the years, governments around the world have made changes such as transforming from traditional paper based system to an electronic based system through the rise of the internet and web-based networks (Al-Azri et al, 2010). The aim of this transformation is to improve their systems and administrative tools to provide efficient and effective services with less cost to the public, businesses, and other government agencies (Zarei et al, 2008; Curtin, 2007). Therefore, this transformation from the traditional, paper-based system to a modern electronic system has led to the evolvement of the concept of e-government. Hence, achieving an advanced e-government service delivery which most governments seek nowadays is based on connecting the government with the public and private sectors electronically to serve their needs (Palvia and Sharma, 2007).

In the past decade, governments have spent huge amounts of money on IT in an effort to transform government to electronic government. For example, many developed countries such as the United States, United Kingdom, Canada, and Austria have large spending on e-government projects (Minicopoulos, 2004). For instance, in 2002 the United States had set a budget of approximately 48.6 billion dollars to fund e-government projects with the aim to provide effective and efficient services with easy access to the public and private sectors and enhance their interaction with the government through government portals. The government of the United Kingdom funded £12.4 billion on e-government in 2003 with a vision to fully transform itself to e-government by providing its services to business and citizens through the internet. Similarly, the European union's expenditures on e-government projects had increased from \$1.3 billion in 2000 to \$4 billion in 2005; and the aim was to provide a one stop access portal to serve the public and private sector's needs.

Following the global trends of e-government, the Saudi Arabian government approved a budget of 3 billion Saudi Riyals in the year 2006 and 3.5 billion U.S Dollars in 2011 to develop and improve its e-government (yesser.gov.sa; Oxfordbusinessgroup.com). The aim of the Saudi Arabian e-government initiative is to strengthen communications between the government, public, and private sectors through informative, interactive, and transaction (yesser.gov.sa). And under the e-government initiative Saudi Arabian government also aims to facilitate and improve services between all ministries and government agencies and public and private sectors for convenient, effective and efficient electronic services delivery to all stakeholders.

## **1.2 Rationale**

E-government has been much researched in the past years. Much of the existing literature focuses on the relationship between the government and the public sector (G2C) and between the government and other government entities (G2G). The challenges, issues and complexities have been discussed, vital questions posed, and conceptual frameworks proposed (Gefen et al., 2002; Carter and Belanger, 2003; Chu et al., 2004; Al-Gahtani, 2006; Skiftene, 2006; Fan and Zhang 2007; AlAwadhi and Morris, 2008; Raus et al., 2009). When taking into account government to citizens research, much has been done to investigate the relation between government and citizens to expand the knowledge and increase the understanding of individual's behaviours in exploring the issues that facilitate or hinder citizens intentions to use or adopt e-government services when using e-government services and assess users' acceptance to e-government service (Carter and Belanger, 2005; Horst et al., 2007; Zhang et al., 2007; Gupta et al, 2008; Vathanophas et al., 2008; Wangpipatwong et al., 2008; Yaghoubi et al., 2010). In addition, other studies investigated some factors such as trust, risk, transparency, and accessibilities of implementing and using e-government services (Horst, et al, 2007; Kanat and Ozkan, 2008, Mohammed et al., 2009), and diffusion of e-government services (Al-shafi et al., 2008). On the other hand, other studies explored the relation between government to government in terms of developing internal and external government to government's communication and collaboration systems (Haque et al., 2013), information system design in G2G (Parrish, 2011), and G2G

interrelations with other organisations in terms of internal networks practices and how work processes flow (Joia, 2007).

While our understanding of issues concerning G2C and G2G increase we have little knowledge in the area of G2B (GBDEC, 2001; GBDEC, 2002; Bertolletti et al., 2003; Zhao et al., 2007; Geetika and Pandey, 2007; Minh, 2009; Lee et al., 2011). It is important to understand the relationship between G2B electronic services because of its role in empowering and improving these e-government services between the government and the private sectors (Ali et al., 2009; Minh, 2009; GBDEC, 2001; GBDEC, 2002). An example from the few available studies investigating the government to business relations is a study looking at data base systems' linkage which is considered a critical aspect affecting the G2B relation (Bertolletti et al., 2003). Also, the issues affecting the development of e-government services between government and business was investigated in another study (Aichholzer and Sperlich, 2001). Furthermore, the resistance to change in some government agencies and some business organisations was found to affect the development of services between the government and private sector and the lack of funding in new IT initiatives were some of the issues highlighted (Zhang et al., 2005). Also, another study investigated the issues affecting linkage between e-government service and business in terms of environment's competitiveness. This was found to be an important issue affecting the relationship between government and business (Minh, 2009).

Therefore, these gaps in the e-government literature related to G2B research may hinder and prohibit new developments and improvements in the transactions between the government and the private sectors and consequently undermines government's efforts to progress and advance in the G2B aspect. In addition, it is important to understand the relationship between G2B electronic services because of its role in empowering and improving these e-government services between the government and the private sectors (Ali et al., 2009; Minh, 2009; GBDEC, 2001; GBDEC, 2002). This is because the private sector plays an important role in encouraging the government to promote e-government services since the majority of business partners are found to recommend dealing with government agencies through the internet (Aichholzer



and Sperlich, 2001; Onojaef and Leaning, 2007). Additionally, the mechanism of designing and implementing electronic service delivery in the form of well designed e-government portals that support private sectors is a valuable and effective element in reducing operating cost, improving customer service and employees IT knowledge, increase service quality, ensure satisfaction and promote business productivity (Zhao et al, 2007, Minh, 2009, Geetika and Pandey, 2007). Moreover, it is argued that once the government improves its electronic services, this improvement will reflect positively on the private sector because this advanced technological change improves and enhances transactions between the government and private sector benefiting both sides. (Zhao et al., 2007; Geetika and Pandey, 2007; Minh, 2009)

Any e-government project is not without challenges which might have an effect on its relationship with the private sector. These challenges can be categorized into strategy, technology, policy, organisation, social, and cultural challenges. Challenges related to strategy include lack of shared e-government goals and objectives, over ambitious e-government milestones, lack of ownership and governance, absence of implementation guidance, and funding issues (Lam, 2005; Zhang et al. 2005; Weerarakody et al., 2008; Weerarakody et al., 2011; GBDe, 2002 ).

Technological challenges include deficiencies in architecture interoperability such as different systems architectures in different departments. This may cause complexities in achieving flawless interoperations among departments and incompatible data standards such as different types of data formats among departments which cause incompatible and inflexible exchange of data and different security models with independent security systems among departments. Additionally, rigid legacy systems such as continuation of using old systems in some organisations cause incompatible practices and processes leading to the use of manual systems that affect the full implementation of electronic services (Lam, 2005; Aichholzer and Sperlich 2001; Onojaefe and Leaning 2007, Jayaradha and Shanthakumar 2003).

Challenges in policy are also identified and major concerns have evolved around citizen privacy, data ownership, and e-government policy evolution

(Lam, 2005; Aichholzer and Sperlich 2001; Onojaefe and Leaning 2007, Jayaradha and Shanthakumar 2003).

Challenges related to organisational readiness include slow pace of government reform, absence of an e-government champion, legacy government processes, lack of relevant in-house management and technical expertise (Lam, 2005; Aichholzer and Sperlich 2001; Onojaefe and Leaning 2007, Jayaradha and Shanthakumar 2003).

All these different challenges will undoubtedly affect the e-government initiative affecting the level of adoption and implementation of e-government services within all sectors. It is still unknown whether these challenges are the same in the government to business sector.

### **1.3 Research aims, objectives, and questions**

#### **- Research aims**

In addition to understanding the government to business sector as previously mentioned, it is essential to understand e-government infrastructure. This is because IT infrastructure has been newly introduced in the e-government studies in the past decades (Julta et al., 2002). One major identified cause which revealed the significance of understanding infrastructure in e-government is the limitations in the progress of e-government projects that infrastructure causes (Jenssen, 2011). Therefore, the focus on infrastructure's development, improvement and expanding is significant as infrastructure is found to be influential for developing, promoting or causing impediments for e-government projects (Jenssen, 2011). Numerous studies described e-government infrastructure from different views that include Information technology IT infrastructure, human infrastructure, organisational infrastructure, information infrastructure, integration of services, systems and organisations, partnerships among stakeholders, collaborations and corroborations of practices, and the existence of standardisations (Klischewski, 2001; Janssen et al., 2009; Humes and Reinhard, 2008; Khrishnan and Teo, 2012; Khoumbati and Themistocleous, 2006; Julta et al., 2002). Therefore, there is a need to expand the knowledge on the impact of infrastructure in e-government in general and particularly in the government to business sector and to understand how different challenges such

as technological, social, human, organisational, and managerial/administrative issues affect infrastructure in the G2B e-government.

This study aims to investigate the infrastructure of an e-government project in the government to business sector in Saudi Arabia. The e-Umrah system was chosen as an example of one of the e-government projects. The reason for choosing e-government provision in Saudi Arabia is to provide a better understanding on the infrastructure of the e-government phenomenon and its complexities in the government to business sector. The outcome of this research will help identify the current gaps in the government's electronic services to the private sectors and inform the service design.

The significance of investigating infrastructure in government to business was essential to provide to the e-government literature a new insight of knowledge and holistic view of government to business implementations through infrastructure. This is because infrastructure was found to be the foundation that connects both government with business. Hence, understanding the relationship between government and business is complex since it contains technological, organisational, political, managerial, and other aspects which involve in these relationships. Therefore, studying this relationship can be investigated and understood through infrastructure.

#### **- Research objectives**

To accomplish this aim, three essential objectives were found to serve the need for understanding the infrastructure of the e-government phenomenon, particularly government to business relations. These objectives are set as follows:

- To investigate and understand the infrastructure of the government to business sector by identifying the factors that play a role in shaping the existing infrastructure.
- To identify the barriers that impede the development of the government to business infrastructure.
- To explore the challenges within the infrastructure that hinder businesses to use e-government services.

## - Research questions

Based on the above objectives, this study proposes the following research questions for this research study:

*The main research question of this study is:*

- What are the challenges in e-government infrastructure in the government to business sector and how can these challenges influence the development of the infrastructure?

*And the subsequent questions are:*

1. What are the factors that shape the existing infrastructure of the government to business sector?

2. How has this infrastructure evolved throughout time?

3. What are the barriers to the government to business infrastructure? Why do these barriers occur?

## 1.4 Background of Umrah and Umrah system

Umrah is one favourable Islamic ritual in Muslims' lives where all Muslims around the world desire to perform. This ritual is not an obligatory for Muslims to perform as Hajj except for those who have the financial abilities to come to the city of Makkah and fulfil this ritual. Also, Umrah can be performed anytime during the year. The ritual of Umrah begins when the Umrah visitors start on seeking for Umrah package that suit them according to their budgets from the travel agencies in their countries which offer Umrah services. Once the Umrah visitors agree with the packages (The Umrah package contains flight, reception/farewell, transportation, and accommodation), Umrah visitors who fulfil Umrah ritual in Makkah usually plan in their Umrah package to travel from the city of Makkah to the city of Madinah to have the honour of visiting prophet Mohammad (peace be upon him) and to spend some days to pray in His holy mosque of Madinah (Hajjinformation.com).

### 1.4.1 Economic role of Umrah in Saudi Arabia

It is known that Hajj and Umrah revenue are counted as the second significant annual source of Saudi Arabian's economy which comes after petrol (arabnews.com). According to the Ministry of Hajj, every year Saudi Arabia witnesses an increase in the amount of Umrah visitors estimated at a range of 10-30 percent (Table 1.1). Millions of pilgrims come to Saudi Arabia for either Hajj or Umrah every year where more than seven millions pilgrims/Umrah visitors for Hajj and Umrah accessed to Saudi and performed these rituals according to a 2012 estimation (arabnews.com). In addition, every year the Saudi government work on improving the capacities of the two holy cities through facilitating services by developing the airports and central areas around the two holy mosques to accommodate pilgrims. These developments were found to facilitate Hajj and Umrah services and helped increase the annual estimation for pilgrims to come for Hajj and/or Umrah (arabnews.com; Gulfnews.com).

Year	Number of International Umrah visitors
2000	1,267,555
2001	1,363,992
2002	1,354,184
2003	1,431,012
2004	1,419,706
2005	1,534,769
2006	1,557,447
2007	1,707,814
2008	1,729,841

**Table 1.1:** Statistic of number of visitors per year visiting SA for Umrah  
(Source: Hajjinformation.com)

Consequentially, this annual increase of Hajj and Umrah visitors was found to increase the Saudi revenue. Some experts estimated the revenue from Hajj and Umrah to have an influence on the Saudi GDP where some experts noted that in 2012 the Saudi GDP was increased by 3% due to Hajj (al-monitor.com). Furthermore, Hajj and Umrah were also found to improve the private sector revenue such as Umrah companies, airlines, transportations, accommodations, in addition to catering in the western province of Saudi Arabia. Inevitably, not only this increase of pilgrims/Umrah visitors numbers and developments of Hajj and Umrah services has an impact on the Saudi economy but also has an impact on other issues such as solving problems of unemployment and reviving the Saudi markets such as shops, restaurants, public transportations, etc (al-monitor.com).

### **1.4.2 Umrah system**

Saudi Arabia has a considerable position among the Islamic countries since it holds the two holy cities Makkah and Madinah. These two holy cities are considered as the two holiest cities in Islam and centre of all Muslims to travel to and perform Hajj and Umrah. The role of the families in the western province of Saudi Arabia was significant since these families were responsible in delivering services to Umrah visitors (Long, 2013). The Umrah was administrated long ago by these ancient families where they were in charge of facilitating Umrah to Umrah visitors through offering transportations, accommodations and meals in addition to tour guidance for Umrah rituals (Long, 2013). Also, these ancient families changed the traditional style of serving Umrah visitors due to the regulations of the Ministry of Hajj when the Ministry begun to re-arrange and organise Umrah practice hence required these random Umrah activities to take an official and instructed administrating. Consequentially, the Umrah field witnessed a remarkable improvement due to the rise of technology such as internet and telecommunications which created a new style of information dealing through the modern technology.

The way these Umrah companies work in the past was through sending some representatives to other countries to deal individually with people and gather a specific number of Umrah visitors who desire to perform Umrah and

arrange their Umrah programmes directly with them. Then with the rise of International travel agencies, the Umrah companies began to deal directly with these international travel agencies to organise and arrange Umrah visitors' programmes. At this stage there was no role for the Ministry of Hajj because it was only responsible for Hajj arrangements and organisations. Then the procedures developed and improved further when the Ministry of Hajj joined the Umrah field. The Umrah companies at this stage began to coordinate with the Ministry of Foreign Affairs and International agencies concerning Umrah visitors and services. Then the Ministry of Hajj took part when they had an agreement with the Ministry of Foreign Affairs to adopt the Umrah field and reorganise and rearrange Umrah procedures and processes and became the direct link to the Umrah companies, International agents, and Umrah visitors. At this stage the Umrah field witnessed the rise of the manual system.

The Ministry of Hajj used to set the rules, rights, duties, responsibilities and regulations of Umrah services to the Saudi private Umrah companies through official written letters and documents to update, guide and/or notify the private companies with the recent issues that concern the Umrah field. The reason for adopting the Umrah field by the Ministry of Hajj was to guarantee Umrah visitors' rights through avoiding fraud deals and the random way of practicing Umrah and makes all the deals between International agencies, Umrah companies and Umrah visitors to become official through a manual system. This new arrangement imposed Umrah companies and international agencies to deal manually and directly with the Ministry of Hajj through passing the contracts for Umrah packages between Umrah companies, international agencies and Umrah visitors by using letters and documents to guarantee their Umrah services. The Ministry of Hajj also worked hard to facilitate and develop the process of Umrah services with the private companies to ensure the efficiency and effectiveness of Umrah services transactions.

With time, the Umrah field witnessed a remarkable improvement due to the rise of technology such as internet and telecommunications which created a new style of information dealing through the modern technology. With the emergence and increased improvement of the ICTs, and the emergence of the electronic government, the Saudi Arabian council of Ministers decided to adopt

and implement an electronic system to ensure the safety and comfort of Umrah visitors and create an electronic culture that facilitate the work practice. Hence, the Ministry of Hajj became a partner with some of the most advanced companies in the fields of IT and communication, information security and database management and produced the Global Electronic Network for Umrah which known as e-Umrah system.

The e-Umrah system was designed and established in the early 2000s. The early electronic system was established by connecting both international agencies and Umrah companies with the Ministry of Foreign Affairs and Ministry of Hajj to offer electronic Umrah visa application only for Umrah visitors. Umrah companies apply for visa through a service provider via their portal with the Ministry of Foreign Affairs and Ministry of Hajj data centres. However, this electronic method of dealing was found limited in providing all Umrah services since it lacked delivering full Umrah services.

Then the Ministry of Hajj adopted Sejel company which is a company that provides information technology solutions for both the government and private sectors in Saudi Arabia. This company was authorised by the Ministry of Hajj in the beginning of 2003 to launch a new and enhanced electronic Umrah system and to promote and accelerate Umrah services transactions such as creating electronic visa applications, electronic payments, electronic follow up, and other related electronic services that concern Umrah visitors.

Furthermore, The Ministry of Hajj approved four other technology companies as service providers to electronically connect Umrah companies with the Ministry of Hajj and other involved ministries. This electronic connection was based through enabling service providers in developing their websites in accordance to the standards of the Ministries of Hajj to enable Umrah companies to perform Umrah services electronically through the e-Umrah system. Their responsibility was to facilitate the interactions between the Ministry of Hajj and Umrah companies by granting Umrah companies access to their websites so that the Umrah companies can submit their Umrah visitors' applications online.



The way the electronic Umrah system works begins when the Umrah companies create Umrah packages consisting of flight, transportation, accommodation, catering, medical insurance, and other services. The Umrah companies place prices for the packages and send them to the service providers which in turn send these requests to the Ministry of Hajj for approval. Once the packages are approved, the Umrah companies offer the packages to international agents outside Saudi Arabia to start selling them to Umrah visitors. The details of the Umrah visitors and passport information are entered into the system. When the numbers of Umrah visitors are complete, the international agents at this stage send all the information to the Umrah companies which in turn send them to the service providers for further processing. The service providers will then send the information to the Ministry of Hajj to check the data of the Umrah visitors and reference numbers are given by the Ministry of Foreign Affairs. Those reference numbers are given to obtain Umrah visas from the Saudi embassy. At this point, the service providers notify the international agents to pass by the embassy or consulate for collecting the visas of Umrah visitors.

It is worth mentioning that this electronic system was invented to solve the negative issues related to the Umrah sector. For example, immigration is an important reason that the government wants to use e-Umrah system to control number of illegal immigration. Another reason for inventing this electronic system was to vet Umrah companies and give licence to those who are qualified.

## **1.5 Structure of the thesis**

This section outlines the chapters that are included in this thesis.

This chapter, Introduction, has described the background of the research and the rational for investigating e-government. The chapter has also identified the research questions, aim and objectives of this research. Also, the chapter provided the structure of the thesis.

Chapter two, Literature Review, is organised under the headings of: Section 2.1 which presents an introduction about the overall chapter. Section 2.2 presents the ideology of government through explaining philosophically the role

of government as a process, provider, partner, product, and protector to public and private sectors. Section 2.3 explores and discusses the definition and concept of e-government. Section 2.4 presents the typologies of e-government through identifying and exploring the different types of e-government services which are delivered to G2C, G2B, and G2G. Furthermore, the e-government movement around the world will be presented in Section 2.5 as it discusses the experiences of different countries with e-government worldwide. It also highlights their strategies, objectives, and challenges they are facing toward achieving successful e-government adoptions. Finally, section 2.6 is an in-depth review on how the government to business relationship will be made and discussion of the different views and thoughts that have been proposed about the e-government to business relationship will be presented.

Chapter Three, Infrastructure in information Systems and e-Government Contexts, is about presenting, describing and discussing the research framework for this research: infrastructure. Hence, the concept such as infrastructure will be defined and discussed, this followed by Star and Ruhleder's (1996) infrastructure framework. The chapter will also review how the framework has been used in the Information system IS and e-government research.

Chapter Four, Methodology, presents the presents the philosophical assumptions, research strategy and design of this conducted research study. This is through reviewing the different methodologies and hence adopting the appropriate methodology which this research studies. It begins describing and discussing the philosophical assumptions and paradigms in social science and information Systems, followed by describing appropriate research approaches and strategies. It also provides rationale justifications for the chosen methodologies of this research, followed by research design and processes which include the data collection, data analysis and the reporting of findings.

Chapter Five, Quantitative Findings, and how it led to the development of the qualitative component of the research.

Chapter Six, Research Findings, presents an interpretative analysis of the case study. The chapter is organised according to the eight dimensions

proposed by Star and Ruhleder's (1996) infrastructure model including dimension (1) Built on an installed base; dimension (2) embeddedness; dimension (3) transparency; dimension (4) learned as part of membership; dimension (5) links with conventions of practice; dimension (6) reach or scope; dimension (7) become visible upon breakdown; and dimension (8) embodiment of standards.

Chapter Seven, Discussion, presents a holistic and systematic discussion of the findings of this research and the literature of e-government. In addition, the aim of this chapter is to provide a broad understanding in both particular and general issues of e-government services and infrastructure issues. Also, the discussion chapter discusses holistically and systematically the findings of this study based on relational and interactional perspective according to the explanation of Star and Ruhleder (1996) which emphasised that Infrastructure was further described as a relational interaction among different subjects meaning that infrastructure of one particular subject is another subject's matter (Star and Ruhleder, 1996).

Chapter Eight, Conclusion, summarises the research contributions, limitations, and finally provides future research opportunities.

# CHAPTER

# 2

## **e-Government Concept and Development**

**2.1 Introduction**

**2.2 Ideology of e-government**

**2.3 e-Government concept and definition**

**2.4 Typologies of e-government**

**2.5 e-Government movement around the world**

**2.6 Government to Business (G2B) related research**

**2.7 Summary**

## 2.1 Introduction

The aim of this chapter is to review the e-government literature. This will include an overview of the government concept and its different relationships. The ideology of government will be presented through explaining philosophically the role of government as a process, provider, partner, product, and protector to public and private sectors. In addition, the different definitions of e-government will be presented and discussed and the typologies of e-government identified. Following that, the e-government movement around the world will be represented. This part discusses the experiences of different countries with e-government worldwide. It also questions their strategies, objectives, and challenges they are facing toward achieving successful e-government adoptions. Finally, an in-depth concentration on the government to business relationship will be made and a discussion of the different views and thoughts that have been proposed about the e-government to business relationship is presented. In addition, the challenges and risks that the government faces and how they developed different strategies and techniques to overcome e-government rejection among public and private sectors are also highlighted.

## 2.2 Ideology of e-government

Government is an authority which governs and has a control over different functions and departments within a region or territory. And it is an institution which governs, frames policies, and takes care of the people residing within the territory (Pardo, 2000). One understanding of government is a notion of public social control, logically related to responsiveness in handling the affairs of the state (McGarrell et al. 1997). Government exists in different forms depending upon the acceptability within the territory. These forms according to Drapeau (2009) can be understood in five different ways:

- i. Government as a Process: This implies the ongoing works in government which helps in providing a continuance even if the political dispensation changes hands
- ii. Government as a Provider: As per this definition, government is supposed to provide products and services to its citizens

iii. Government as a Partner: Government is supposed to work towards developing the municipality, the state or the country by soliciting active support and cooperation of its citizens, organisations and like-minded political affiliations

iv. Government as a Product: This indicates that decisions of the government can be seen as a storehouse of information and decisions.

v. Government as a Protector and Peacekeeper: This includes almost everything expected of a responsible government.

Internally, government is expected to provide services to its citizens (G2C) and businesses (G2B). It is necessary to consider its dynamic interrelation with the citizens and businesses it serves. When considering the government to citizen relation, this relation works best if both parties are happy with each other (Abdullah, 2008). If the citizens are unhappy with the functioning of the government, it leads to negative support on the political system (Miller, 1974). Similarly, if the government finds fault with the citizens, it can take appropriate punitive measures against those erring citizens. It can therefore be said that citizens and government are inextricably linked. The decision making process of the government is supposed to work in such a manner that the larger interest of citizens welfare is served. This decision making process works when the government takes the citizen's input and incorporates it into decision making and later on provides citizens with the outcomes of these particular issues (U.N, 2005). As we move ahead in the 21<sup>st</sup> century, we find a marked shift in the manner in which citizens around the world have started expressing themselves on a variety of matters related to governance. Such proactive inputs help the government in making more thoughtful decisions (U.N, 2005).

Examining government in a dynamic context, its interrelation with business (G2B) is another core consideration. If one goes strictly by definition, business is considered as an activity with a profit motive. Thus, in such cases the government too is supposed to act as a facilitator, providing certain services to the business organisations, while expecting something in return. In general, business activity participates in nation-building. While a large amount collected in the form of taxes help the government in taking up welfare measures, the goods and services produced by the business houses help the citizen in living a

decent life. Therefore government is expected to facilitate and promote business as well, within certain moral and ethical standards. It will be demonstrated that this interrelation becomes one of the core considerations of e-government.

## **2.3 e-Government concept and definition**

Just as the general concept of government carries different definitions through different perspectives, the same can be said about e-government. There are different approaches and perspectives in defining e-government which can be divided into: technological, managerial, and political. The current approaches to studying e-government cover various perspectives on e-Government and the chapter will introduce a holistic approach that encompasses and addresses different aspects of e-government.

### **2.3.1 Technological perspective**

The technological approach to e-government places the emphasis on using technologies to deliver government services and information to the public in a more efficient manner (United Nation Report, 2008; Gartner Group, Duffy, 2000; Brown and Brudney, 2001; Norris et al., 2001; West, 2001; Jaeger and Thompson, 2003; Altameem et al., 2006). For example, the definition by United Nation describes government utilising information and communication technologies (ICTs) to improve services offered to the public. Gartner Group (as cited in Palvia and Sharma, 2007) also provided a similar definition but argues that government should ensure effective internal and external channels are in place before they can implement services to the public electronically. Additionally, the transformation from a local network into a centralised network with external operations helps in improving the optimisation of service delivery. These external operations can include the government entities in addition to citizens, businesses or other beneficiaries (Duffy 2000).

Since the rise of the Internet, delivering government services to the public online has become an important agenda in the e-government domain. It is argued that government can maximise the speed and broaden the reach of accomplishing its activities through the Internet (Jaeger and Thompson, 2003).

Thus for some, e-government is about considering delivering information and services online through the Internet (Brown and Brudney, 2001; Duffy, 2000; West, 2001). It is however argued that the definition which primarily concerns online delivery should not only focus on using innovative communication and information technologies, but also elements of accessibility, accountability and quality of service, and change management (Altameem et al. 2006).

Author	Definition
United Nations ( <a href="http://www.unpan.org">www.unpan.org</a> ) definition (E-Government Survey 2008: 139)	“The use of information and communication technologies to improve the activities of public sector organisations and by doing so improve the services offered to the public’.”
Gartner Group’s definition (Cited in Palvia and Sharma, 2007: 2)	“The continuous optimisation of service delivery, constituency participation, and governance by transforming internal and external relationships through technology, the Internet and new media.”
Jaeger & Thompson (2003: 389)	“e-Government can create significant benefits for citizens, businesses, and governments around the world”
Norris et al. (2001: 5)	“The delivery of services and information electronically to business and residents, twenty-four hours a day, seven days a week”
West (2001) <a href="http://insidepolitics.org">insidepolitics.org</a>	“The delivery of information and services online through the internet”
Duffy (2000) <a href="http://www.cnn.com">http://www.cnn.com</a>	“Simply using information technology to deliver government services directly to the customer 24/7. The customer can be a citizen, a business or even another government entity.”



Brown & Brudney (2001:1)	“The benefits of disseminating information online that derived from information and its associated technologies to promote and enhance service productivity, performance, and effectiveness”.
-----------------------------	---

**Table 2.1:** Technology perspective of e-government

### 2.3.2 Management perspective

The management approach to e-government places emphasis on using technologies to improve management efficiency (World Bank; Gunter, 2006; Palvia and Sharma, 2007; Yildiz, 2007). The definitions in this category focus mainly on transforming public services to citizens using new organisational processes supported by the technologies, empowering citizens by providing them with access to information, improving government efficiency by utilising IT and Internet for planning, and organising and coordinating different functions and reducing bureaucracy. Also, from the management perspective, e-government may be of great help to tackle corruption problems because of increased transparency in information flow and transactions (World Bank).

Author	Definition	Perspective
World Bank (www.worldbank.org) definition	“e-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, business, 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	Technology & Management

	less corruption, increased transparency, greater convenience, revenue growth and/or cost reductions.”	
Gunter (2006: 362)	“Electronic government comprises the use of modern ICTs to deliver public services to citizens and businesses. It entails the transformation of public services to citizens using new organisational processes and new technologies.”	Change Management
Palvia& Sharma (2007:1)	“e-Governance refers to how managers and supervisors utilise IT and Internet to execute their functions of supervising, planning, organising, coordinating and staffing effectively.”	Management
Yildiz (2007:650)	“e-Government means when the public administration uses ICTs to produce a networked structure for; competence, transparency, interconnectivity, service delivery, effectiveness and accountability.”	Management

**Table 2.2:** Management perspective of e-government

### 2.3.3 Political perspective

In addition to the thematic focus on technology and management, the concept of e-government has been established from the political perspective. It was defined as the rules, decisions, policies, regulation, administrations and legislations (GDBe, 2001) that govern citizens, businesses and different areas of government electronically to make a new way of public access facilitation (Huang and Bwoma, 2003) with a new style of superstructure leadership (Fang, 2002; Commission of the European Communities, 2003; Sheridan and Riley, 2006). In addition, this political definition provides greater opportunities for government stakeholders to have effective and efficient government process (Unesco.org; Fang, 2002) and enhances the relationships between government

and public-private sectors (The Working group). Though, this political transformation leads various benefits to the government where expected to decrease corruptions, increased transparency, greater expediency, revenue growth, and cost reduction. (Unesco.org, Huang & Bwoma, 2003; Commission of the European Communities, 2003; Sheridan and Riley, 2006).

Within the political distinction, there exist a number of notable differentiations. The engagement, enablement and empowerment of citizens to involve in e-government are some of the concern that the UNESCO has identified in e-governance showing that the e-government is more than delivering service to citizens ([www.unesco.org](http://www.unesco.org)). Fang (2002) added that e-government provides greater opportunities for public engagement in democratic institutions and processes. This understanding of political distinction also comments on the greater opportunities of governments when delivering accessible services. The concept of e-government has also been considered as a way of improving the interactions between government to citizens (G2C), government to business (G2B) and reducing the corruption of government departments (Huang and Bwoma, 2003).

The political dimension has also been considered along with the technology and management aspects of e-government. In these regards, e-government potentials are to strengthen the relationships between government and other parties to increase the revenue of countries when delivering services and reduce cost of transactions. The definition has similarly explained the use of ICT in public administration and described from management perception the impact of e-government in the organisational change and new skills (Commission of the European Communities, 2003). However, the managerial impact has direct influence on political views, as the use of ICT is expected to strengthen the support of public policies and enhance a new way of public services and democratic processes. Sheridan and Riley (2006) have thought that distinguished between e-governance and e-government and defined both definitions separately. This definition on e-governance, included electronic consultation, electronic controllership, electronic engagement, and networked societal guidance. On the other hand, electronic service delivery, electronic workflow, electronic voting, and electronic productivity were the major element

that defined and referred to the concept e-government and clarified e-government structure and responsibility.

Author	Definition	Perspective
<p>the Working Group on E-government in the Developing World (<a href="http://www.pacificcouncil.org">www.pacificcouncil.org</a>)</p> <p>(Cited in Palvia and Sharma, 2007: page number 2)</p>	<p>“e-Government is the use of information and communication technologies (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>	<p>Political</p>
<p>The UNESCO definition (<a href="http://www.unesco.org">www.unesco.org</a>)</p>	<p>“e-Governance is the public sector’s use of information and communication technologies with the aim of improving information and service delivery, encouraging citizen participation in the decision-making process and making government more accountable, transparent and effective. e-governance involves new styles of leadership, new ways of debating and deciding policy and investment, new ways of accessing education, new ways of listening to citizens and new ways of organising and delivering information and services. e-Governance is generally considered as a wider concept than e-government, since it can bring about a change in the way citizens relate to governments and to each other. e-Governance can bring forth new concepts of citizenship, both in terms of citizen needs and responsibilities. Its objective is to engage, enable and empower the citizen.”</p>	<p>Political, Management</p>

Fang (2002: 1)	“e-Government is defined as a way for governments to use the most innovative information and communication technologies, particularly web-based Internet applications, to provide citizens and businesses with more convenient access to government information and services, to improve the quality of the services and to provide greater opportunities to participate in democratic institutions and processes.”	Technology & Political
Huang & Bwoma (2003: 164)	“e-Government refers to the use of information technologies (such as the Internet, the World Wide Web, and mobile computing) by government agencies that can transform their relationship with citizens, businesses, different areas of government, and other governments. The use of e-government can lead less corruption, increased transparency, greater convenience, revenue growth, and cost reduction”	Technology, Political, & Management
The European Union (Commission of the European Communities, 2003: 4)	“Information and communication technologies (ICT) can help public administrations to cope with the many challenges. However, the focus should not be on ICT itself. Instead it should be on the use of ICT <i>combined with</i> organisational change and new skills in order to improve public services, democratic processes and public policies.”	Change Management & Political
Sheridan and Riley (2006) <a href="http://www.egovmonit">www.egovmonit</a>	“e-Government is an institutional approach to jurisdictional political operations. e-Governance is a procedural approach to co-operative administrative	Political & Multi Dimensional

<u>or.com</u>	relations, i.e. the encompassing of basic and standard procedures within the confines of public administration. It is the latter that acts as the lynchpin that will ensure success of the delivery of e-services."	Perspectives
Global Business Dialogue on Electronic Commerce - GBDe (www.gbde.org) definition (AOEMA report) (2000: 42)	"Electronic government (hereafter e-Government) refers to a situation in which administrative, legislative and judicial agencies (including both central and local governments) digitize their internal and external operations and utilise networked systems efficiently to realize better quality in the provision of public services."	Political & Business

**Table 2.3:** e-Government definition in term of Political perspective

### 2.3.4 A holistic approach for the concept of e-government

Based on the findings of the concept of e-government in e-government literature, the literature lacked the comprehensive concept of e-government meaning the combined use of technological, social, political, and/or organisational/managerial aspects of e-government in one study. Rather, the literature discusses each aspect either individually or combining two or at the most three aspects together.

For example, some studies such as United Nation Report, 2008; Gartner Group, Duffy, 2000; Brown and Brudney, 2001; Norris et al., 2001; West, 2001; Jaeger and Thompson, 2003; Altameem et al., 2006 have defined e-government from technological perspective as the existence and utilisation of technologies in serving beneficiaries (citizens, businesses, etc.) without considering the impact of the other perspectives social, political, organisational/managerial, etc.

Furthermore, the management perspective focused in defining e-government from organisational and managerial point of view in some studies ((World Bank; Gunter, 2006; Palvia and Sharma, 2007; Yildiz, 2007) such as managing technologies to develop and improve public and private sectors' demands. Also, the management perspective has also defined e-government as a means for managerial level (designers and/or leaderships) to improve management over technological tools such as planning, organising, supervising or coordinating to achieve efficient and effective service. However, the political and social perspectives were not included which might have an impact over technological and management perspective.

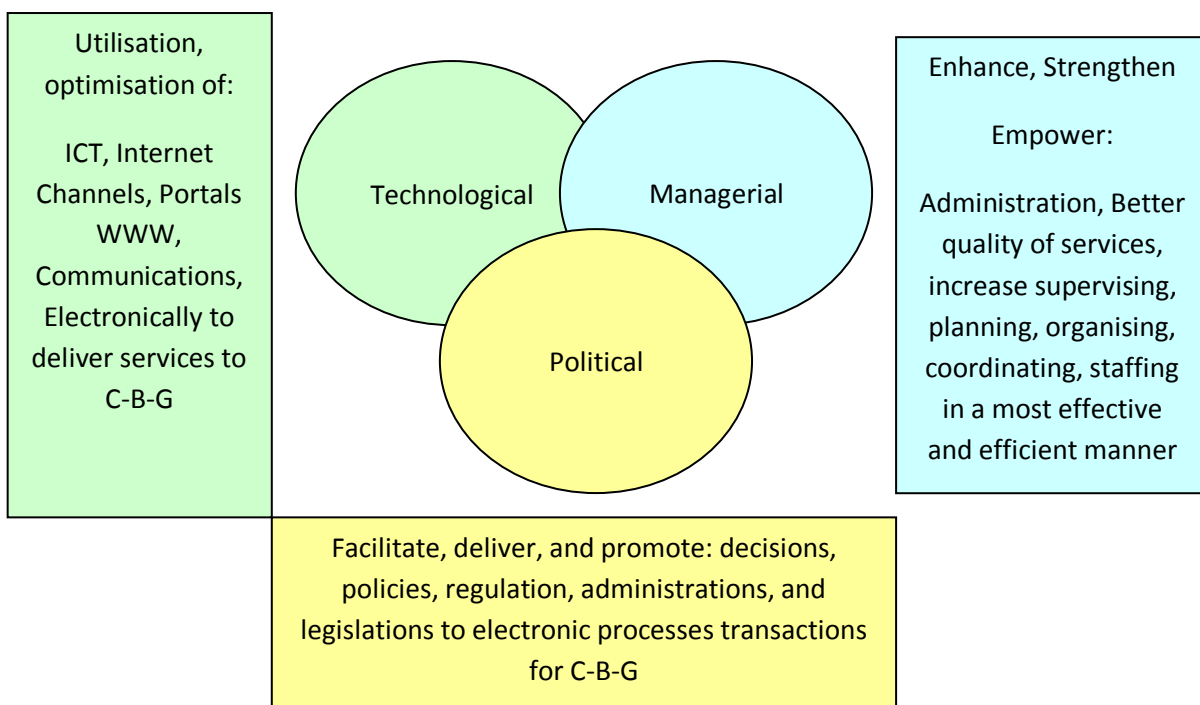
Nevertheless, the political perspective focused mainly on impact of rules, decisions, policies, regulation, administrations, and legislations on facilitating and improving e-government. Even in some definitions which were expanded to define the concept of e-government, have been added to another political aspect, such as management, technological, or business without combining all aspects along together to define e-government (Unesco.org, Fang, 2002; Huang & Bwoma, 2003; Commission of the European Communities, 2003; Sheridan and Riley, 2006; GBDe, 2000).

To sum up, it is evident that while these categories represent thematic distinctions, the different perspectives may be combined and integrated with each other as can be seen from Fig 2.1. Broadly speaking, the e-government project concentrates on the presence of information technology and the internet to deliver services electronically to engage in dealing with services that the government provides (Palvia & Sharma, 2007). e-government has been referred to as the optimal utilisation of information and communication technologies (ICT) (Yildiz, 2007).

Furthermore, the e-government definition has added elements to enhance managerial functionality such as effective supervising, planning, organising, coordinating and staffing. The e-government definition has also considered the political visions of e-government through the impact of e-government project in enhancing the participation of citizens in joining government for decision making and the essence of e-government in improving the accountability, accessibility and transparency when citizens become involved with a new style of electronic

government. Ultimately, this research advances with the notion that the technology perspective has been influenced by the social, management, and political perspectives, to form a new transformational entity called electronic government.

Furthermore, it is worth noting that understanding of e-government holistically requires considering all these perspective as interwoven, together and with each other, being the cause for shaping the conception of e-government. In addition, it is essential to investigate e-government through combining all these multi perspectives to enable understanding and exploring e-government since each perspective might have an influence or impact on the other aspect. For example, political aspect might have a considerable impact on technological and/or organisational/managerial aspects.



**Figure 2.1:** e-Government in three perspectives

## 2.4 Typologies of e-government services

e-Government services are categorised into Government to Government (G2G), Government to Citizen (G2C) and Government to Business (G2B).



These services generally aim to increase efficiencies in wide ranging government processes in delivering transparency and eradicating corruption in transactions (Fang, 2002; Palvia & Sharma 2007; Huang & Bwoma 2003; Minh, 2009; Blakemore and Lloyd, 2008). In addition, they aim to empower citizens, businesses and government agencies to embrace the process of service delivery and information diffusion using web base electronic means. The following sections will discuss each category in detail.

#### **2.4.1 Government to Citizen (G2C)**

This category refers to the way that e-government is developed to enhance the interactions between government and citizens to allow citizens to achieve their needs through a one stop portal. The government also aims to strengthen its relationship with citizens through facilitating services to allow citizens to interact with government services online (Al-adawi et al., 2005). This has enabled citizens to access government's information, interact with government through downloading forms and asking questions, and performing transactions online such as paying taxes, renewing licenses and get the advantages required through the electronic services delivery that the government offers to citizens online (Fang, 2002; Palvia & Sharma 2007). The idea of G2C has been extended to include public interactions with government in the democratic process, such as online voting and polls participation (Huang & Bwoma 2003). This G2C design was seen to fulfill government objectives toward the public and seemingly lead citizens to achieve their benefits with less time and effort and allow them to carry out their transactions efficiently.

There are many advantages of G2C. One of these advantages is to empower the public participation through offering them with the dissemination tools that deliver enablement and reinforcement to engage in the community life through emails and online discussion forms (Ndou, 2004; Seifert, 2003). This perspective has been augmented through research which argues that the use of latest technology has added value to G2C through service delivery (Scholl et al 2009). G2C has also been perceived as enhancing citizens' interactions with the government by being more reliable. The advantages of such services can be seen when citizens have the opportunities to access government services 24 hours a day (Chang et al 2005). It has been suggested that the government

offers online access to public information through offering online portals/websites/kiosk to get advantages of the dissemination tools (Seifert 2003).

Regarding the challenges which face government to citizens development and implementation, social, technological, political, organisational, and economical factors are still the major challenges for enhancing government to citizens relations (Alshehri and Drew, (2010); Vermal et al., (2012); Alateyah et al., (2012).

Vermal et al. (2012) investigated the challenges in developing citizens' interactions with government services in Libya. Their findings revealed numerous issues which still seem to be affecting the development of the public sector such as literacy, localisation, infrastructure, and standardisation. Their study found that regarding literacy challenges, there is a variation in the level of IT skills knowledge among users which hinders the use of e-government services by everyone in the population. In addition, localisation challenges cause difficulties in reaching government's sites due to the language of the interface which was designed using the English language while the majority of the society uses the local language. Infrastructural factors were found to be the major challenge hindering the implementation of government services. This is because the Libyan government focused on an internal automation process which concerns the technological aspect rather than the external aspects which concerns the web presence and services of government departments and sub departments which connect government with citizens. Following infrastructure is the standardisation challenges where absence of a common framework for standards that facilitate technical aspect in term of providing standards for different integrated systems and services applications is one of the significant challenges.

Alateyah et al (2012) have also indicated the common challenges which were found to affect improving the government to citizen relations such as technical issues, technical infrastructure, and accessibility and availability. However, in their findings on challenges they added that trust, security and privacy, government and citizens' cultures, and launching an efficient and effective integrated e-government infrastructure, are other significant challenging issues

which require consideration since they impede the development and implementation of e-government projects as well as hindering citizens' adoptions of e-government services.

In addition to technical and social challenges, Alshehri and Drew (2010) added organisational and financial challenges which are considered to be influential factors which delay the progress of e-government implementation in the public sector. For example, the organisational challenges consist of top management support such as providing proper collaboration, cooperation to lower level management to provide necessary resources, solutions, and training to stakeholders. Additionally, resistance to change to electronic manner (such as transforming the practice from manual to electronic for all government departments and sub-departments), collaboration (such as creating an electronic collaborative society that are connected and reached), and lack of ICT training among employees (such as developing the process of training and learning skills among government employees to provide effective services for citizens), were found to delay government for providing efficient services to citizens. On the other hand, the financial challenges is another issue, such as providing adequate plans and budgeting for funding e-government programs in term of offering systems' hardware, software, maintenance, and training for developing and improving the e-government implementation.

#### **2.4.2 Government to Business (G2B)**

Government to Business is understood as the activities of government in supplying all the services and requirements of private sectors that are needed from the government by offering efficient and fast information delivery, interactions, and/or performing transactions of services (Palvia & Sharma, 2007). The government offers the best methods of servicing businesses depending on the type of activities and business requirement. For example some businesses connect with governments externally through websites while others connect with government internally using internal or private network (Scholl et al, 2007).

There are at least two types of interactions between government and businesses: Government to Business (G2B) and Business to Government

(B2G). Government to Business interaction occurs when the government provides businesses with the rules, regulations, and e-government services. Business to Government interactions occur when businesses supply the government with goods and electronic services (Fang, 2002; Huwang & Bwoma, 2003) It is seen that G2B is one of the benchmark targets of e-government projects since businesses are perceived to have an influence on improving the public service sector (Heeks, 2006). More details on this category will be discussed further.

### **2.4.3 Government to Government (G2G)**

Government to Government is referred to the relation between different governments or within the different departments of the government to develop and improve its departments, organisations and agencies to utilise all the government sectors with modernised technologies, digitalized network and wireless communications (Palvia and Sharma, 2007; Heeks, 2006; Fang 2002; Backus, 2001; Huwang and Bwoma, 2003; Carter and Belanger, 2005). This also involves using the latest telecommunications innovations. These instruments allow government to transform its processes and activities for effective and efficient electronic operations delivery between government's sectors (Palvia and Sharma, 2007; Heeks, 2006; Fang 2002).

The G2G can also be viewed as the use of communication, coordination, and standardisation of information and services electronically to achieve electronic administration that allow each government organisation/department/agency to establish their own data warehouses for exchanging information and service between each other (Yildiz, 2007). According to Backus (2001), the G2G is described as the online and/or internal dissemination of information and knowledge between government agencies with static electronic means via local area network/intranet/e-mail to achieve paperless transactions for upcoming transparent processes. Similarly, Carter & Belanger (2005) have agreed with the same description of the G2G definition and added that in the G2G category government support promotes the transformation into electronic interactions and communication between agencies.

Regarding G2G in relation to infrastructure, G2G is to improve the process of administration electronically through facilitating and strengthening the inner government infrastructure to administratively develop the process of administration to reach some targets such as decentralising power, cutting cost, managing the performance, and developing effective strategic decision making (Heeks, 2006).

In G2G relations, some major challenges were highlighted which still affect government to government development and implementation such as integration, interoperation, technological, infrastructural, and communicational among different government departments and sub-departments (Klischewski and Askar, 2010; Ziaee Bigdeli et al., 2011; Haque et al., 2013).

Klischewski and Askar (2010) focused in their study on the factors which affect government to government development and implementation. Integration and interoperation among government departments and sub-departments were the main issues which found to be challenging and obstruct the progression of developing government to government sector. In addition, their study has also found some factors from the strategy aspect such as problem perception (tackling problems which impede integration and interoperation among departments), action plan (such as setting methodological agenda for collaborations and negotiations among different government departments), and commitment (such as unifying legal framework for standardising services and ensure communication among different departments). Moreover, future options (such as increasing the planning horizons between government departments and making them aware of the choices of technologies and methodologies when promoting systems, services, and applications to avoid interoperations and integrations' deficiencies) are some of the factors which considered challenging issues that cause failure to G2G e-government projects.

Haque et al. (2013) found that not only the integration and interoperation factors impede developing G2G sector but also using adaptive networked technological infrastructure for G2G system that increase the electronic communication and collaboration between the government departments. Improving electronic communications and collaborations systems were also found to influence the administrative process and found to have made a

substantial improvement to the decision making process in addition to the managerial levels among these governmental departments.

Ziaee Bigdeli et al. (2011) investigated interorganisational electronic information sharing in local government to government. Their study found that electronic information sharing among different government departments was found to be surrounded by various influences such as environmental, organisational, technological, and administrative factors. However, their study focused on the technological perspective since they found that there is a lack of frameworks for electronic information sharing in G2G. This lack of framework was a significant issue which required consideration and more emphasis since the government to government relations is affected technologically in terms of different systems, data, communications, and networks infrastructures.

e-Government Typology	Definition	Type of interaction	Type of Involvement	example
<b>G2C</b>	Allows citizens to achieve their needs through one stop portal enables citizens to access to government's information	Information Interaction Transaction	Dual Communication  Portal/Website external channels  G2C, C2G	Access to government's information, downloading forms and asking questions needing answers, paying taxes, renewing licenses, and get the advantages required through the electronic services delivery
<b>G2B</b>	The activities of the government in supplying all the services and requirements of private sectors that are needed from	Information Interaction Transaction	Dual Communication  Portal/Website External/Intern	e-collaboration, e-recruitment, information, downloading forms, e-mail notification, online support, website

	government through offering the best processes of dealing in case of information, interactions, and/or performing transactions of services.		al channels G2B, B2G	integrations
<b>G2G</b>	Is an online interactions government seeking to develop and improve its departments, organisations, and agencies to utilising all the government sectors with modernised technologies, digitalized network, wireless, communications, along with using the latest telecommunications innovations.	Information Interaction	Direct Communication  Internal channel	As an example of data, administrative act and law, online policy and solution, projects, and interactive negotiations.

**Table 2.4:** Summary of e-government typologies

## 2.5 e-Government movement around the world

### 2.5.1 North America (Comprises US and Canada)

#### 2.5.1.1 America

The United States' e-government initiatives have been pro-active and effective. In considering the five part e-government definition previously advanced the United States demonstrates the greatest optimisation of the five categorical assumptions. Indeed, West (2003) argues that the U.S has the most

advanced and organised portal among other countries where the federal IT administration had designed the portal to deliver easiness when browsing the web and placed the information and services in a logical way. The U.S found the e-government mission significant when the project allowed the government to reduce excessive paper work and operating inefficiencies, saving a projected several billion dollars (Forman, 2002).

Many electronic services have been released, such as license renewal, taxpaying, car registration, and social security transactions. In 2002, the federal Information Technology spent more than \$48 billion to improve e-government and to upgrade the level of the Information Technology sector to reach the transformation level and provide the electronic services that serve citizens. In 2003, the federal information Technology department had increased the spending of e-government project to \$52 billion when the federal administration of the Information Technology discovered that the expansion of the project were increased and the public awareness had added more values to the project (Forman, 2002).

The United States' experience of e-government effectively improved online availability. One report indicates more than 60% of the population uses the internet and interacts with the government through the websites (Forman, 2002). Furthermore, in a 2008 report conducted by West (2008) to examine the improvement and effectiveness of service delivery to the public outreach, the results of percentages in dealing with 1,537 States official websites showed increased percentage of interaction changes comparing to the last seven year's reports. However, the e-government experience in the U.S found success at the early stages, the project had addressed several hurdles that the government face while implementing the project. Some of the hurdles that the U.S is working with in order to succeed concern culture, architecture, trust, resources and stakeholder resistance (Forman, 2002).

### **2.5.1.2 Canada**

While not as optimised as the United States, Canada was found to be one of the top ten countries in e-government readiness (United Nation Report, 2008). Indeed, the United Nation report of 2008 noted that “The Canadian web portal is



still a leader, especially given the fact that all information and services provided at the site are equally available in both English and French. The national web portal is packed with information and services, yet remains user-friendly” (United Nation Report, 2008: 30). In 1999 the Canadian government released the initiative e-government project (GOL) to the public in order to develop the public experience toward using the internet through an online presence (Kumar et al, 2007). The Canadian e-government Program GOL mechanism is to promote swiftly the citizens, businesses, government agencies, and other groups to the transformation phase in order to develop the electronic usage to move forward to best practice of e-government usage (Kumar et al, 2007).

It can also be seen that Canadian government acts as both provider and partner domain (Kumar et al, 2007). In terms of government as provider, the Canadian government's vision for the e-government project is to offer the best practice that serve citizens through investigating the types of electronic services that citizens expect to see unlike other e-government programs which aims to seek what should government implementation offer to citizens (Riley, 2005). Indeed, the majority of Canadian users felt satisfied in dealing with government online and support the presence of electronic governance. According to Accenture (2002), Canada is one of the countries which have developed the government consultancy with public and private sectors to guarantee the acceptance of both public and private sectors in meeting the e-government vision (Kumar et al, 2007). Canadian policy also has attended to the government as partner continuum. Chabrow (2004) has stated the role of the Canadian government in insisting to identify the needs of citizens and businesses toward e-government. These needs can be identified from surveys and interviews which give feedback that reflect citizens and businesses needs and satisfaction toward government services (Chabrow, 2004). Therefore, with the feedback from surveys and interviews with the Canadian government’s beneficiaries (citizens, businesses and government agencies), this allows the government to enhance and improve the electronic services and allows the Canadian program to achieve higher performance with a maximum value to their citizens, businesses and government agencies.

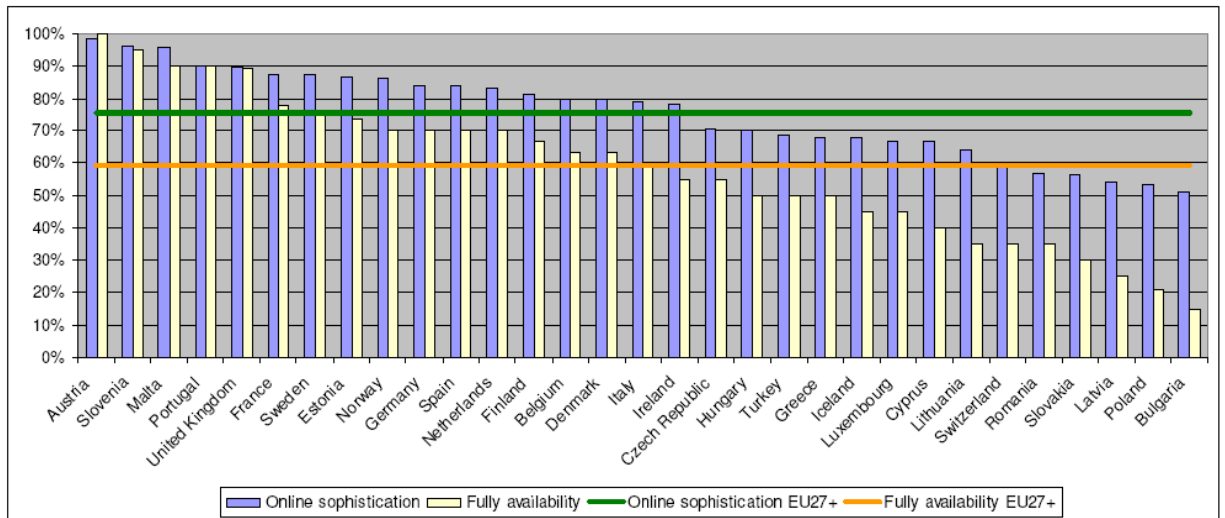
Ultimately, the Canadian government has successive and clear vision on planning for e-government approach. As a result, the Canadian government has received high awards for setting strategies, objectives, and targets for its e-government project.

### **2.5.2 Europe**

The European Union has considered the importance of the e-government around the world as a path that promotes government transition to the Digital Age (Capgemini, 2007). The European vision of e-government is to transform governments' activities all over Europe to reach the new ways of administrations and governance electronically. Furthermore, one of the European visions is to improve the relationships of all bodies of governments to enhance the processes of delivering services for all beneficiaries such as citizens, businesses, government agencies, and other stakeholders. Similar to the United States, in articulating the European e-government approach it's necessary to examine it in terms of a fully integrated understanding of government. Uniquely, by the very structure of Europe, it's impossible to speak of European government in the singular, but examine a generalised approach to e-government policy (Capgemini, 2007).

There are some universal features to European e-government approaches. A total of 31 European countries have participated in improving their e-government systems and working intensively in transforming to fully online services (Capgemini, 2007). The one stop access portal has been the major issue since the vision of all European e-government projects of all countries is to provide comprehensive and trusted portals that serve the public needs (Capgemini, 2007). As seen in Fig 2.2, most of the European countries have reached the online sophistication through enhancing their portals in performing two way interactions between government to citizens and citizens to government. The report has indicated that Europe has crossed the overall average with 76% of online sophistication. As indicated in the report, the full online availability has observed to increase with more than the half scoring 58% of Europe portals have fulfilled their websites with full services. Some of the countries are in initiative stages while others such as Austria, Malta, Slovenia,

Portugal, and the United Kingdom have achieved 90% ranks in sophistication and online availability (Capgemini, 2007).



**Figure 2.2:** Source: the European commission directorate general for information society and media

There are also a number of notable universal strategic features. Some of the European strategies are to offer services electronically via two ways, the first is virtually through building government's portal that serve users to access directly at anytime, while the second way is to provide service in person rather than virtually by service providers using shops, centres, and kiosks who have authorities to complete services to public. Furthermore, Europe has intensely concentrated on the role of the Information and communications technology sectors (ICTs) through collaborating with both sides' governments and ICTs to enhance the government's facilities and prepare administrations to serve electronically for future dealing with public and private sectors by enabling them to connect online (Capgemini, 2007).

### 2.5.2.1 United Kingdom

The United Kingdom released the e-government programme indicating that the program will imply changes to the country's structure, processes, working practices and corporate cultures. All the mentioned authorities are considered an initiative plan where the government will expand its services to cover every

governmental department and agencies that are involved with the public business and citizens.

According to the 2007 report there are two major portals that link citizens and business to perform transactions through, the Directgov being the link that serves all citizens to governments needs while the Business link is developed to deliver the business purposes (Capgemini, 2007). The United Kingdom Department of Education and Skills has also released an effective project that enables individuals to access internet and increase awareness and skills demanded for internet usage (UK Department of Education and Skills, 2005). Also, an idea of providing more than 6,000 centers all over the country was developed to encourage individuals to support government to transform to complete deal with local government through electronic services and move toward high level of electronic usage (UK Department of Education and Skills, 2005; Capgemini, 2006).

One of the United Kingdom visions of e-government is to make the United Kingdom a top country in supplying ICT skills. Indeed, the UK government released a budget around 3.1 billion pounds to develop e-services (ODPM, 2003). According to the UK local e-government report, the United Kingdom provided vast efforts in transforming the government, citizens, and business sectors involved and interacting online (ODPM, 2003). The impact of ICT in the United Kingdom had played a major role in delivering the opportunity of the three sectors to get involved with each other through providing technical supports and guidance to improve the efficiency of e-government. The ICT had developed secured transactions systems to enable people and business to get advantages of the high level of service delivery (ODPM, 2003). The United Kingdom government has attempted to complete the development of the electronic participation through permitting people and business to engage with government in the democratic processes that makes the country one of the leading countries (ODPM, 2003).

#### **2.5.2.2 Austria**

Austria is notable as it is considered the first country that accomplished full online availability. The Austrian government portal measurement taken by the

European commission directorate general for information society and media indicated that 68% of public services are accessible to citizen and business sectors. The Austrian government's vision is to provide the opportunity for public access to government sites and get all the electronic services needed in secure, private portals that provide high quality communication channels for transactional use for both citizens and businesses (Capgemini, 2006; Capgemini 2007).

The Austrian government has pursued objectives in the realm of government as partner to enhance the processes of electronic transformation. One of the objectives is to enable stakeholders' citizen/business to conduct all administration actions electronically through accessing online for performing services with an effective and effortless way. According to Meesters and Jaremba (2007), the e-government in Austria has aimed to simplify and accelerate the governmental processes between citizen and administration to transform the internal process of public administration to fully electronic collaboration and utilisation. Also, another aim of the Austrian government is to transform the manual interaction between administration and both public/private sectors and as well transform the internal interactions between administration departments for implementing supportive nationwide and standardised e-government systems. Furthermore, delivering high quality, client-oriented, low cost, and secured services to all stakeholders was perceived as one of the objectives of Austrian government in accomplishing a successful e-government implementation.

### **2.5.3 Middle East**

The United Nation e-government survey (2008) has noted that some countries such as United Arab Emirate, Bahrain, Kuwait, Jordan, and Saudi Arabia have achieved better standing comparing to the previous three years and found established elements for progress (United Nation Report, 2008). It was also observed that some of the Middle Eastern countries have provided excellent examples of e-governments in the area, such as in the United Arab Emirates, Bahrain, and Jordan.

### **2.5.3.1 United Arab Emirates**

The UAE vision in e-government is to facilitate the knowledge based through integrating policy formulation to stakeholders in a most efficient, effective, and economical way through launching service online via utilising latest technologies, communications, and channels (Sethi and Sethi, 2000). In addition, the UAE government aim to improve the internal administration networks/systems through integrating all administrations together to provide rapid and effective service delivery at anytime and from anywhere (Sethi and Sethi, 2000; Westland and Al-Khourri, 2010).

The UAE government has set some objectives that describe the short and long term e-government project's strategy. These strategic objectives focused on enabling the users to access government online services and to make services available to citizens, businesses and government entities through various channels. The objectives also aim to provide quality to its users by assessing and improving the implemented online service. In addition, another objective is to achieve full integration by connecting all government agencies into a universal portal that allows them to share their data across each other. In the end, the UAE government aims to launch marketing campaigns to advertise the new services to the government, private and public sectors (Sethi and Sethi, 2000).

Currently, the United Arab Emirates works on improving the electronic services by digitalizing the ID national cards to achieve authentication of online identities for their citizens and residents. By doing so, this digitalisation of services is expected to facilitate electronic services and increase the overall requirements of trust and privacy. It would also allow the UAE government at further stages of e-government development program to increase the computerization of other government operations (Westland and Al-Khourri, 2010).

### **2.5.3.2 Bahrain**

The Bahraini government is one of the Middle Eastern countries who launched a comprehensive e-government programme that is collaborative, inclusive, and dynamic to provide all government services online for all

stakeholders ([ega.gov.bh](http://ega.gov.bh)). The Bahraini's objectives focus on delivering benefits to stakeholders in term of creating awareness of the e-government programme, reducing the level of resistance to change, improving customer satisfaction, and increasing the level of online service delivery through offering friendliness and easy convenient delivery channels.

Also, the official website of the government of Bahrain has achieved an advanced level of service delivery in term of providing information, enabling interaction, and accomplishing online transactions for e-payment purposes ([ega.gov.bh](http://ega.gov.bh)). The Bahraini government's goal at the end suggests some outcome to reach as a transformational approach through providing availability of all kind of services for all stakeholders, developing mobile channels to through providing mobile services through WAP and SMS channels, and increasing the level of integrations and processes between government departments with each other and with stakeholders G2C, G2B, and G2E ([ega.gov.bh](http://ega.gov.bh)).

### **2.5.3.3 Jordan**

Jordan is one of the Middle East countries which have launched an online website that offer e-government services. The vision and strategy of the programme is to create a society that deals with the government electronically to improve the relationship with the public and private societies at all levels (Al-Omari and Al-Omari, 2006). The Jordanian government has also set a long term vision that enables them to improve the information technology and communications to fully interact with its society and transform into fully electronic services usage that allows easy access to government information and services (Mohammad et al., 2009).

The goal of providing an electronic government is to offer an opportunity to make a major contribution to economic development by helping Jordanian business to reduce their operating costs through providing direct access to government information and procurement. This can be achieved by enhancing infrastructure, improving skills, modernising laws and working together with the private sector (Al-Omari and Al-Omari, 2006).

In addition, introducing e-government services allows the Jordanian government to develop an effective technology infrastructure (Naffa, 2005). It will also improve the education and skills development of using technology and will increase economic growth and job creation (Naffa, 2005; Al-Omari and Al-Omari, 2006; Mohammad et al., 2009). Other benefits include supporting government entities for IT training and other necessary skills, recruiting staff with relevant skills, incentives for government entities to invest in developing ICT expertise internally, promoting retention of skilled professionals in cooperation with other programs, sourcing certain functions when business case supports it, and creating links with local universities to give on-the-job-training to students. (Naffa, 2005; Al-Omari, 2006; Mohammad et al., 2009).

As for the current situation in Jordan, the government of Jordan has addressed some challenges such as budgeting barriers, common technical frameworks and infrastructure, digital divide, privacy and security concerns, rapid technology change, and citizen expectation and seamless services (Mohammed et al., 2009). It has also come up with strategies such as identifying the gaps that lie between the government's agenda and current implementation and published new aims for confirming the e-government programs to achieve its goals (Mohammed et al., 2009). Further issues addressed by the Jordanian government is to work on sending high quality services to citizens, businesses, and organisations that can be achieved through developing government performance and efficiency. The government has also enhanced Jordan's competitiveness by ensuring transparency and competitiveness, reduce cost and increase ease of interacting with government. In addition, the Jordanian government put into consideration the benefits of promoting the ICT sector's development to achieve good electronic services, build up skills in the public sector, and improve e-commerce activities along with developing information security (Mohammed et al., 2009).

## **2.6 Government to Business (G2B) related research**

It is essential to understand the current position of G2B in the e-government context and shed light on the gaps in the e-government literature that hinder the



diffusion and development of government to business development and implementation.

### **2.6.1 Government to Business (G2B) considerations**

There are a number of important considerations that must be mentioned in relation to government to business. According to the Global Business Dialogue (2001) the government has an important role in conducting activities that are related to business. Businesses are aware and motivated to deal with digitized government and depend on its improvement on the government administrative functions in utilising the information technology to apply e-government. The report also revealed that the government is aware of the importance of technology development through implementing strong IT infrastructure that improves effectiveness of G2B and strengthens the relationship between the government and private sector. Also, the report has shed light on the significant role of private sectors in improving the government-private sector's relationships. This is through offering outsourcing, suggestion for improvements, strategies for customer convenience and satisfactions, successful example of IT utilisation and information related to the most latest technologies. In addition, passing the method of evaluation private sectors use to evaluate government technologies for e-government projects, cooperation with the government in improving governmental officials through offering IT education techniques, and providing universal equipments that deliver easiness for governmental officials environment are other suggestions for improving the relationship between G2B (GDBe, 2001; 2002). Even though the report has comprehensively addressed some important issues and challenges that should be done for G2B implementations and e-government best practices, it could not claim these issues empirically because of lack of evidence due to the limited number of studies related to G2B and/or absence of empirical studies that address the G2B demands or identifies its gaps.

Within the government to business spectrum, there is considerable emphasis on elements of improvement. Bertolletti et al. (2003) argue that one of the critical obstacles that government to business (G2B) face in e-government project in Italy is the complications that affect services to business. Their main concern on services in the business project was in the database records linkage process

since the integration of records is different from one system to another. In addition, some records were explained in the database and can be easily matched in e-government system while others were unexplained and found unmatched and perceived complication when locating them. Based on the findings, Bertolletti et al. (2003) suggest considering all integrated scheme and its corresponding entities, building conceptual scheme for database linkage, building the integrated conceptual scheme that identify the linkage databases and its extensions, and setting strategy for data integration transformation.

Further challenges have been noted. The review of government to business has revealed various deficiencies that affect the relationships between government and services. Some can be seen in the previous mentioned article, such as a lack of legal guarantee for transactions; security and trust were also some issues of e-government that were observed to be major issues affecting the development of e-government services between government and business (Aichholzer and Sperlich, 2001). However, the Global Business Dialogue on electronic commerce report (2002) supports Aichholzer and Sperlich's (2001) concerns about privacy, confidentiality, and security. In addition, some other deficiencies generally related to lack of infrastructure and which have a negative impact on government to business electronic development. These include gaps in telecommunications infrastructure, broadband access, difference between the designed laws and regulations and the existing ones, digital literacy, low home computers access, and electronic signature (GDBe, 2002).

Unlike the (2002) Global Business Dialogue on electronic commerce report and Aichholzer and Sperlich (2001) study, Zhang et al. (2005) had other points of views in deficiencies that affect the development between government and private sector where most of the private sector concerned a lack on both the organisational resistance to change and a lack of funding in new IT initiatives. Dada (2006) had agreed with some previous authors on several deficiencies affecting e-government services in the private sector and added on lack of IT, systems, designs, changes of dealing, non advanced policies, and low level of security and regarded those factors addressed are essential elements that would reflect on the future expectations changes.

### **2.6.2 Private sector perspective**

One of the substantial thematic occurrences in the G2B literature examines the topic from the perspective of the private sector. In the year 2006, the Global Business Dialogue on electronic commerce released a report that is one of the important sources promoting government to business studies. The report has commented on the significance of investigating e-government from the point of view of the private sector. These points were imperative because they identify the need of the e-government literature to increase the amount of theoretical and empirical studies related to government to business (G2B). This was mentioned by Zhao (2007) where it was found that most of the research studies concentrate on government to citizen (G2C) and the public sector more than the government to business (G2B).

A Primer on E-Government: Sectors, Stages, Opportunities, and Challenges of Online Governance was another report released for the Congress in (2002) by Seifert. The report has explained the e-government concepts and challenges of successful e-government implementation. The report also states the role of private sector in fueling e-government development in the initiative approach. Moreover the report addresses the barriers that the private sector faces such as agency centric solutions and the solutions for the private sector in promoting the customer centric. Furthermore, the report has stated on how the government and private sectors' relationships are expected to be when developing national infrastructure assurance for protecting the nation's critical infrastructure. (Siefert, 2002)

The 2002 Global Business Dialogue on electronic commerce report has emphasised the importance of the collaboration of the private sector in promoting e-government projects with the public sector and presented a brief outline of economic, technological, and legal/political factors when establishing successful implementation of e-government that provides services with fast and higher quality standards. Although the report has stated many important issues that reinforce the relationship between Government and Business (G2B), they did not represent cultural and/or society changes. Also, the report observation was generalised and did not specify if the proposed model or recommendations released can be applied in developed or developing countries (GDBe, 2002).

Following this perspective, a few studies explored the expectations of private industry for government to effect market concerns. Zhao et al (2007), Geetika and Pandey (2007), and Minh (2009) argue the role of government in developing competitiveness in the private sector. Well designed portals that support private sector were seen an effective element in reducing operating cost, improving customer service, improve employees' IT knowledge, increase service quality, ensure satisfaction, promote business productivity (Zhao et al., 2007; Geetika and Pandey, 2007, and Minh, 2009). Besides, once the government improves electronic services, this influence reflects positively on the private sector because this advanced technological change affects the processes of transactions between government and private sector which add a multitude of benefits for both of them. Zhang et al. (2005) explores stakeholders' expectations of the benefit and barriers of e-government knowledge sharing. The study investigates the diverging and converging expectations of different stakeholders such as state government, local government, non-profit organisation and private organisation stakeholders. The findings of the study suggest that 4.5 percent of the private organisation stakeholders have valid responses to the expectations of e-government and most of them are concerned that the barriers on the organisational resistance will change and the lack of funding in new IT initiatives.

Warnick (2001: 1) argued that "Some elements in the private sector claim that allowing public access to the new capabilities embodied in e-Government represents unfair competition by providing a service that should be the purview of commercial publishers and information vendors." It was also observed that collaboration between the government and private sector in disseminating information are expected to improve the e-government project since the private sector has some fundamentals and methods that the public cannot file by government agencies. Although the government does cooperate with the private sector as services providers to add values, packages, market information and products to assist users to accept and engage new changes and to increase the information expansion. The participation of private sectors is perceived to support e-government services for the sake of improving all the participated stakeholders in the e-government services when sharing governmental information dissemination to the public.

While generally collaboration between the government and the private sector is examined in terms of large firms, research also explores the issue in terms of the small business perspective. For instance, Onojaefe and Leaning (2007) point out the importance of partnerships in empowering e-government through understanding the relationship between small businesses, ICT, and local communities. This is valuable research since it addresses the extent of ICT usage among small businesses through a proposed model. The applied model critically investigates the relationship between the internet and the stakeholders of a business. As a conclusion to this study, the authors have stated some important issues that have to be considered, such as the risk of mix management competencies that could affect the relationship of small business with other partners. In addition to the importance of small business in improving the technical and managerial skills, it also strengthens the relationship of small business with partners, and benefit from technology investments with partners. However, the appearance of some deficiencies in IT infrastructure, trust, and loyalty in some countries are considered major obstacles that affect business partnerships and need further exploration.

### **2.6.3 Public utilities and technology**

Within the Government to Business spectrum there also exists considerable consideration of the government's role in terms public utilities and technology. Geetika and Pandey (2007) have considered evaluating the impact of the e-government application on basic infrastructure and public utilities as an important approach for improving the power sector. Their model of evaluating e-government development has been developed to improve user interface and ensure competitiveness. Reducing operating cost, improving customer service, and increasing employees' efficiencies were some of the expected outcomes that the study aimed to approach. Also, the study selected two organisations from the private sector to investigate the differences in technological initiative and to address the impact of those two organisations on thier performance. The study disclosed that 61% of respondents were expecting from the private sector to provide better services, 6.5% respondents were expecting from the private sector to provide better services with lower price, and 11.5% of respondents

were expecting the private sector to provide better services with no change of price (Geetika and Pandey, 2007)

One of the major technology investigations was advanced by Ebrahin and Irani (2005). They pointed out the need of government in considering the technology as a supportive tool to promote e-government. However, technology is considered a successive tool that enhances e-government but technology along with the government support can change the conventional way of processing services. Some challenges such as providing relevant sources, building effective infrastructure, strong IT training, and training staff are the most challenges that face government and private sector for achieving advanced and modern way of electronic services dealings.

Technology has also been considered in relation to the political spectrum. For instance, two main factors were found that are concerned with private sector co-ordination with government and public sectors. These factors are technical and social co-ordinations. On the one hand, the technical co-ordination between information systems is defined as an element that enhances the non-duplication of information systems to improve the technological infrastructure and/or policy innovation when integrating systems. While on the other hand, social co-ordination was defined as an element that enhances the linkage between technical specialists and policy makers that creates an atmosphere of expertise and experience that improves the sharing of information and interacts with systems and application together across departments. As a result, it has been suggested at the end of the study that those two factors are of utmost importance.

#### **2.6.4 Culture and government**

While not as central as the government and private sector interrelation, a substantial amount of literature examines the interaction of culture and region on e-government policy (Van Dam et al, 2005; Ali et al, 2009; Kovacic, 2005; Bouaziz, 2008). According to Ali et al. (2009), the impact of culture on e-government is considered an important aspect when implementing electronic services. The study compared two different cultures from two different countries, the UK and Sri Lanka. The importance of the study was to address

the challenges that face e-government project administrations of both countries when implementing e-government services. The study notes the collaboration with the private sector in enhancing e-government which was needed in some countries in order to resolve the lack of technology where some countries have limitation in the telecommunications and technology infrastructures in the public sector. However, this study concentrated more on the aspect of the relationship between the government to citizen rather than emphasis on the relationship between the government to business especially in regards to the collaboration and challenges that face e-government implementation in the private sector.

Conversely, Aichholzer and Sperlich (2001) discussed electronic government services for the business sector in Austria. The article contained e-government elements definitions along with evidence of those elements defined and the demands of e-government services. In the study the majority (62%) of businesses desired to use the internet to communicate with the government agencies. In addition, the majority (65%) of the business sectors recognized the government website through Austrian administration. Some businesses suggested that communicating with the government and the public through the internet was efficient while others suggested that communicating through the internet is not profitable for the business sector.

Vietnam has also been considered in the e-government context (Minh, 2009). One of the important issues was the linkage between e-government service and business environment's competitiveness. Furthermore, improving electronic services will positively adjust the processes and procedures and create many benefits for business sectors. Other benefits include saving time, increasing speed, and reducing corruption by developing technological tools that enable businesses to promote its processes. Furthermore, the positive approach of promoting the e-government services observed to positively influence the business sector by reducing operational cost, and save money and human resource for businesses, where this influence on the private sector will reflect on the government subsequently and making it more innovative and effective in achieving advanced level of e-government services delivery. Finally, major obstacles were noted that affect the improvement of e-government services, such as lack of proper ICT infrastructures, the absence of interoperability

among local authority organs' websites and the digital divide among the population, and the lack of user-centric orientation in developing services.

The above review indicates visions of studies, reports, and official documentations that relate to private sector involvement in the e-government project. There was found to be a massive limitation in the theoretical and empirical studies that assess, explore, explain, or enhance the relationships between the government and the private sector. A large amount of the articles proposed conceptual frameworks and/or critical reviews to consider the public sector; where less attention was paid to the private sector and its substantial role in empowering and enhancing the e-government project. However, some studies, reports, and official documents have indicated the significance of the private sector involvement in e-government. This significance can be found through strengthening the relationship between government and the private sector in term of considering business perspectives, infrastructures, cultures, and improving the e-government services which allows the government stakeholders to benefit from the private sector's technological and practical development (Ali et al, 2009; Minh, 2009; GBDEC, 2001; 2002). Consequentially, collaboration, involvement, and support of the private sector for improving e-government applications and empowering electronic services was perceived to be one of the important issues (Warnick, 2001; GBDEC, 2002; Zhao et al, 2007).

### **2.6.5 e-Government challenges**

This section will provide a general overview of the challenges in e-government with a special focus on the G2B category to increase our understanding and knowledge on the influencing factors affecting the development of this sector.

A significant amount of research has examined the challenges and failures that occur in e-government projects. Heeks (2003) has identified that in general 35% of e-government project in developing countries had total failure, 50% had partial failure, and the rest of successive e-government projects had a 15% failure rate.



e-Government challenges were discussed in depth by Lam (2005), perhaps more than any other study. He broadly discussed it in the realms of strategy, technology, policy, organisation, process, and social and cultural challenges (Lam, 2005). Strategy challenges refer to a lack of shared e-government goals and objectives, over ambitious e-government milestones, lack of ownership and governance, absence of implementation guidance, and funding issues (Lam, 2005; Zhang et al. 2005; Weerarakody 2008; GBDe, 2002 ). For example it is found that lack of shared e-government goals among governments can lead to lack of clarity, confusion and conflicts in responsibilities and roles between the governments (Lam, 2005). It is also found that over ambitious e-government milestones result in unrealistic schedule of implementation and underestimation of the effort required to complete the e-government implementation projects (Jaeger and Thompson, 2003; Lam, 2005). In addition, lack of ownership and governance was found to be linked to lack of shared e-government goals among governments, a previous barrier. This is expected as one would think that the latter barrier would contribute to the other. Absence of implementation guidance is another strategic barrier which is very important to agencies that need to interpret to provide tangible specifications for e-government services (Lau, 2003). The last strategic challenge is funding issues (Lau, 2003; Weerarakody 2008; Lam, 2005). These can be related to difficulties in obtaining the necessary funding for certain projects, difficulties in managing and releasing the funds, in addition to the annual variation in the budget due to financial changes.

Technology challenges include deficiencies in architecture interoperability, incompatible data standards, different security models, rigid legacy systems, and incompatible data standards (Lam, 2005; Aichholzer and Sperlich 2001; Onojaefe and Leaning 2007, Jayaradha and Shanthakumar 2003). Deficiencies in architecture interoperability, an important technical challenge is caused by for example the use of different programming frameworks and technology platforms or problems with existing applications (Aichholzer and Sperlich 2001). There must be some form of cooperation and standardisation of the issue of architecture interoperability. This has been initiated by some countries such as the UK's e-government Interoperability framework and Italy's Authority of Information Technology in the Public Administration (AIPA) (Lam, 2005).

Incompatible data standards affect the ability of data to be exchanged between governments in a flawless fashion (Zaman, 2007; Lam, 2005). This may be due to different applications formats, the structural differences in the way the same concept was represented in different applications, and the lack of a common data model that can be standardised and adopted. Different security models is another technical barrier in the e-government system (Karokola and Yngstrom, 2009; Lam, 2005). Again, this barrier is similar to the previous one in that it lacks a common security model that is compatible and can be integrated with other applications. Rigid legacy system is yet another technical barrier (Lam, 2005; Eynon, 2007). These systems were developed many years ago and suffer from limited network connection and aging file formats which cannot be used with network integrated applications. Incompatible data standards are a further barrier which creates a gap between all the involved agencies in the e-government programme (Lam, 2005; Zaman, 2007). For instance, difference in technical standards adopted by different government agencies, difference in methodologies and modelling standards, and different technology versions under the same technical standards are all common issues related to this barrier.

As for the policy challenges, the major issues appear to be concerns over citizen privacy, data ownership, and e-government policy evolution were the challenges that affecting e-government development from policy perspective (Lam, 2005; Aichholzer and Sperlich 2001; Onojaefe and Leaning 2007, Jayaradha and Shanthakumar 2003). Concerns over citizen privacy remain an issue in the e-government system (Lam, 2005; Pieterse et al, 2005; Janseen and Zeef, 2006). This is caused by absence of concern over sensitive information, citizens' identities, and lack of clarities in privacy policies among government's agencies. Clear policies related to citizen's privacy should be established and clarification of these privacy issues between government agencies was suggested. Data ownership is another issue where some government agencies observe themselves as owners of specific data and are extremely protective of it (Lam, 2005). This unwillingness to share data and information with other agencies is an obstacle to the progression and development of e-government. Another technical barrier related to e-government policy evolution is where the lack of detailed e-government policy,

or their premature stage of development may hinder the progress of e-government initiatives, especially those of a more ambitious nature (Lam, 2005; Alshehri and Drew, 2010).

Challenges generally related to organisational readiness include slow pace of government reform, absence of an e-government champion, legacy government processes, lack of relevant in-house management and technical expertise.(Lam, 2005; Aichholzer and Sperlich 2001; Onojaefe and Leaning 2007, Jayaradha and Shanthakumar 2003). The lack of agency readiness reflects that many agencies are still in the learning process about what e-government is and how it can be implemented within their own agencies (Lam, 2005). They are still unprepared to undertake major efforts in implementing e-government initiatives. This can also lead to their inability to cope with the rapid pace of government reform which has a reverse effect on the long term causing a slower pace of government reform. In addition, the absence of an e-government leading authority that manages funds, resources, and ensures commitment until successful implementation has a role to play as a barrier (Lam, 2005; Al-Omari, 2006). Legacy government processes established many years ago resist the change required for full e-government implementation and hinder this process. This can be overcome by setting up new mutual procedures between the different government agencies and flexible attitudes to change. The lack of internal management and technical skills is another barrier that hinders implementation of big e-government projects. Many e-government projects were seen to be dependent on external consulting firms which may result in faster progress over the short term. But on the long term, issues of over dependence on these external partners may be critical in relation to support and maintenance (Lam, 2005).

These elements are augmented by IS/IT integration challenges, lack of alignment between corporate planning and IT planning, inability to integrate existing and new systems into a holistic system, and lack of IS/IT skills.(Hwang et al., 2004; Heeks, 2003, Lam, 2005; Lau, 2003; Weerarakkody, 2008; Elsheikh and Hobbs, 2008; Dugdale, 2005; Bjorn and Wahid, 2008; Heeks, 2002; Kumar and Best, 2006; Abuali et al., 2010; Dada, 2006; Vivian, 2004; Conklin, 2007; Jayaradha and Shanthakumar, 2003)

Whereas the previously discussed challenges fall along a similar paradigmatic structure, there also exists a classificatory approach to challenges that argue challenges are most prominent in different contexts (Lau, 2003). This perspective argues that the first type of challenges in terms of e-government contain technological tools available, the level of access that citizens and business will have, their overall trust in electronic channels, and their expectations of the types of services that should be delivered and how should be delivered were the challenging factors that affecting the willingness of businesses and citizens to use or take up electronic services. Other challenging factors affecting e-government development are found in rapid technological change. Such elements include the digital divide (unable to benefit from online service because of inability to provide online service), and deficiencies in developing customer-focused services. (GBDe, 2002; Eynon, 2007; Hwang et al., 2004; Lau, 2003). Digital divide is often discussed as a challenge in information society and is argued to prevent citizens from participating in e-government fully (Lau, 2003; GDBe, 2002; Eynon, 2007)

Furthermore, external and internal e-government barriers often pose challenges. These involve breakdowns, missing components or lack of flexibility in the government-wide frameworks that enable e-government, legislative and regulatory barriers, budgetary barrier, and common technical frameworks and infrastructure (Lau, 2003). While internal challenges to e-government implementation concern ensuring a common vision, providing leadership at many levels, strengthening co-ordination, improving collaboration (implementation of integration models for online service, seamless online service content, seamless service delivery, developing shared vision of service, increasing use of formal co-operative mechanisms, facilitating the development of customer focused clusters, and taking action to address constraints arising from internal government frameworks) (Lau, 2003; Jayaradha and Shanthakumar, 2003), clarifying public-private partnerships (Heeks, 2003; Onojaef and Leaning, 2007), monitoring and evaluation e-government to understand demands and assessing the benefits to users of alternative proposals and evaluate the effectiveness of proposals in meeting their objectives (Lau, 2003).

In counteracting the literature on the failures and challenges of the e-government project success models have been proposed (Ebrahim and Irani, 2005; Zhao et al, 2007). For instance, Ebrahim and Irani (2005) advanced a framework that focuses on the e-government adoption for the public sector from two points of view: architecture and barriers. They clarify the development of the ICT in the private sector, indicating this influence has a valuable effect on the private sector in promoting its systems and applications to improve the business through developing new technological infrastructure that promotes businesses and deal with government or public electronically. The best solution of connecting private sectors and government is indicated to be through web services.

Similarly, Zhao et al, (2007) assessed the satisfaction and quality of services between the government and the business sector in the United States. Based on the findings of this study, it was observed that most of the states had well designed portals that carry all the five investigated electronic services with high speed and quick service delivery. Furthermore, it is observed that 68 percent of participants perceived to have overall satisfactory experience in evaluating G2B service.

## **2.6 Summary**

This chapter provided an overall review and discussion of e-government. The government was found as the process, providers, product, and facilitator that provide electronic services to citizens, business, and as well as government. In addition, the definition of e-government had different perspectives technological, managerial, and political. The literature revealed an absence of a universal definition of e-government that combines all these different perspectives in one definition. The typology of e-government was explained and discussed. The chapter had also reviewed e-government around the world and revealed on the strategies, developments, and its movements in America, Europe, and Middle East. The review of this section provided the strategies which had taken by governments to improve e-government projects and the different objectives in order to develop e-government and transform to effective and efficient electronic dealing with stakeholders such as citizens and businesses. The last section of this chapter explored and discussed government to business which is

the focusing area of this research. This section discussed the current understanding of government to business and revealed on the lack of both theoretical and empirical studies which concerns government to business.

Following this chapter is the infrastructure in information systems and a holistic framework chapter which reviews and select the chosen framework for this research study.

**Infrastructure in Information Systems  
and a Holistic Framework**

**3.1 Introduction**

**3.2 Infrastructure concept in information systems (IS)**

**3.3 e-Government infrastructure**

**3.4 A holistic concept and framework for e-government  
infrastructure**

**3.5 Summary**

### **3.1 Introduction**

The aim of this chapter is to review the existing literature on infrastructure in the context of information systems. Section 3.2 explores and discusses the concept of infrastructure from general and particular (information systems) views. It also presents and discusses the different approaches for infrastructure in the Information systems' domain. In addition, the section reviews and discusses the existing infrastructure framework in the information systems' field. Section 3.3 presents and discusses infrastructure in e-government. Section 3.4 examines and discusses the selected framework for this case study. Section 3.5 provides a summary about the chapter.

### **3.2 Infrastructure concept in information systems (IS)**

Bowker et al. (2010) defined infrastructure in general and in particular relation to information systems domain. The general term infrastructure was defined as a set of equipment such as buildings, bridges, electrical power plants, wires, roads, pipes, communication networks that exist to facilitate human activities (Bowker et al., 2010). On the other hand, the specific meaning for infrastructure in information systems was defined as technology which consists of computers, internet, networks, servers, hardware, and software to facilitate human activities. Also emphasised was a relationship between humans and technology where humans utilise technology as an invisible tools which existed to facilitate their activities.

Several studies defined and described the infrastructure in the field of information systems (Weil, 1992; Serafeimidis et al., 1996; Eriksson, 2002; Chung et al, 2003; Contini and Cordila, 2007; Gheysari et al., 2012). All definitions described information system infrastructure from diverse perspectives (Table 3.1) such as technological, social, socio-technical, and organisational and managerial.



Infrastructure definition/description	Perspective type	Reference
Technological infrastructure refers to the utilisation of hardware (computers), software (applications), servers, internet, networks, telecommunication, and digital communication channels that form the information systems. Technological infrastructure also refers to the technological capabilities which enable exchange of information through accessing and use of services and information.	Technological	(Serafeimidis et al., 1996; Gheysari et al., 2012; Byrad and Turner, 2000)
Social infrastructure refers to the human interactions where humans set rules, regulations, standards, protocols, collaborative networks, arrangements that enhance their everyday practice and enable them to have smooth process and procedures to achieve their demands.	Social	(Eriksson,2002; Gal et al., 2004; Byrad and Turner, 2000)
Socio-technical infrastructure refers to utilising technology such as hardware, software, internet, servers, networks to facilitate social activities and enhance operations to take electronic practices that deliver efficient, effective, and rapid services	Socio-technical	(Chung et al., 2003; Contini and Cordilla, 2007)
Organisational and managerial infrastructure refers to the utilisation of technologies and social activities in term of planning, developing, implementing, managing, and operating to serve users on their daily base activities to deliver effective services and developed processes to organisations.	Organisational/ Managerial	(Weil, 1992; Sirkemaa, 2009; Magalhaes, 2011)

**Table 3.1:** Definition of information systems infrastructure

Therefore, the following sections will discuss the concept and definition of infrastructure from the following perspectives: technological, social, socio-technical, and organisational/managerial.

### **3.2.1 Technological approach to infrastructure**

Technological approach to infrastructure is the study of technological tools including hardware, software, network, data, and digital communication channels that form the infrastructure in information systems (Serafeimidis et al., 1996). Most of the studies that defined infrastructure from a technological perspective were found to provide a common characteristic of a technological approach to infrastructure. For example, Serafeimidis et al. (1996) emphasised that technological capabilities are considered the foundation which forms effective practice and passes advantages for enabling organisations to achieve vast and better practice for their activities (Serafeimidis et al., 1996). Gheysari et al. (2012) indicated that there are various technological tools involved such as computers, software, and telecommunications where it is considered an important aspect in managing the massive flow of information and the exchange of knowledge. Byrd and Turner (2000) perceived technological infrastructure from a user's perspective as the integration and interconnection of these technological tools (e.g. computers, telecommunication, software, and data) to facilitate work processes and provide effortless and seamless practice for users. However, these studies have only defined technological perspective without giving an in depth understanding of the interrelation of this technological approach to infrastructure with other approaches which has an impact such as social, or organisational, and/or managerial approaches.

### **3.2.2 Social approach to infrastructure**

The social approach to infrastructure refers to studying an information systems infrastructure from the social perspective which emphasises human interaction, social rules and environment. In addition, the social approach to infrastructure is based on a contextual background that concerns practice and thought (Gal et al., 2004). These practices and thoughts are shaped by the society where interactions of humans (varieties of users and groups) collaborate in setting protocols for explorations and collaborations to exchange knowledge and information to deliver efficient activities and practice which consisting of procedures and processes that bring necessary value to humans demands (Eriksson, 2002; Havasi et al., 2011; Gal et al., 2004). In addition, social approach to infrastructure means the social involvement or engagement that

concerns one particular group or multi groups who are involved and collaborating to form an efficient and supportive society that is able to explore, learn, collaborate, implement, and achieve their particular needs (Eriksson, 2002; Havasi et al., 2011). Sambasivan and Smyth (2010) had another view on defining a social approach to infrastructure and emphasised that the majority of studies stressed increasing the understanding of the technological approach to infrastructure where social approach to infrastructure is less well known. In addition, Sambasivan and Smyth (2010) defined the social approach to infrastructure as a relational model that consists of people, relationships, communities, connections, networks, and social arrangements. In addition, Lee et al. (2006) defined infrastructure from procedural and relational view as the role of actors in arranging organisations and stakeholders which must be structured and developed to enhance the work to be accomplished. However, the definition of the social approach to infrastructure was found to lack the relational part of the technological approach to infrastructure to the social aspect in addition to organisational and managerial aspects.

### **3.2.3 Socio-technical approach to infrastructure**

The socio-technical approach to infrastructure is the combination of social/human and technical aspects which include utilising technology to facilitate social activities and enhance operations to take electronic practice (Chung et al., 2003). Contini and Cordilla (2007) perceived that the relationship between the social and technical approaches to infrastructures is that both approaches of infrastructures social and technical are developed independently where a technical approach to infrastructure has a direct impact on a social approach. This is because in order for social infrastructure to develop and improve social activities and bring vast and efficient value to society, it would require the embedding of technologies in social activities to obtain a significant manner of practicing and achieving a better-quality of implementing organisational activities (Contini and Cordilla, 2007). However, Geels (2004) highlighted, in their definition of technological systems/infrastructure, to not only focus on the part of the technological aspect in shaping and generating technological infrastructure but to understand its diffusion, relations, and utilisation by the social/human systems since the technological

systems/infrastructure is built based on the existing social network for the purpose of facilitating this human systems' demands. This definition was brought by Geels (2004) who found that most of the literature on the socio-technical infrastructure focuses on the technological side rather than considering the importance and the impact of the social/human infrastructure side in depth.

### **3.2.4 Organisational/managerial approach to infrastructure**

The organisational and managerial approach is based on bringing value to organisations through utilising IT infrastructure to enable organising business activities which concern processes, procedures and interoperations (Weill, 1992). In addition, operational and managerial aspects are important elements that form an infrastructure that creates smooth operation and utilises infrastructure to enhance daily tasks (Sirkemaa, 2009). It also has a substantial role in mediating between stakeholders and the daily operations of the organisations. Furthermore, both organisational and managerial infrastructure shape the policies, responsibilities, authorities, rules, regulations, standards, accountabilities, task-relations, requirements, data-flow, and the overall quality of information (Magalhaes, 2011). This is through utilising technologies and social activities in term of planning, developing, implementing, managing, and operating to serve users on their daily base activities to deliver effective services and developed processes to organisations (Sirkemaa, 2009). However, the difference between defining IT infrastructure in terms of organisational and managerial was found to vary in terms of perspectives. For example, Weill's (1992) definition focused on utilising technology's capabilities to improve business process and to develop few areas in organisations. Sirkemaa's (2009) definition focused on utilising IT infrastructure in organisations as working solutions for enhancing businesses practices, complexities of work processes and constant change developments within organisations to achieve smooth operations. In addition, Magalhaes (2011) focused on defining IT infrastructure in organisational and managerial terms as the tool that enhances the flow of information rules and regulations, and quality of information process within the organisations.

It was found in the literature that there is no universal or holistic definition of infrastructure that combines all these perspectives. Infrastructure is a mixture of the technological, social/human, socio-technical, organisational and managerial aspects which have shaped the concept of infrastructure that constitutes a base that formed information systems (Hanseth and Monteiro, 1998). According to Hanseth and Monteiro (1998), understanding information systems infrastructure requires a holistic perspective. This is because information systems infrastructure is the combination of all information, systems, telecommunication, human, protocols (processes, procedures, standards and policies) and any related approaches. Therefore, it combines all technological, human, organisational, governmental, and business linkages in addition to any other internal and external factors that have influences on infrastructure.

Infrastructure has been a subject of interest in many studies in the field of information systems (Weil, 1992; Serafeimidis et al., 1996; Eriksson, 2002; Chung et al, 2003; Contini and Cordila, 2007; Gheysari et al., 2012). Numerous studies adopted the concept of infrastructure for the purpose of exploring the understanding of infrastructure in terms of development, flexibility, managing and proposing solutions to tackle its complexities (Byrd and Turner, 2000; Cohen, 2003; Spirco et al., 2007; Gheysari et al., 2012). But most of these studies focused on particular aspects rather than adopting a holistic approach to infrastructure.

For example, one study focused on exploring the validity and reliability of constructs which facilitate the exploration of technical infrastructure's flexibility (Byrd and Turner, 2000). The study proposed a technical infrastructure model that consists of eight dimensions. These dimensions were identified as follows: (1) IT connectivity, (2) application functionality, (3) IT compatibility, (4) data transparency, (5) technology management, (6) business knowledge, (7) management knowledge and (8) technical skills. The first four dimensions were aimed at exploring technical infrastructure while the other four dimensions were aimed at exploring human infrastructure. The findings revealed that these constructs were significant to IT managers to develop and improve technical infrastructures and increase productivity and enhance organisations' activities

(Byrd and Turner, 2000). However, these dimensions were only focusing on identifying the factors which have an impact on flexibility of technical and social infrastructure and lacked the understanding of the impact of organisational and managerial approach or technical and human approach to infrastructure.

Another study aimed at exploring the concept of flexibility in infrastructure and identifying the impact of standards on flexibility of infrastructure (Spirco et al., 2007). The flexibility dimension included three constructs as follows: (1) Temporal, (2) Range and (3) Intention. The temporal constructs referred to the change which occurs during time to improve infrastructure. The range referred to the extent of required adjustment which occurs in term of visible and invisible changes. The last construct of infrastructure's flexibility was the intention which referred to the nature of change which occurs in infrastructure. The findings revealed that standards have an influence on flexibility and were challenging due to the changes in technical infrastructure causing conflicts to standards and these changes hinder infrastructure to deliver flexibility and stability to activities (Spirco et al., 2007). However, the study has only focused on the impact of standards on the flexibility and stability of infrastructure and lacked the impact of standards on other aspects such as social or organisational aspects. In addition, the study focused only on the technological approach to infrastructure and lacked the impact of social and organisational aspects on the technological approach and how these two approaches influence the current standards.

Infrastructure was also reviewed from a management and organisational perspective. Gheysari et al. (2012) argued the importance of a technical approach to infrastructure and identified nine components that have an impact in management and organisations as follows: (1) reach IT reach, (2) shared IT service range, (3) IS standards and procedures, (4) ITI flexibility and (5) IS management competence. Gheysari et al. (2012) concluded the importance of a technological approach of infrastructure on improving management in organisations. However, the study lacked the role of a social and organisational approach to infrastructure as infrastructure is relational and these approaches have relational impact between technological, social, organisational, and managerial aspects.

Consequentially, all these examples of infrastructure frameworks were found to lack the broad understanding of infrastructure in the information systems' field. This is because the frameworks are developed to tackle a particular perspective. For example, Byrad and Turner (2008) investigated infrastructure from an organisational and managerial perspective. However, their study provided little understanding of infrastructure in information systems due to the study being aimed at investigating the flexibility of technical infrastructure on organisations without providing the impact of social and organisational approaches to infrastructure.

### **3.3 e-Government infrastructure**

#### **3.3.1 Infrastructure concept in e-government**

Infrastructure in e-government was also found to be a subject of interest which is introduced to understand infrastructure in an e-government context (Klischewski, 2001; Khoubati and Themistocleous, 2006; Humes and Reinhard, 2008; Janssen et al., 2009; Khrishnan and Teo, 2012). Some studies in the field of e-government described infrastructure in e-government from a general perspectives such as in the descriptions provided by Klischewski (2001) and Janssen et al. (2009) where Infrastructure in e-government was described as product, relation, networked components, characteristics of society and its foundation. All these aspects should be considered in order to enhance and increase understanding when exploring infrastructure for e-government (Klischewski, 2001). Furthermore, infrastructure in e-government is the system's development where improvements of government's products, services, and applications inherited, initiated and expanded with the rapid development of IT, human, and organisational aspects. It is the collaboration of systems among each other, the corporation of information which is facilitated by the existence of IT capabilities, Human IT infrastructure, services, and applications (Klischewski, 2001). Janssen et al. (2009) described infrastructure as the use of multiple type of parties. It is the technological services that contain systems, networks, cooperation, connectivity, security, sharing information and knowledge in different fields of different networks, systems, standards, users, and translation of legislations and administration of collaborations between government, public and private sectors. Infrastructure was also described as integrations of

different services and stakeholders. It is embedded in the daily activities and is taken for granted. Furthermore, infrastructure evolves and changes over time. Also, infrastructure implies the fact that every party that is involved in the infrastructure is dependent on other parties in terms of development of functionalities or projects (Janssen et al., 2009).

### **3.3.2 Infrastructure frameworks in e-government**

In addition, some studies focused on the infrastructure in e-government in particular aspects. For example, the Janssen study was found to focus only on the socio-technical systems, studies conducted by Humes and Reinhard (2008); Khrishnan and Teo (2012) were found to focus on information infrastructure. A study conducted by Khoubati and Themistocleous (2006) was found to investigate infrastructure from the integration of service and organisations perspective, while collaboration arrangements and the impact of power politics was the focusing study of Bekkers (2009). Therefore, the previous studies were examples which utilised infrastructure to investigate particular subjects in e-government. However, a lack of defining the concept of e-government infrastructure in the field of e-government was found in these studies particularly and in e-government literature generally. This is because the studies which adopted the concept of e-government infrastructure either had a brief description of the impact of infrastructure in improving e-government or directly investigated the term infrastructure such as service infrastructure, human infrastructure, technical infrastructure, interoperable infrastructure, etc without reflecting an understanding of the characteristics of infrastructure.

It was found in the e-government literature that some models/frameworks of e-government infrastructure were addressed and investigated (Kaufmann et al., 1999; Julta et al., 2002; Douwe et al., 2009; Krishnan and Teo, 2012). However, these models were just investigating a particular subject rather than drawing a wider understanding of the relation of this subject to other aspects of infrastructure. For example, a study emphasised the relationship between information infrastructure and e-government development (Krishnan and Teo, 2012). The study indicated that information infrastructure has an effect on e-government development and it was suggested that understanding this relationship can be strengthened when the government focuses on improving



the issues regarding to this relationship. The study (Kaufmann et al., 1999) adopted six dimensions for managerial use to help understand the relation between information infrastructure and e-government development. These dimensions were as follows, (1) voice and accountability, (2) political stability, (3) government effectiveness, (4) regulatory quality, (5) rule of law, and (6) control of corruption. However, these dimensions were proposed for measuring information infrastructure rather than focusing on the concept of infrastructure and the internal and external impact of other involved boundaries such as social and/or organisational, etc (Krishnan and Teo, 2012). In addition, these six proposed dimensions were found to enable the investigation of understanding e-government infrastructure from organisational/managerial perspective which presented in dimensions (1) and (6) in addition to political perspective which demonstrated in dimensions (2), (3), (4), and (5) hence making this framework to be more focused on the political followed by organisational/managerial issues without giving a wider an in-depth perspective through adding the social and technical perspectives since these organisational and political perspectives have an impact on the social activities and the existent technology that is in use.

A framework that identified critical aspects of organisational infrastructure was presented by Julta et al. (2002). In their study, they found that most of the studies identified two major components that focused on understanding infrastructure in e-government. These two components consist of: (1) technical IT infrastructure, and (2) human IT infrastructure. However, Julta et al. (2002) suggested three constructs to be included in e-government studies for the purpose of enhancing the understanding, exploration, and managing of infrastructure issues in e-government initiatives. These components consisted of (1) organisational infrastructure, (2) business process infrastructure, and (3) technical infrastructure. In addition, the components were also used empirically, through surveying, to explore the municipal e-government websites in Canada. The findings revealed that absence of organisational infrastructure issues hindered the diffusion of e-government across the country. These issues include legal, business, and technical interoperability which existed in the government's designated information systems. Therefore, the five proposed dimensions were found to give a wider image of understanding e-government infrastructure in term of technological, organisational, business, and

human/social as these dimensions were found abandoned in Khrisnan and Teo (2012)'s study. However, the study did not include a fundamental viewpoint which is political perspective which considered an influential part of the e-government infrastructure since it focused more on providing a wider understanding on the influence of technological, organisational, business, and human/social aspects on e-government infrastructure.

Another study investigated a software infrastructure in e-government (Douwe et al., 2009). Their study was based on exploring a one stop e-appointment service as part of a software infrastructure for e-government. The study identified four components for identifying challenges for software infrastructure. These components included (1) the need to understand the business process, (2) the need to provide a technical infrastructure supporting secure communications between the one stop government portal and service providers, (3) addressing organisational issues, and (4) addressing regulatory issues. The findings of their study revealed that there should be considerations from the government and negotiations with service providers for alternative solutions for the appointments in addition to providing support for business processes. Further challenges concerning technical infrastructure were found. This was that government should enhance communications between different service providers and one stop government portal. In addition, the organisational infrastructure challenges addressed controlling misuse as a main barrier since multiple appointment arrangement was found to affect practice in the one stop government portal. Lastly, multi channel delivery applicants' interactions, data exchange, privacy issues, and access to information were other challenges identified in the regulatory issues. Consequentially, the proposed dimensions for e-government infrastructure were designated to tackle the issues of e-government infrastructure from organisational, technological and business point of views. However, the study did not consider the important role of understanding the social/human aspect in shaping infrastructure's practices.

Consequentially, the previous models were found to tackle information infrastructure, software infrastructure, and organisational infrastructure. However, the previous examples lacked the holistic understanding of infrastructure in e-government. For example organisational infrastructure has an

impact on infrastructure. However, organisational infrastructure is also affected by other factors such as technological, political, or social/human infrastructure. In addition, the lack of including all these aspects under the umbrella of e-government infrastructure is one vital topic which requires e-government to understand infrastructure from a wider perspective to understand in depth e-government infrastructure and the causes and consequences of these dimensional aspects on infrastructure in addition to each other. As a result, this lack of a holistic aspect requires a need for a comprehensive view which combines all these aspects to be investigated for the sake of delivering a wider and in depth exploration and understanding of e-government infrastructure.

### **3.4 A holistic concept and framework for infrastructure**

Star and Ruhleder in 1996 introduced a new concept in studying infrastructure and argued that infrastructure is something that already existed, ran and operated. This Infrastructure is also described as a relational interaction among different subjects, meaning that infrastructure of one particular subject is another subject's matter. Furthermore, Star and Ruhleder (1996) also argued that infrastructure can be visible when the tension between local and global is resolved meaning that when affected practices are resolved it functions invisibly and shapes infrastructure. This is because infrastructure is something that is already built and maintained. It is standardised in the sense that it solves the conflicting practices and is involved in technological and social practices that provide transparent processes and operations to the community of practice. Furthermore, Star and Ruhleder (1996) emphasised that there is no beginning of infrastructure as infrastructure is something that is already installed and built as a base and is sunk invisibly with other subjects. For example, one subject could be infrastructure to another subject in terms of advantages and/or complexities. Furthermore, Star and Ruhleder (1996) emphasised that there is no fixed or universal definition for infrastructure as infrastructure is something invisible and only becomes visible once it breaks or fails to function properly. Hence, the concept of infrastructure developed by Star and Ruhleder (1996) reflects that infrastructure is the understanding of the relationships between systems, networks, work practice, and organisations where all standards, processes, procedures and stakeholders are involved and become

infrastructure to each other. Karasti et al (2010: 380) described the concept of infrastructure by Star and Ruhleder (1996) as:

“A multifaceted concept referring to interrelated technical, social and organisational arrangements involving hardware and software technologies, standards, procedures, practices and policies together with digital configurations in support of human communication and capabilities.”

This broad understanding implies that the meaning of infrastructure is based on an integral perspective. This is because it is the involvement of technological, social, organisational and managerial and any other related aspects such as political or economical that has a relational influence on infrastructure when investigating large scale technical systems. This understanding of infrastructure's meaning found agreement among other scholars such as Bowker et al. (2010) who defined infrastructure as a set of shared technological aspects that are installed to facilitate vast services and procedures to society. In addition, Star (1999) emphasised that these shared aspects of infrastructure are relational which concern any subject that is already invisible and ready to hand which means that infrastructure of one organisation is the demand of others (Star, 1999). Furthermore, Cordella (2010) used Star and Ruhleder's (1996) concept to emphasise that there is a gap which requires filling. Not only should infrastructure be described or measured as processes and performances in term of stability and manageability but it should be understood in terms of the dynamic interactions and relations of infrastructure's related action, such as the dynamic relations between technology and society, in terms of impact on each other. In addition, Hanseth and Monteiro (1998) defined infrastructure as the interconnection of collected computer networks and associated services that already exists and has extended throughout time. Also Hanseth and Monteiro (1998) emphasised that the technological tools which are mixed with social, organisational and managerial aspects are found necessary for bringing the integral prospect of understanding infrastructure and this can be through understanding the inter-operational and commitment impact of multi aspects which occur among a diversity of different interconnected systems, groups, and instruments. Furthermore, Henningsson and Henriksen (2009) inspired by the definition by Star and Ruhdler (1996) have defined infrastructure from the interorganisational domain as the range and nature of

internal relationships and interactions between and within organisations and between different parties of different systems that electronically work together to deliver services and exchange information. This interorganisational environment also combines both technological and organisational characteristics that consist of trade association, supply chain, software providers and standards organisations, etc.

Star and Ruhleder (1996) suggested eight dimensions to study infrastructure. These are: (1) built on an installed base, (2) embeddedness, (3) transparency, (4) learned as part of membership, (5) links with conventions of practice, (6) reach or scope, (7) become visible upon breakdown and (8) embodiment of standards. Each of these dimensions investigates a specific aspect in infrastructure which eventually leads to a broad view and a holistic understanding of the infrastructure under investigation. This is because these eight dimensions cover most aspects that need to be considered when studying the infrastructure of any system. These eight dimensions will be discussed in the section below.

### **(1) *Built on an installed base***

According to Star and Ruhleder (1996), "Infrastructure does not grow *de novo*: it wrestles with the "inertia of the installed base" and inherits strengths and limitations from that base. Optical fibres run along old railroad lines; new systems are designed for backward compatibility; and failing to account for these constraints may be fatal or distorting to new development processes (Monteiro, et al. 1994)" (Star & Ruhleder, 1996: 113).

Installed base takes its shape from the nature and roots of the system. It describes chronologically the development of the system and traces its emergence and improvement throughout time. The installed base exists as a result of the sequence of changes occurring in the operations, tasks, work practices and activities before and after the development of the electronic system. Consequentially, installed base inherits the strengths and weaknesses from the existing system's design, integrations and functions and identifies the existing barriers which hinder the system from being developed (Star and Ruhleder, 1996; Henningson and Henriksen 2000).

Rolland (2000) has a common definition of installed base which defined as the existence of different systems that are installed to stabilise practice, product, structure, network or standards. However, Rolland (2000) explained more the installed base of a manual system's design such as the paper-based practices which consist of documents, or information cause constrains to the existing design, implementation, or use of the system. This additional explanation of the concept of installed base in Rolland's (2000) definition sheds light not only on the systems but on the design, implementation, use and practice of the installed base as the invisible issues which concern the design and practice, and become visible when implementing and using the system and which cause constrains to the current installed base.

## **(2) *Embeddedness***

Embeddedness dimension refers to technologies, structure, and social arrangements which are designed to shape infrastructure (Star & Ruhleder, 1996). The dimension involves the issues that shape the concept of embeddedness such as existening heterogeneous organisations, systems, social networks, stakeholders, tasks arrangements, policies, standards, or practice that are shaped from either technological, organisational, or social systems. Thus, the concept of embeddedness incorporates various entities, systems, networks, infrastructures, standards, processes, procedures, arrangements, collaborations, practices and users which shape the system's infrastructure. Bietz et al. (2010) use a common definition of embeddedness in infrastructure, defined as infrastructure which is included within a network, web and arrangement of relationships to other systems. However, they focused on extending the definition of embeddedness to the influence of the arrangement of the relationships to other systems in the sense that good association arrangements between different systems enables infrastructure to provide efficient and useful systems and at the same time poor arrangements between different systems might cause constrains and challenges., Halinen and Tornroos (1998; 2005) defined the concept of embeddedness from a business perspective as the companies' relations, connectedness, boundaries and dependence with different types of companies and networks. These companies are connected with each other and at the same time they are connected with

other various types of network structures, where the second connection influences network evolution in term of the technological, social and political aspects. In addition, Halinen and Tornoroos (1998) have emphasised that embeddedness is an explanation of the change in the relations between, and developments in, business networks.

### ***(3) Transparency***

Transparency dimension refers to infrastructure as transparent in the sense that it invisibly supports tasks meaning that the tasks are designed to be achieved without being reinvented or reassembled each time when implementing tasks. Annamalai et al. (2012) defined infrastructure as transparent and it is the means to connect all entities to share information, facts, figures, mechanisms and processes. Although, Annamalai et al. (2012) argued that infrastructure is unpredictable when changes occur from administrative level hence these changes become invisible to some users and should be visible to allow those who are affected by administration, tasks, or practice to understand how infrastructure is shaped to achieve simple and efficient information sharing and practice.

### ***(4) Learned as part of membership***

This dimension refers to the learning processes and procedures of a community of practice. It is the way that users familiarise themselves and develop a level of knowledge in the system. It is the interactions and collaborations of new and old comers' over the tasks, work activities and artefacts which shaped the existing processes of learning, familiarity, beside gaining adequate knowledge, information, and skills that enable them to practice and operate in the large scale system. Also, being a part of membership of a community is the way to learn, taking infrastructure that contains practices and processes of tasks, operation and activities within organisation and in interorganisations or interconnected systems for granted. This definition is equivalent with that of Talja (2007) who defined communities of practices as the embeddedness of knowledge and information which form the learning within fixed work practices, tasks, and interpersonal exchange among users.

**(5) *Links with conventions of practice***

This dimension refers to the way infrastructure both shapes and is shaped by the conventions of practice. It is the production of conventions of practice through their activities on shaping the existing system(s), communication, networks, operations, rules, regulations, work practices and processes. These shaped issues by the conventions of practice in turn reflect the impact of infrastructure on shaping the current issues.

**(6) *Reach or scope***

Star and Ruhleder defined reach or scope as 'This may be either spatial or temporal infrastructure has reach beyond a single event or one site practice' (Star & Ruhleder, 1996: 113).

This dimension refers to the accessibility and usability of infrastructure beyond a single site or event. It is the idea of whether the infrastructure fulfilled its role and whether it has a wider applicability, spatially and/or temporally.

The spatial relation refers to the reach of infrastructure from different locations: locally and globally. It is concerned with whether the use of the infrastructure can be reached locally with either a common or different manner of practice, use and ways of implementing, or globally. On the other hand, the temporal relation involves the impact of changes over time in the use and access of infrastructure before, within and after the development or expansion of infrastructure.

**(7) *Become visible upon breakdown***

This dimension refers how the infrastructure works as a taken for grantedness mode which becomes invisible when it is functioning accordingly. However, infrastructure becomes visible upon breakdown once it fails to function or serve as designated.

**(8) *Embodiment of standards***

This dimension refers to the standards which have been set up to conduct processes, practices or procedures performed in the infrastructure. It is also the



standards which have been set up to interconnect other infrastructures or tools in a transparent and standardised fashion. Hence, transparency is a key attribute of how standards are measured. If standards are invisibly supporting tasks and providing interconnected infrastructure and/or tools to functions in a taken for granted fashion then standards are transparent.

Following the introduction of the dimensions established by Star and Ruhleder (1996) in the previous section, it is important to discuss the several strengths and limitations of these dimensions. Firstly, in contrast to the other infrastructure models which discussed the information systems domain and e-government context from a narrow perspective and focused on particular aspects, Star and Ruhleder (1996) took a holistic approach and viewed it from a broad perspective. This is because the framework was developed from a general outlook which allows investigating infrastructure for any large scale system (including varieties of components and dimensions each differing in its characteristics and nature). Therefore, the framework was integral and combined technical and social characteristics of infrastructure which extends to include any other involved aspects such as organisational, managerial, governmental, and business related to infrastructure within the eight dimensions. Secondly, the strength of these dimensions is that they are generalisable and can be applied to any infrastructure such as e-business, e-government, e-health, e-services, etc. and rather than being limited only to information systems infrastructure. Thirdly, these dimensions are comparable among different contexts. For example, it enables us to understand the commonalities and differences in findings among different systems in different contexts such as the findings of one study that investigates e-health system and another study that investigates e-government system and increases the understanding of the influence of infrastructure among disciplines and contexts. Lastly, Star and Ruhleder's eight dimensions of an infrastructure provides in depth knowledge about each dimension within this framework. This is because each dimension discusses a particular aspect of infrastructure and by combining all these dimensions under the umbrella of infrastructure this increases the knowledge and understanding of infrastructure from narrower and broader points of view.

It is worth pointing out that the infrastructure framework by Star and Ruhleder (1996) is not without limitations. One weakness of the dimensions is that Star and Ruhleder (1996) defined the dimensions from their perspective however, the meaning of each dimension can be interpreted differently. For example Star and Ruhleder (1996) interpreted the transparency dimension as infrastructure being invisible and not needing to be changed or assembled for each task. However, transparency can also be interpreted as the level of communication between the different entities or users within the infrastructure that renders the infrastructure to be transparent or not (Annamalai et al., 2012).

It is interesting to note that only a few studies have used Star and Ruhleder's (1996) infrastructure framework to investigate infrastructure in the information systems and e-government context. One study adopted Star and Ruhleder's (1996) model in the information systems domain to investigate the relationships between the human and the technological by looking at mobile technologies and conducting work among nomadic workers who essentially depend on mobile technologies (Mark and Su, 2010). The aim of the study was to tackle the challenges of infrastructure invisibility and making infrastructure visible to nomadic workers. The findings revealed significant implications where a lack of knowledge of infrastructure for nomadic workers was found to affect transparency, reach or scope, and the foundation of the installed base. In addition, the dimension of visibility upon breakdown was also found to be visible to some nomadic workers whereas invisible to others. In addition, infrastructure breakdown was found to affect remote collaboration and make infrastructure invisible to those who work remotely. However, their study focused only on local knowledge and suggested exploring further the interwoven relationship between human and technological infrastructures which were found to affect the use of technology among stakeholders. Besides this, the study did not expand more on the challenges which affect social and organisational aspects based on Star and Ruhleder (1996)'s eight properties of infrastructure.

Borgman (2003) adopted Star and Ruhleder's (1996) infrastructure framework as a foundation to provide a holistic view of the challenges which were undetected in the infrastructure of e-libraries. The dimensions unveiled four challenges found to affect e-libraries' infrastructures, and they were: (1)

invisible infrastructure, (2) content and collection, (3) preservation and access and (4) institutional boundaries. The dimensions were used to provide a brief overview and understanding of the infrastructure of the e-libraries rather than delivering in-depth understanding on the characteristics of properties and how the e-libraries were installed and maintained, plugged into other infrastructures, and shaped the current practice.

In the e-government domain, one study was found to take a holistic approach to investigating the inter-organisational information systems which include public and private sectors (Henningsson and Henriksen, 2009). The study explored challenges of implementing e-custom in Denmark. The study adopted Star and Ruhleder's (1996) eight dimensions to explore challenges which hinder the development of infrastructure in e-government from an organisational perspective. One major finding of their study was that the organisations favoured the old paper-based/manual system due to the fact that the legacy system was more standardised than the electronic system and its processes. However, this study has mainly focused on how e-Custom works and used the dimensions of Star and Ruhleder (1996) to provide a brief overview of e-Custom infrastructure rather than an in-depth understanding of the infrastructure of e-Custom using the dimensions proposed by Star and Ruhleder (1996).

### **3.5 Summary**

This chapter reviewed and discussed the existing literature of infrastructure in the information systems domain. The chapter began by reviewing the concept of infrastructure from general and particular (information systems) views. The definition of infrastructure in information systems had four approaches technological, social/human, socio-technical, organisational and managerial aspects. The literature revealed that there is no universal approach that define infrastructure from socio-technical and organisational/managerial approaches to infrastructure. The chapter also reviewed and discussed the existing infrastructure framework in Information system and found a lack in investigating infrastructure from broad understanding due to the existing frameworks are developed to narrowly tackle a particular perspective. The chapter also reviewed and discussed infrastructure and its frameworks in e-government. The

review revealed lack of a holistic concept and frameworks when investigating infrastructure in e-government.

In addition, the chapter introduced a holistic framework proposed by Star and Ruhleder (1996). The chapter reviewed and discussed Star and Ruhleder's (1996) concept of infrastructure. It also discussed their proposed framework which consisted of eight dimensions that explore infrastructure from diverse angles. These dimensions consisted of: (1) built on installed base, (2) embeddedness, (3) Transparency, (4) learned as part of membership, (5) links with conventions of practice, (6) reach or scope, (7) become visible upon breakdown and (8) embodiment of standards. In addition, the chapter discussed the strengths and limitations of these dimensions.

Following is the methodology chapter which describes and discusses the methodology used for this research study.

**METHODOLOGY**

- 4.1 Introduction**
- 4.2 Philosophical assumptions**
- 4.3 Research strategy**
- 4.4 Research design**
- 4.5 Summary**

## 4.1 Introduction

This chapter is dedicated to presenting the methodology used in this study. The organisation of this chapter is as follows: brief on the mixed methods study which includes preliminary quantitative and the primary qualitative case study, research strategy for the case study which consists of the philosophical assumption for this study, research paradigm, and research method. Following is the research design which outlines and explains the procedure of case study selection, data collection and data analysis.

## 4.2 Philosophical assumptions

It is understood that each research method has its underlying philosophical assumptions which guide the research design, data collection and analysis and interpretation of the phenomenon under investigation from a particular perspective (Holden et al., 2004; Remenyi et al., 2011). This research follows the scheme developed by Burrell and Morgan (1985) to examine the philosophical assumptions of the research methods in four dimensions: ontology, epistemology, human nature and methodology, with an aim to identifying an applicable research method for this study.

### - Philosophical assumptions for this research

Ontologically speaking this research is inclined towards a nominalism standpoint, where the reality does not exist outside but through an individual's consciousness. Epistemologically, this research complies with the anti-positivism stance and emphasises that the social world can only be understood from the point of view of the individuals who are involved in the activities or phenomenon that is under investigation. This is contrary to positivism which assumes that the regularities that are found in the natural world can also be found in social activities. With respect to human nature assumptions, this research is disinclined toward voluntarism or determinism standpoints. This is because the arguments of this study decline both beliefs since arguments of this research study are neither as extreme as voluntarist nor as extreme as determinist arguments. This is also because determinism belief characterised individual as determined by the rules, conditions and situation that the

environment include and individual is influenced by these external issues which impacted by the environment. On the other hand the voluntarism belief is contrary and characterised individual as open and independent and can make an influence and renovation to the situations which exist in the external environment (Burrell and Morgan, 1985). Methodologically speaking, this research complies with the ideographic, seeking to obtain in-depth knowledge about a particular subject through giving close attention, describing and explaining this subject and highlighting its significance. According to the stance of this research study, Table 4.1 provides a brief summary explaining the philosophical position underpinning of this research.

<b>Philosophical assumption</b>	<b>Characteristic of the assumption</b>	<b>This position of this research</b>
<b>Ontology</b>	This assumption concerns the existence of reality	This research inclines towards a nominalism standpoint which holds that reality does not exist outside but through an individual's consciousness
<b>Epistemology</b>	This assumption concerns knowledge	This research complies with the Anti-positivism stance. This holds that the research is done using an interpretive stance to explore the complexity that requires investigating and understanding from the participants' perspectives.
<b>Human Nature</b>	This assumption concerns the relationship between humans and the way they interact, feel, deal and think about their environments	This research argument is neither as extreme as voluntarism nor as extreme as determinism.
<b>Methodology</b>	This assumption concerns the selected approaches that enhance and increase knowledge of the	This research argument inclines towards an Ideographic perspective as this research seeks to obtain in depth knowledge about a particular subject

	issues that are under investigation.	and highlight its significance.
--	--------------------------------------	---------------------------------

**Table 4.1:** Positioning of this research study based on philosophical assumptions

### - Research paradigm

Three major philosophical paradigms found recognition in the information systems research identified as positivist, interpretive and critical (Orlikowski and Baroudi, 1991; Klein and Myers, 1999; Niehaves and Stahl, 2006).

#### ***Positivist***

Positivist research emphasises on studying the existence of an unchanging relationships within a phenomena that investigated through structure instrumentations. This enables to supply the field of knowledge with theoretical traditions and fixed law based on natural science that provide indication of existent formal propositions, quantifiable approach for measuring the variables and hypothesis testing (Orlikowski and Baroudi, 1991; Lee, 1991). In addition, positivism approach assumes that objective social reality and objective facts is what describes social world where researcher apply mathematics, statistics and numerical to test empirically and underlying theories (Newman, 2006). With respect to positivist paradigm, this research is not aimed to investigate unchanging relationship, exploring fixed law, neither testing a hypothesis. However, this research aims to investigate empirically and subjectively e-government context particularly intending to create and obtain deep knowledge to clarify and understand government to business relationships through investigating government to business infrastructure.

#### ***Critical***

The second type of Information system's research paradigm is the critical research. In critical research, the emphasis falls on criticising the current status of phenomenon which is under constant change and dominated by numerous issues which constrains its improvements such as political, cultural, economical, and social forms that limit the phenomenon (Klein and Myers, 1999). It assumes



that an individual has the capability to identify and reveal the structural contradictions within the social systems which formed by historical, ideological and contradictory nature that exists in a social practice (Orlikowski and Baroudi, 1991). Once these issues are brought to light, it is assumed that critical research can enable transforming the existing social practice to be improved (Klein and Myers, 1999). With respect to critical paradigm, it is perceived to be lacking in this research. This is because this research does not aim to emphasis on criticise the current status of e-government for the purpose of changing or improving the current relationships between government to business. However, this research does aim to describe the current nature which exists between government and business but brings to light the issues that affect the relationships between government and business.

### ***Interpretive***

The third type of research paradigm is interpretive research. Interpretive research emphasises interaction of individual with the external world and adds their own meaning and interpretation to the phenomenon that is under concern. Individual in interpretive research is assumed to be the inventor and the one who is associated with interpreting the social world and is the cause of shaping and constructing the knowledge that occur in a phenomenon through the meaning that captured by people who are involved in that phenomenon (Orlikowski and Baroudi, 1991; Klein and Myers, 1999; Lee, 1991, Newman, 2006). Hence, the interpretive research in Information systems aims to simplify in depth the phenomenon through producing an explanation that simplify the understanding of the investigated situation and provide explanation to the process that the investigated phenomenon influences and influenced by (Klein and Myers, 1999).

This research can be regarded as falling into an interpretive paradigm. This is because interpretive paradigm refers to the interaction of the individual with the external world and how individuals add their own meaning and interpretation to the phenomenon that is under concern. The individual in interpretive paradigm is assumed to be the inventor and the one who interprets the social world and who is the cause of shaping and constructing the knowledge of a phenomenon through the meaning that is captured by people who are involved in that

phenomenon (Orlikowski and Baroudi, 1991; Klein and Myers, 1999; Lee, 1991, Newman, 2006). In the context of this research study, it is the intention to investigate a particular subject which is infrastructure in e-government to business (e-Umrah system). It is intended to construct a new insight and knowledge about this phenomenon through the meaning that is captured by the business sector (Umrah companies).

Interpretive research in information systems aims to simplify in depth the phenomenon by producing an explanation that simplifies the understanding of the investigated situation and provides explanation for the process that the investigated phenomenon influences is influenced by (Klein and Myers, 1999). Walsham (2006) described how interpretive research in information system is carried out. This is by choosing a style for investigating a subject of interest (such as formal interviews or observations of a particular subject), preparations of gaining access, collecting fieldwork information (such as notes or type-recording) and utilising fitted theory or framework for designing the interpretive research for facilitating the data to be collected and analysed. In addition, conducting interpretive research is also about displaying the interpretation of the case study from the researcher's own interpretations of the participants' perspectives (Walsham, 1995).

In this context, this research study has adopted a framework (Star and Ruhleder, 1996) which consists of eight dimensions. The framework enabled all phases of the case study, beginning with data collection, data analysis and including the phase of reporting of findings, to organise the data for each dimension, as each dimension discussed a particular phenomenon of e-government G2B infrastructure. The framework also assisted this interpretive research in the data analysis phase by the utilisation of the data coding system. In addition, the researcher maintained access to the Umrah companies through the introductory step which took place in the beginning of the study, in order for the researcher to introduce this interpretive research to business sector (Umrah companies) receive the approval of participations.

## **4.3 Research strategy**

In the field of social science, three fundamental approaches are identified quantitative, qualitative, and mixed methods approaches that are considered when investigating a phenomenon that occurs in social life. The aim of selecting one of these approaches is to enable the researcher to systematically collect and analyse empirical data to increase the understanding and explanation of the social life phenomenon that is under investigation (Newman, 2006).

### **4.3.1 Quantitative research**

A quantitative research method refers to the systematic process that relies on a positive, objective, and straightforward approach using mathematical figures and numerical analysis in order to describe, test, examine, and/or measure causes that influences and/or influenced by relationships of phenomena (Carr, 1994; Newman, 2006). In addition, quantitative method narrows the investigated phenomena to a focused question of a topic (Newman, 2006). Surveys are perceived as a favoured instrument for investigating a phenomenon since they are voluntarily adapted to communicate with respondents (Carr, 1994, Harwell, 2011). Moreover, the aim of quantitative research method is to test a theory or hypothesis and measure variables deductively through following a linear research path that consists of a fixed sequence of steps to produce reliable outcomes for the investigated phenomena (Carr, 1994, Newman, 2006).

There are four types of quantitative research methods; descriptive, correlational, quasi-experimental, and experimental (Carr, 1994; Burns and Grove, 2005). Descriptive research explores and describes phenomena based on real-life situations. It helps provide new information about a topic which has not been completely explored. It describes concepts and relationships and provides more data from which more quantitative research can be conceptualized (Burns and Grove, 2003). Correlational research on the other hand examines the relationship between two or more variables and determines if the relationship is negative or positive (Burns and Grove, 2003). A positive correlation means that the variables vary together and they either increase or decrease together; for negative correlation, variables vary in opposite directions or have an inverse relationship (Burns and Grove, 2003). Quasi-experimental

research seeks to determine the cause and effect relationships of independent and dependent variables. A treatment is usually implemented in research and the effects are reviewed using selected methods of measurement (Burns and Grove, 2003). Finally, experimental research is “an objective, systematic, highly controlled investigation for the purpose of predicting and controlling phenomena” (Burns and Grove, 2003). The causality between variables is tested here under highly controlled conditions.

<b>Strength</b>	<b>Weakness</b>
Testing and validating already constructed theories about how (and to a lesser degree, why) phenomena occur.	The researcher’s categories that are used may not reflect local constituencies’ understandings.
Testing hypotheses that are constructed before the data are collected. Can generalize research findings when the data are based on random samples of sufficient size.	The researcher’s theories that are used may not reflect local constituencies’ understandings.
Can generalize a research finding when it has been replicated on many different populations and subpopulations.	The researcher may miss out on phenomena occurring because of the focus on theory or hypothesis <i>testing</i> rather than on theory or hypothesis <i>generation</i> (called the <i>confirmation bias</i> ).
Useful for obtaining data that allow quantitative predictions to be made.	Knowledge produced may be too abstract and general for direct application to specific local situations, contexts, and individuals.
The researcher may construct a situation that eliminates the confounding influence of many variables, allowing one to more credibly assess <i>cause-and-effect</i> relationships.	
Data collection using instruments such as telephone interviews, survey questionnaire are relatively quicker than	

using instruments in qualitative research	
Provides precise, quantitative, numerical data.	
Data analysis is relatively less time consuming (using statistical software).	
The research results are relatively independent of the researcher (e.g., effect size, statistical significance).	
It is useful for studying large numbers of people.	

**Table 4.2:** Strength and weakness of quantitative research (Source: Johnson and Onwueguzie, 2004. P.19)

### 4.3.2 Qualitative research

Qualitative research method refers to the engagement of individual in the form of words to investigate a particular incident to discover and experience of meaning, purpose, consequences, behaviour, attitude, society, or reality to increase the knowledge of the external world empirically from the perspective of the phenomena or people's view and not the investigator (Miles and Huberman, 1994; Carr, 1994; Bryman, 1984). In addition, qualitative research method relies on explanation and exploration of the social reality holistically from subjective and interpretive stance due to the belief of the accuracy of applying qualitative research method as a tool that enable its process to obtain the knowledge of external world and the existent social reality within the world (Newman, 2006).

In addition, qualitative research methods investigate inductively the phenomena to enable the researcher to have comprehensive image of the particular investigated subject in term of its existent process, structure, relationships and its types, social setting and how the involved people perceive this subject from their perspective (Newman, 2006). Also, the qualitative research method takes a circular steps when investigating a phenomena

through moving backward and sideways approach with slow moves to the top (Newman, 2006). This type of nonlinear research path which used by the qualitative research method was found to enable the researcher to have new insights of the phenomena and obtain new knowledge about the investigated phenomena (Newman, 2006). Furthermore, the most favourable instrument that is used in interpreting and obtaining the knowledge in qualitative research method is through interviews in addition to other tools such as observations, conversations, field notes, memos, photographs, recording, and series of representation to enable the researcher to systematically measure the relationships of factors which occur in a phenomena (Johnson and Onwueguzie, 2004; Harwell, 2011).

<b>Strength</b>	<b>Weakness</b>
The data are based on the participants' own categories of meaning.	Knowledge produced may not generalize to other people or other settings (i.e., findings may be unique to the relatively few people included in the research study).
It is useful for studying a limited number of cases in depth.	It is difficult to make quantitative predictions.
It is useful for describing complex phenomena.	It is more difficult to test hypotheses and theories.
Provides individual case information.	It may have lower credibility with some administrators and commissioners of programs.
Can conduct cross-case comparisons and analysis.	It generally takes more time to collect the data when compared to quantitative research.
Provides understanding and description of people's personal experiences of phenomena (i.e., the "emic" or insider's viewpoint).	Data analysis is often time consuming.
Can describe, in rich detail, phenomena as	The results are more easily influenced

they are situated and embedded in local contexts.	by the researcher's personal biases and idiosyncrasies.
The researcher identifies contextual and setting factors as they relate to the phenomenon of interest.	
The researcher can study dynamic processes (i.e., documenting sequential patterns and change).	
The researcher can use the primarily qualitative method of "grounded theory" to generate inductively a tentative but explanatory theory about a phenomenon.	
Can determine how participants interpret "constructs" (e.g., self-esteem, IQ).	
Data are usually collected in naturalistic settings in qualitative research.	
Qualitative approaches are responsive to local situations, conditions, and stakeholders' needs.	
Qualitative researchers are responsive to changes that occur during the conduct of a study (especially during extended fieldwork) and may shift the focus of their studies as a result.	
Qualitative data in the words and categories of participants lend themselves to exploring how and why phenomena occur.	
One can use an important case to demonstrate vividly a phenomenon to the readers of a report.	
Determine <i>idiographic</i> causation (i.e., determination of causes of a particular	

event).	
---------	--

**Table 4.3:** Strength and weakness of quantitative research (Source: Johnson and Onwueguzie, 2004. P.20)

### 4.3.3 Mixed methods research

The mixed methods research is referred to the use of a researcher a combination of quantitative and qualitative research methods, techniques, approaches, and concepts altogether in one single study to produce multi methods, techniques, and approaches that bridge the gap between difference philosophies and their conflicts stance and reduce the potential weakness of investigated phenomena (Johnson and Onwuegbuzie, 2004; Harwell, 2011). As a methodology, “it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process” (Creswell, 2006, p. 5). It highlights on the collection, analysis, and combination of the quantitative and qualitative results in a single study or series of studies. Its main idea is that combining quantitative and qualitative approaches would create a better understanding of the research problems than either approach alone (Creswell, 2006).

<b>Strength</b>	<b>Weakness</b>
Words, pictures, and narrative can be used to add meaning to numbers.	Can be difficult for a single researcher to carry out both qualitative and quantitative research, especially if two or more approaches are expected to be used concurrently; it may require a research team.
Numbers can be used to add precision to words, pictures, and narrative.	Researcher has to learn about multiple methods and approaches and understand how to mix them appropriately.
Can provide quantitative and qualitative	Methodological purists contend that



research strengths	one should always work within either a qualitative or a quantitative paradigm.
Researcher can generate and test a grounded theory.	More expensive.
Can answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach.	More time consuming.
A researcher can use the strengths of an additional method to overcome the weaknesses in another method by using both in a research study.	Some of the details of mixed research remain to be worked out fully by research methodologists (e.g., problems of paradigm mixing, how to qualitatively analyze quantitative data, how to interpret conflicting results).
Can provide stronger evidence for a conclusion through convergence and corroboration of findings.	
Can add insights and understanding that might be missed when only a single method is used.	
Can be used to increase the generalizability of the results.	
Qualitative and quantitative research used together produce more complete knowledge necessary to inform theory and practice.	

**Table 4.4:** Strength and weakness of mixed-methods research (Source: Johnson and Onwueguzie, 2004. P.21)

With regards to quantitative approach, this research is not intending to deductively focus on a theory or testing hypothesis neither investigating e-

government phenomena through obtaining the knowledge based on numerical data.

With regards to qualitative approach, this research is not intending to only focus on the meaning of having a comprehensive image of the particular investigated subject (such as understanding only the e-Umrah system's infrastructure itself).

This research study aims to combine both numerical and narrative data to enable exploring, explaining and describing a complex phenomenon which exists in e-government context and investigate government to business infrastructure from a holistic perspective which is through obtaining knowledge in the form of numerical and narration to explore how and why this phenomena occurred and what influences this phenomena to develop. Therefore, mixed methods approach was found to be the most appropriate approach for this research.

Moreover, the e-government literature emphasised on the existent gap in the literature which is the lack of knowledge of government to business relationships (GBDEC, 2001; GBDEC, 2002; Bertoletti et al., 2003; Zhao et al., 2007; Geetika and Pandey, 2007; Minh, 2009; Lee et al., 2011). Therefore, it is important to understand the relationship between the G2B electronic services because of its role in empowering and improving the e-government services between the government and the private sectors (Ali et al., 2009; Minh, 2009; GBDEC, 2001; GBDEC, 2002). Therefore, a mixed methods approach is the favourable choice because it supplies this research study with a comprehensive, systematic understanding, numerical statistics and rich details about the government to business relationships that is embedded in the e-government context.

Another essential reason is that the e-government phenomena particularly e-government infrastructure is complex because it contains diverse systems, stakeholders, technological, organisational, administrative and collaborative cultural aspects that requires deep consideration and exploration of these multi-aspects that are interrelated and embedded in the e-government context. Hence, adopting both methods can inform theory and practice by providing

complete knowledge necessary to answer a variety of questions and deliver insights and understanding rather than using a single method.

In the context of this research study, the mixed methods approach will increase the understanding of the complex and interrelational interactions which require deep interpretation through investigating the viewpoints of the business sector to holistically build a clear and simple image and unveil the adoption and acceptance of e-Umrah system among business (Newman, 2006).

Most weaknesses associated with the mixed methods approach could not be avoided. The expenses associated with conducting both quantitative and qualitative studies existed as the researcher needed to fly to Saudi Arabia on two occasions. In addition, the time taken to carry out this study was too long and this is an inherent problem associated with this mixed method approach. However, the researcher endeavoured to avoid the problem of gaining conflicting results from both studies by setting different targets for each part of the study. The first preliminary study was to understand the background of the business culture and the level of adoption and acceptance of the e-Umrah system in Saudi Arabia. The second part of the study was the primary study which focused on the infrastructure of the e-Umrah system and the barriers which affect it. Hence, dividing the study helped to reduce the complexities associated with the information gained from the mixed method approach and reduced conflicting results whereas each part has a separate analysis to focus on gaining a clear understanding of the e-Umrah system government to business culture and its infrastructure.

#### **4.4 Research design**

The research design will have three main parts: firstly, an explanation of why a case study was chosen will be provided and the reason e-Umrah system was selected as a case study will be discussed. Secondly, the design of the preliminary study will be explained. In the third part, the focus will be on the primary study.

### 4.4.1 Selecting case study as a research design

This research adopts case study as an appropriate strategy for this research method which falls into this paradigm and often used in IS research. As case study concerns investigation of a particular situation that concerns a social entity or social event and consists of a variety of methods and strategies that enable the researcher to select the source of data and to collect and analyse the data in a particular period of time (Blaikie, 2010). This was found to be relevant to this research study as the case study will be investigating the e-Umrah system in a specific period of time and will enable this research study to qualitatively collect and analyse the data.

Case study also enables the facilitation of the exploration of a particular phenomenon, entity, event or individual from diverse data sources (Yin, 2003, Baxter and Jack, 2008). This is another relevant reason which will enable the researcher to collect data from various sources which will be described in detail in the research procedure section. It ensures that the exploration takes a profound understanding from multiple perspectives (Baxter and Jack, 2008). This also enables this study to investigate all the users of the e-Umrah systems with their different perspectives on the e-Umrah system infrastructure.

Furthermore, case study is used when the questions why and how are involved, to deliver reasons to understand the differences between what was practically proposed and the actual occurrence through questioning why issues occur in contextual reality and how these issues exist (Noor, 2008; Yin, 2003). This will also enable the researcher to understand how the system developed and why the phases of the system and the changes that occurred in the scope of the e-Umrah system infrastructure throughout time.

Case study has also been lauded for giving researchers a holistic view of certain phenomena, as well as for providing a round picture of the evidence made available. It is useful in capturing the emergent properties of life in organisations, including the flow and changes in organisations (Noor, 2008). This is another reason why case study is used in this research to enable the researcher to give a holistic, clear and wide image of the phenomena under investigation which is e-Umrah system infrastructure.

Benbasat et al. (1987) proposed three strengths of case study research strategy that they recommended as fitting well in the information systems discipline. Firstly, case study enables the researcher to investigate a particular phenomenon in the natural setting and learn the nature of the existing state of the art, such as protocol, processes and procedures of the phenomenon. This was found to be relevant to the aim of this research which is to investigate e-government phenomena in their natural settings and to learn about the state of the art that is designated in the relationships of government to business specifically in the e-Umrah system. Secondly, the case study was found to empower the researcher to understand the nature and complexity of the processes that occur in the phenomenon and to enable us to answer the questions of how and why. Hence, this was found applicable in this research study since the researcher aims to have some answers as how the relationships between government and business are established, how these relationships developed and changed chronologically throughout time, how infrastructure is perceived from the perspective of the private sector (whether visible or invisible), and why obstacles exist which hinder government and private sector from having a robust relationship. Thirdly and most essentially is, as Benbasat et al. (1987) summarised, that the case study fits well when little knowledge is known about the phenomena in the area which the research study aims to investigate. The rationale for this study was to investigate e-government and government to business relationships through its infrastructure, because little consideration has been given to this topic, and few previous studies have concerned G2B.

As the case study has strengths, it also has weaknesses in its general application. Case study has been considered as lacking in scientific rigour and reliability, and also limited in its ability to deal with the issues of generalisability (Noor, 2008). Another considerable weakness of case study research is that case study presents subjectivity in the data collection process, due to the fact that the researcher is interpreting from a single perspective which is the researcher's perspective (Noor, 2008). Steps have been taken to overcome the problems of reliability, generalisability, and subjectivity. As regards generalisability, this case study adopted one example of government to business projects which is e-Umrah system, hence if similar conditions occur in other projects, this

research study can be applied. The researcher attempted to link the findings of this study to the findings of other studies from the same context which is e-government literature. As regards reliability, the data were reviewed by interviewees after the researcher finished collecting the data. And as regards subjectivity, the researcher was working with supervisors during the whole case study processes when interview questions were developed, data collected, analysed and reported. The supervisors worked closely with the researcher and reviewed all the steps and processes to overcome subjectivity, therefore the interpretation does not interpret solely from the researcher's perspective but with consultation and feedback from other perspectives.

Case study can either be single or multiple. A single case study highlights one case only; and a multiple case study includes two or more cases within the study (Yin, 2003). This research study selects a single case study because it describes one single case which is the e-Umrah system's infrastructure where diverse aspects such as social, technological, organisational and managerial are embedded within this bounded system.

Case study has different types (Table 4.5). This research study can be categorised as an exploratory study. The reason why this study takes an exploratory approach is due to the ability of an exploratory approach to provide a new set of questions and knowledge for e-government infrastructure and government to business that enables the researcher to get a single set of outcomes in a situation that is not clear, is complex, or has not been investigated previously (Yin, 2003; Baxter and Jones, 2008). In addition, exploratory study enables the researcher to have insight into the existing status of the investigated subject and permits the production of new insights and generates ideas for new research (Runeson and Host, 2009).

<b>Case study type</b>	<b>Definition</b>	<b>Published study example</b>
Explanatory	This type of case study would be used if you were seeking to answer a question that sought to explain the presumed causal links in real-	Joia (2002). Analysing a web-based e-commerce learning community: A case study in Brazil.

	life interventions that are too complex for the survey or experimental strategies. In evaluation language, the explanations would link program implementation with program effects (Yin, 2003).	<i>Internet Research</i> , 12, 305-317.
Exploratory	This type of case study is used to explore those situations in which the intervention being evaluated has no clear, single set of outcomes (Yin, 2003).	Lotzkar & Bottorff (2001). An observational study of the development of a nurse-patient relationship. <i>Clinical Nursing Research</i> , 10, 275-294.
Descriptive	This type of case study is used to describe an intervention or phenomenon and the real-life context in which it occurred (Yin, 2003).	Tolson, Fleming, & Schartau (2002). Coping with menstruation: Understanding the needs of women with Parkinson's disease. <i>Journal of Advanced Nursing</i> , 40, 513-521.
Multi-case studies	A multiple case study enables the researcher to explore differences within and between cases. The goal is to replicate findings across cases. Because comparisons will be drawn, it is imperative that the cases are chosen carefully so that the researcher can predict similar results across cases, or predict contrasting results based on a theory (Yin, 2003).	Campbell & Ahrens (1998). Innovative community services for rape victims: An application of multiple case study methodology. <i>American Journal of Community Psychology</i> , 26, 537-571.
Intrinsic	Stake (1995) uses the term intrinsic and suggests that researchers who have a genuine interest in the case should use this approach when the intent is to better understand the case. It is not undertaken primarily because	Hellström, Nolan, & Lundh (2005). "We do things together" A case study of "couplehood" in dementia. <i>Dementia</i> , 4(1), 7-22.

	the case represents other cases or because it illustrates a particular trait or problem, but because in all its particularity and ordinariness, the case itself is of interest. The purpose is NOT to come to understand some abstract construct or generic phenomenon. The purpose is NOT to build theory (although that is an option; Stake, 1995).	
Instrumental	Is used to accomplish something other than understanding a particular situation. It provides insight into an issue or helps to refine a theory. The case is of secondary interest; it plays a supportive role, facilitating our understanding of something else. The case is often looked at in depth, its contexts scrutinised, its ordinary activities detailed, and because it helps the researcher pursue the external interest. The case may or may not be seen as typical of other cases (Stake, 1995).	Luck, Jackson, & Usher (2007). STAMP: Components of observable behaviour that indicate potential for patient violence in emergency departments. <i>Journal of Advanced Nursing</i> , 59, 11-19.
Collective	Collective case studies are similar in nature and description to multiple case studies (Yin, 2003)	Scheib (2003). Role stress in the professional life of the school music teacher: A collective case study. <i>Journal of Research in Music Education</i> , 51,124 136.

**Table 4.5:** Case study types, definitions, and examples (Source: Baxter and Jack (2008: 549))

In order to achieve the aim of this research, an interpretive stance is the appropriate paradigm. This is because the researcher interacts subjectively with



the e-government phenomena to unveil the knowledge that lies behind the relationships between government to business from a business perspective. Hence, the researcher's focus in this research study is on delivering in-depth and holistic knowledge about the relationships between government and business and its infrastructure by stressing close attention to describing and explaining the existing relationships, its infrastructure, and highlighting its significance. Also, the interpretive paradigm enables the researcher to obtain the knowledge from the Umrah companies in order to construct, shape and conceptualise the knowledge that enables the creation of a meaning to these relationships and to understand government to business relationships through its infrastructure, based on Umrah companies' perspective. In addition, utilising an interpretive paradigm in this research study assists the researcher in highlighting the barriers and limitations that obstruct understanding of these investigated relationships. For the above reasons, interpretive case study, single case and exploratory approach were the most suitable strategy for achieving the aim of this research.

It is also worth mentioning that the researcher selected e-Umrah system as a case study for numerous reasons. Firstly, the researcher's core education and background was focused in the field of Information systems and management information systems. Secondly, the researcher had a background on the political issues in his country through family members working in several Ministries. This enabled the researcher to have an understanding of the governmental projects and ease of accessibility to the field of Umrah and investigating and exploring e-Umrah system. Thirdly, the researcher was from the western province of Saudi Arabia and living in the holy city of Madinah which is considered a part of Umrah activities. Fourthly, the researcher had some knowledge about the Umrah activities and desired to provide a research that increased the understanding of Umrah and add knowledge in the Umrah field through exploring and investigating the e-Umrah system as this research is original and had not been investigated and explored before.

#### **4.4.2 The design and procedures of the preliminary (Quantitative study)**

This research was carried out in two stages. The first stage used survey questionnaire to explore the current status of e-Umrah acceptance and adoption of electronic services among Umrah companies. Built on the findings of the preliminary study, the second stage considered to be the primary study used interviews to investigate Umrah companies and examined relevant documentation to understand e-Umrah system infrastructure and the influence of infrastructure on the e-Umrah system and the delivered services.

##### ***- Purpose of the preliminary study***

The purpose of the preliminary (quantitative) study was to investigate the level of adoption of electronic services among Umrah companies in Saudi Arabia and to study the ways in which e-government services improves and enhances transactions between the government and private sectors. In addition, the improvements in their relationship with the government through the electronic services were also examined. The outcome of the preliminary study research was one of the causes which helped identify the current gaps in the government's electronic services to the private sectors.

##### ***- The design of the Survey***

In order to understand the level of adoption and satisfaction of these Umrah companies with the e-government services, the survey was designed according to Kumar et al.'s (2007) framework. (Figure 4.1) The framework consists of five factors (1) User Characteristics, (2) Website Design, (3) Service Quality, (4) Satisfaction, and (5) e-government Adoption.

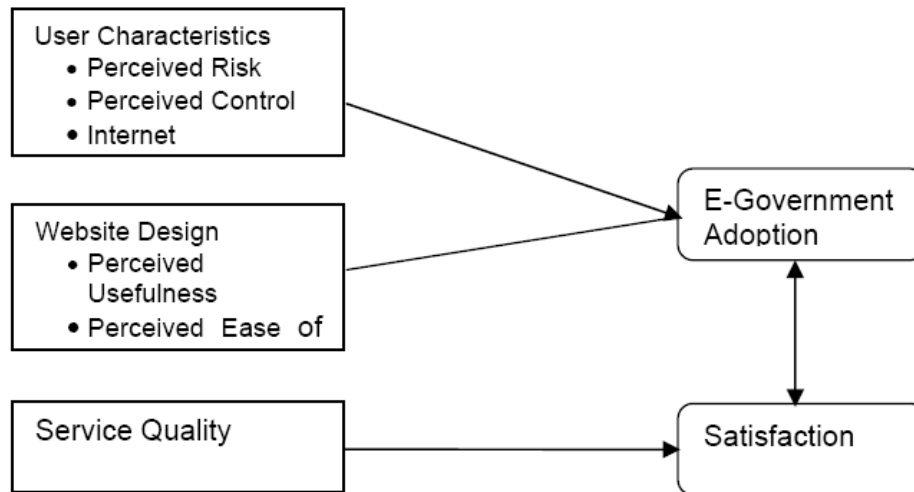
1) The User Characteristics factor investigated the level of risk, control, internet experience and IT knowledge, and businesses adoption and satisfaction toward electronic services. It also included the level of electronic or online service delivery, internet usage, online engagement, technological level, employees' skills, etc. This factor at the end gave an overview of how dedicated the companies are to the online/electronic services.

2) Web Design investigated the design of the service provider's website. The author had adopted two constructs from the Technology Acceptance Model (TAM) to investigate service providers' websites which are: perceived usefulness and perceived ease of use. These two constructs were selected because of the association between the web design and e-government adoption factors. The more the web design is useful and easy to use, the more the e-government adoption will take place among businesses.

3) The service quality factor was part of the framework because it investigated the tangibility and reliability of electronic services provided by the government. The study had adopted this factor to investigate the quality of services provided by the government to businesses.

4) Satisfaction was an important factor because it determined how satisfied the businesses are with the service providers. It was, in a way, a measure of their level of performance because it follows that if the businesses are satisfied then the service providers have done a good job.

5) The e-government adoption factor was used in this study to determine the intention and dedication of the businesses to the e-government. As such, the factor was hoped to determine what was currently being done by the service providers and also by the businesses in relation to e-government services. Moreover, this factor was considered a key factor to identify the potentials of Umrah companies in supporting e-government movement and also to assess the level of adoption among companies toward e-government adoption in Saudi Arabia. Finally, the e-government adoption factor was found to be essential and helped identify the future challenges and intentions of Umrah companies toward the implementation of e-government services in Saudi Arabia.



**Figure 4.1:** e-Government conceptual framework (Source: Kumar et al (2007:68))

The survey generally included direct response type questions where the respondents indicated some information related to their company and employees. It also consisted of a combination of both multiple choices and yes/no questions to determine the issues related to e-government services. The likert scale type of questions was also added to identify the level of agreement or disagreement to particular statements. It also ranked the level of satisfaction on a particular item to determine how satisfied the businesses are with e-government services. At the end of the survey, two open ended questions were added to determine the intention and dedication of businesses to e-government adoption. As such, the questionnaire has determined what is currently being done by the government and service providers and also by the businesses in relation to e-government services.

The reason for choosing this conceptual framework was because it had a diversity of factors which rooted from other models such as Technology Acceptance Model (TAM), ServQual Model, in addition to other factors proposed by the author due to their importance in the field of e-government. One more reason was because this framework was dedicated to investigate government to business. This is because the framework combined technological and business perspectives which were believed to serve the

investigation of this research to understand the level of adoption and satisfaction with e-government services provided to business sector.

**- Research setting and sample size**

The research setting targeted the western region of Saudi Arabia specifically in three major cities: Jeddah, Makkah, and Madinah. This is because the western region is the targeted location for Umrah activities, therefore all Umrah companies and service providers' headquarters offices which link these Umrah companies with electronic services are found there. The list of the Umrah companies operating in the region was published by the Ministry of Hajj. The list contains 45 companies and their details such as companies authorisations' numbers, addresses, and all their contact numbers. Out of these 45 companies 27 operate in Jeddah, 13 operate in Mecca, and 5 operate in Madinah. The researcher obtained this data after visiting the Ministry of Hajj and gained the approval from the deputy Minister for Umrah sector to conduct this research study in the Umrah field. All 45 companies were contacted and invited to participate in this study. 43 out of 45 companies were willing to take part in the study and the survey was subsequently sent to them; while 2 companies did not wish to participate.

All Umrah companies' owners/managers were invited to take part in this research project. The researcher then visited the Umrah companies' owners/managers to introduce himself and provide a brief introduction about the research including its purpose, aims, objectives and expected outcomes. The reason for selecting owners and managers is because they are the decision makers and responsible in approving this research to be carried out in their companies by either accepting or declining to participate. After the research was briefly explained, an information sheet was given to them and they were encouraged to take time to read the information sheet carefully. They were also advised to contact the researcher if there should be any enquiries or clarifications needed. Following that, they were given the choice of either participating or not participating in the study.

**- Research distribution**

The 43 companies which agreed to participate in the project were informed about the duration of the data collection for the preliminary study of this research project which was during the month of June, 2010 and lasts for four weeks. They were also notified that the questionnaire will be distributed to them in their companies (one questionnaire per company) and will be collected either on the same day or the day after. It was explained to all participants that they should take their time to answer all questions clearly and accurately. The participants were ensured that no expected risks and disadvantages would be involved by taking part in filling the questionnaire.

Consequentially, the chosen conceptual framework helped in organising the data collection and analysis of this research and the analysis of the questionnaire focused on using descriptive statistics such as frequencies. The findings of the preliminary study was important since it revealed that the private sector is fully satisfied in dealing with government electronically therefore the preliminary study informed the main case study (primary/qualitative study) to focus more not on the electronic services delivered by the government but the base of the e-Umrah system which is through investigating deeply the e-Umrah system's infrastructure.

**4.4.3 Primary study (Qualitative study)**

The second stage following the preliminary study is the primary study which focused mainly on understanding the e-Umrah system infrastructure and the influence of infrastructure on the e-Umrah system and the delivered services.

**- Sample (Respondents' information)**

The case study on the e-Umrah system targeted in the beginning, Umrah companies' owners, managers and/or supervisors because of their broad understanding and experience in dealing with technologies, management, government's standards, regulations and other issues related to e-Umrah system. In addition, in order to have access to the Umrah companies the researcher had to get the approval from the owners, general or executive managers to investigate e-Umrah systems in their companies. Furthermore, the

selection of respondents determined by those owners and managers where some had deep knowledge and participated as respondents, where on the other had others who had limited knowledge provided referred the researcher to specialists who had better knowledge of the e-Umrah system to provide the researcher with more reliable information relating to the investigation (Table 4.6 and Table 4.7 illustrate the respondents' positions and number of respondents). Furthermore, the duration of investigation ranged between 1:30 to 3:00 hours.

<b>Respondents positions</b>	<b>Number of respondents</b>
Umrah Companies Owners	8
Managers (General, Executives, Branch)	13
IT (Managers, Supervisors, specialists)	10
Marketing and Sales (Managers, specialists)	4
Finance (Managers, specialists)	4
Operation and Follow up (Managers, specialists)	4
<b>Total</b>	<b>43</b>

**Table 4.6:** Umrah companies respondents' information

<b>Respondents positions</b>	<b>Number of respondents</b>
Customer Service (Managers, specialists)	2
System Developers (Managers, specialists)	2

<b>Total</b>	<b>4</b>
--------------	----------

**Table 4.7:** Service providers respondents' information

The main data sources of this research are: interviews and documentation.

#### **- Interview**

Bryman (1984) argued that interviews are a key informant that enables the researcher to gain more accurate and reliable data from the interviewees with more detailed information about the perceptions and opinions of the interviewees due to the face to face situation.

There are three types of interviews which are structured, semi-structured, and unstructured interviews (Lodico et al, 2009; Hancock et al, 2009). A Structured or focused interview contains a set of questions about the phenomenon that is being investigated which is prepared and presented to all interviewees (Lodico et al, 2009). However, it is rigid and allows neither the researcher nor the participants to deviate from the scripts, due to the necessity of following the set of questions that has been developed, therefore it delivers less flexibility (Lodico et al, 2009; Yin, 2009).

Semi-structured or in-depth interview is the second type of interview. It also consists of a set of questions to investigate the phenomenon or event, however the researcher in a semi-structured interview can change the order of questions, modify the questions or wording, or add new questions as required in order to trace unforeseen issues that exist within the phenomenon (Lodico et al, 2009). Hancock et al (2009) highlighted that semi-structured interviews enables both the researcher and the interviewees to discuss in detail any emerged issues that require more explanation and clarification. Noor (2008) highlighted that semi-structured interview is the most favourable type to use when developing interview questions due to its satisfactory flexibility when investigating different interviewees with different perspectives, while this difference in approach to investigating different interviewees retains the flow of information when covering the same phenomenon.



The third type of interview is the unstructured interview. This type of interview is more like informal or broad conversation where the researcher begins with a general topic or question and listens and traces the development of the conversation from participants. However, this type of interview requires a high level of skill and familiarity with the phenomenon or the area of investigation (Lodico et al, 2009).

The primary source of data for this research came from semi-structured interviews. The aim of the interview was to collect information on the e-Umrah system infrastructure based on the conceptual framework developed by Star and Ruhleder (1996). The interview questions were developed to investigate e-Umrah system in eight dimensions including embeddedness, transparency, reach or scope, learned as part of membership, links with conventions of practice, embodiment of standards, built on an installed base, and become visible upon breakdown. It was hoped that the rich descriptions given by the interviewees about the e-Umrah system and their experience and interaction with e-Umrah system would help the researcher achieve a holistic understanding of the relationships between government and business in G2B context.

After developing the questions to be asked in the interview, a pilot study was conducted on three Umrah companies. This was done to refine the questions and to decide which questions should be removed or if there was a need to add some questions. Additional Umrah companies included in the pilot study were chosen randomly and the managers of these companies who had knowledge of the e-Umrah system's infrastructure were interviewed. After the interviews, the researcher reviewed the transcripts and assessed the questions. The number of questions were found to be slightly too many and were time consuming, however they were very rich in information and so were kept.

The researcher then began the actual research project. 43 out of 45 Umrah companies agreed to participate in this project. The Umrah companies were told about the interviews during the period of collecting quantitative data and hence had prior knowledge of the interviews. The interviews took place during the months of August and September 2011 (8 weeks).

The researcher at this stage began to visit the Umrah companies' managers to start interviewing the Umrah companies. The researcher interviewed Umrah companies' owners, general managers, executive managers, branch managers, IT managers and specialists, marketing and sales managers and specialists, operation and follow up managers and specialists, and finance managers and specialists. The total number of interviewees was 47 (43 participants from Umrah companies and 4 participants from service providers). This was because some owners and managers referred the researcher to those specialists who had better knowledge of the e-Umrah system and could provide the researcher with more reliable information relating to the investigation. Before the researcher began the interview, the researcher took consent from the participants to being recorded on an audio device. However, none of the participants gave consent to this and preferred the researcher to take notes. At the end of each interview, the researcher submitted the notes to each interviewee to review the transcripts and gain their approval. After all interviews were completed, the researcher began to translate all the transcripts from Arabic into English.

#### **- Documentation**

Documentation, which was used as the secondary source of evidence is summarised in Table 4.8. This information consists of documents such as reports, diagrams, systems' manuals and guidelines. This resource helped the researcher to acquire a deep understanding of the e-Umrah system and background of the e-Umrah services which will allow the research study to achieve a holistic understanding of the relationships between government and business in e-government and G2B's infrastructure.

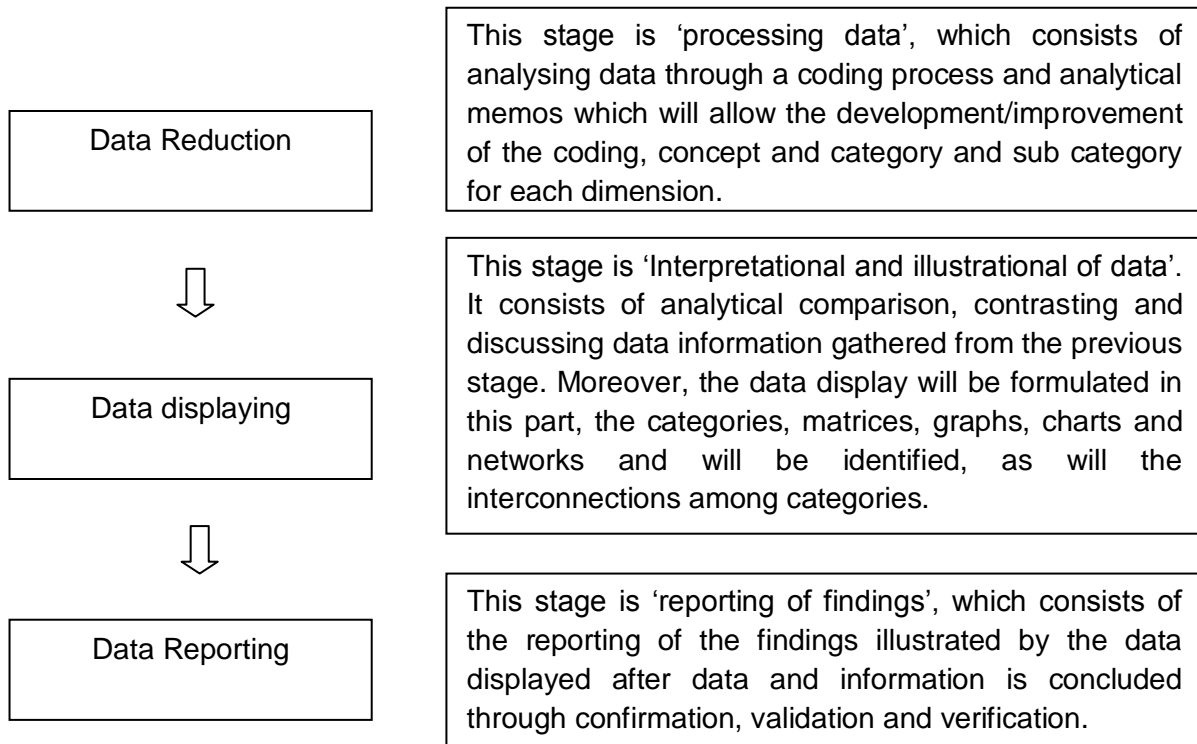
<b>Source</b>	<b>Description of Documentation</b>	<b>Type of Documentation</b>
<b>Ministry of Hajj</b>	Company details, Hajj and Umrah services documentation.	Tables contain: names of Umrah companies, license numbers, and contacts. Documents related to the e-umrah system reflecting the plan, strategy,

		vision and mission of the Ministry of Hajj.
<b>Service Providers</b>	Description of service providers' activities and services offered in the field of the e-Umrah project including Umrah packages.	Manuals booklets, diagrams, CDs, and brochures describing service providers' services, strategies, plans, website designs and implementation and process mechanisms of Umrah electronic applications.
<b>Umrah Companies</b>	Descriptive documents of Umrah activities and diagrams.	Documents and diagrams.

**Table 4.8:** Summary of data collected from the fieldwork

#### **- Data Analysis**

According to the design of the data analysis for this research study, the method of data analysis will utilise Miles and Huberman (1994) steps (as summarised in Fig 4.2) which consist of data reduction (writing summaries, coding, themes and patterns, making clusters and partitions and writing memos), data display (categories, matrices, graphs, charts and networks), and data reporting (Confirmability, validity, and verification of findings). These three steps will allow the analysis of this study to establish and follow a systematic and thematic technique of analysing data by labelling the themes, ideas and thoughts under the emergence of data codes from each of the eight dimensions.



**Figure 4.2:** Data analysis process of the research adapted from the component of data analysis: Interactive model (Miles and Huberman (1994))

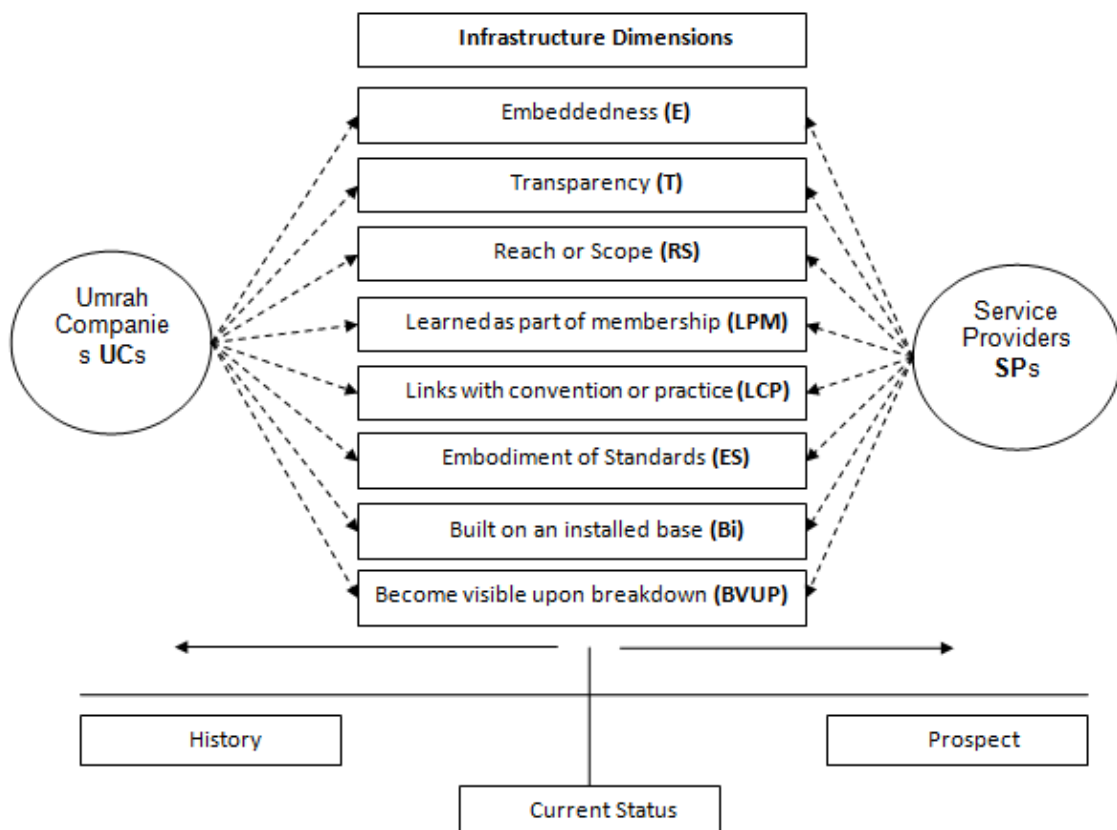
### - Data reduction

Data reduction is an essential stage of data analysis. Data reduction can lead to do conceptualising, categorising, breaking down, comparing and examining the data (Bryman and Burgess, 1994). In addition, data reduction enhances the revision of data and enables the researcher to develop clear connections and relations between data (Bryman and Burgess, 1994). As for the data reduction phase, this research study will utilise Neuman's (2006) three coding processes. The reason for selecting Newman's (2006) three coding processes is because it describes in detail, in depth, and in a systematic manner the data reduction steps through the three phases, open, axial and selective coding, in addition to the analytical memos which enable brainstorming and connecting the data in a structural and organised form. This, in the end, will enable the researcher to deliver a summarised, presentable, systematic, and sequential final report that is usable for understanding the e-Umrah system's infrastructure and its current design and barriers.

Zhang et al. (2009) emphasised that it is essential to develop a coding manual that guides the reader and ensures consistency of the coding process. Therefore, the application and implementation of Newman's (2006) coding system to the e-Umrah system infrastructure's case study was developed as a coding manual that guides the reader to understand the approach and steps taken in the three coding system, open, axial and selective coding.

### **Open Coding**

According to Neuman (2004), the open coding step allows the researcher to go over the transcripts collected from interviews by reviewing and reading the notes taken from interviewees. This step enables the researcher to create/initiate codes that reduce the data and capture ideas, processes and themes and condense these into categories and sub categories. Therefore, the researcher utilised the eight dimensions as the initial coding 'major categories', since each dimension illustrates certain issues and viewpoints around the e-Umrah system's infrastructure, as illustrated in Fig 4.3.



**Figure 4.3:** Open coding phase

For example, each dimension of Star and Ruhleder (1996) was designated to discuss a particular aspect of infrastructure. For example, built on installed base was designated to explore the base and foundation of the system and aimed to provide understanding on the nature of the system through understanding how the system expands and develops throughout time. Therefore, the researcher labelled the dimension as a core category. In addition, the other dimensions as illustrated in Fig 4.2 were also all labelled as core dimensions where each dimension in the later stage of analysis (axial coding) developed through generating sub-categories to provide more understanding about infrastructure in e-Umrah system.

### ***Axial coding***

According to Neuman (2004) the axial coding step is the next step following the creation/initiation/development of codes. At this step, the organisation of codes begins to take a form of structure by inspecting the scripts and initiating minor codes for each dimension, enabling the researcher to explore the relations among the codes. In addition, Neuman (2004: 331) pointed out that “during axial coding, a researcher asks about causes and consequences, conditions and interactions, strategies and processes, and looks for categories or concepts that cluster together”. At this step, the researcher began to list all the common ideas, themes, processes, procedures, practices, historical records, prospects and/or any emerging viewpoints/cases/issues under each major category to organise and display systematically and prepare each for the following step which is selective coding for the reporting stage, as illustrated in Table 4.9.

<b>Dimension</b>	<b>Categories</b>	<b>Codes</b>
Built on installed Base ( <b>iB</b> )	Legacy System	Foundation of the System
	Relationship of Legacy and Innovative System	Relationships between the old and new systems

	Legacy and Innovative System Functionality	Sequence of change before and after the new system
	Legacy and early electronic System Barriers and Challenges	Former challenges
	Existing Barriers	Current challenges
<b>Embeddedness (E)</b>	Innovated System - Current Design	Current Structure/Design
	Innovated System - Dimension of Design  Individual or Part of an Overall Bigger System	Dimension of Design
	Innovated System - Current Role/Position of Entities	Role & Position
	Innovated System – Playing Part In the Overall Bigger System	Playing Part of Entities
	Relation of Activities/Operations to e-Umrah System Infrastructure	Embeddedness of e-Umrah system Infrastructure
<b>Transparency (T)</b>	Innovated System Transparency	Overall Transparency
	Providing Feedback Design  Shape and Form	Feedback Design
	Process of Providing Feedback	Getting Asked to Provide Feedback
	Form of Constant Communication	Communication Forms
	Input Consideration	Input Being Considered

	Receiving Support	Support
	Kind of Support	Types of Support
	Circumstances of Receiving Feedback	Circumstances of Supports
	System Improvement After Feedback	System Improvement after Feedback
Learned as Part of Membership <b>(LPM)</b>	Learning process and the impact of relations of tasks to the e-Umrah system infrastructure	Unrelated Task (Which should be Included in the System)
	Familiarity in the e-Umrah System	Level of Familiarity (Leading to not noticing System's limitations)
	Process of Familiarity	Interpretation of Familiarity (New participants Engagement)
	Extent of Engagement	Degree of Familiarity (New participants Engagement)
	Extent of Usability	Extent of Using the System
	System usability	System Level of Usability
Links with Conventions of Practice <b>(LCP)</b>	Views on Constant Development in the e-Umrah system	Perspective of System's Development
	Views on Other Electronic Systems	Integration of Other Systems



	(of Other Involved entities)	
	Connectivity with other Electronic Systems	Description of Connectivity with Other Systems
	Type of Works/Operations when dealing with other Electronic Systems	Involved Tasks and Operations of Other Systems
	Rules/Conventions Affecting the Use/Design of the System	Issues Affecting the Current practice
Reach or Scope (RS)	Views on the system's reach or scope of the current e-Umrah system	Reaching Scope
	Requirements of achieving reach or scopes'  Fulfil system's reach and achieving scopes/goals	Issues Still Need to Achieve
Becomes Visible Upon Breakdown (BVUB)	Visibility of breakdown	Breakdown visibility
	Mechanism of solving breakdown	Conventional Protocol to Handle Breakdown in the system
Embodiment of Standards (ES)	Primary players  (Set the rules, standards, notifications, and modification to the system)	Major stakeholders
	Views on sufficiency and satisfactory standards (Built Up to sufficient and satisfactory standards)	Sufficiency of standards

	VS Still Need Modification)	
--	-----------------------------	--

**Table 4.9:** Data reduction coding table (Dimensions, Categories and Codes)

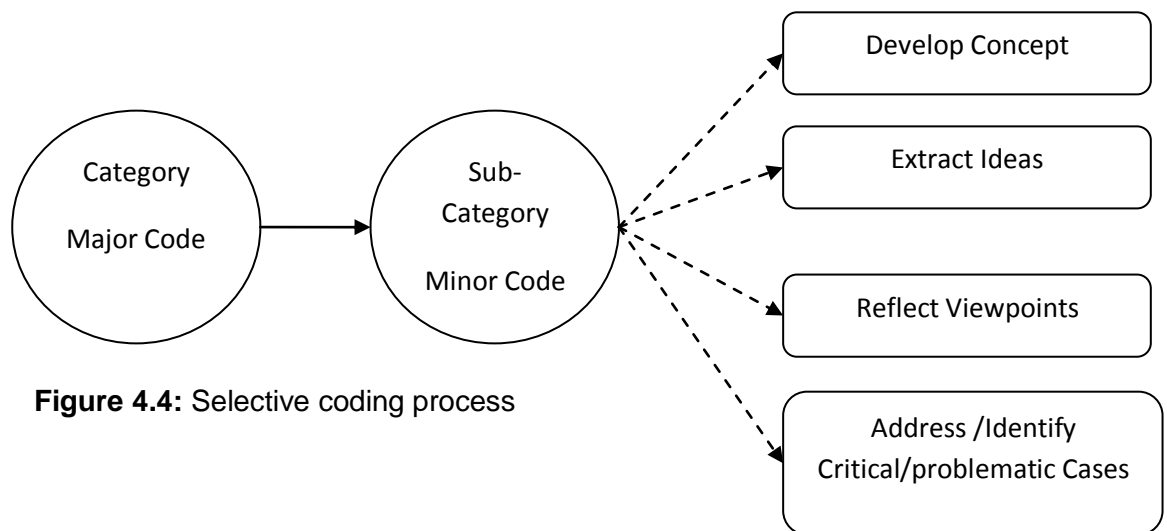
According to the analysis process which was applied in investigating the e-Umrah system's infrastructure, the qualitative case study data revealed several minor codes which were regarded as topics that explain each dimension. For example, the minor codes identified in Table 4.10 concerning installed base, highlighted the following aspects: foundation of the system, relationship between old and new systems, sequence of change before and after the new system, former challenges and the current challenges. Thus, each minor code discussed the foundation and installed base and provided in depth knowledge regarding the history of infrastructure and how it developed throughout time, in addition to its old challenges and barriers which resolved and the remaining barriers which hinders the development and expansion of the infrastructure.

Another example involves the analysis of the embeddedness dimension where minor codes were also developed, based on the data collected and revealed on several minor codes (as illustrated in Table 4.10) as the main topics of embeddedness. These seven minor codes had provided a deep understanding of embeddedness through explaining the structure of the e-Umrah system's infrastructure and the involved entities and activities where each one of them has a role and responsibilities in addition to services which delivered by these entities which shaped the infrastructure of the e-Umrah system.

Consequentially, the coding system which developed in the data analysis succeeded to explain and analyse infrastructure through the eight dimensions which proposed by Star and Ruhleder (1996). In addition, the emerged minor codes which developed from the analysis were also found to identify an advanced theoretical framework that enhances the understanding of infrastructure in e-government to business domain and added more knowledge about e-government infrastructure.

### **Selective coding**

The selective coding step follows the completion of the open and axial coding steps. This step enables the researcher to review the codes from the original documents and determine the most appropriate interpretation and illustration of data and place it in the report. Neuman (2004:332) pointed out that 'Researchers look selectively for cases that illustrate themes and make comparisons and contrasts after most or all data collection are complete'. As illustrated in Fig 4.4, this step of coding has helped the researcher to reorganise the ideas and themes and clarify the concept of the e-Umrah system's infrastructure in each dimension under the minor codes which were developed from the sub-categories which enabled the selection of the most appropriate themes and ideas that clarify/articulate the infrastructure in each category and its sub-categories and allow us to understand the e-Umrah system and explain the system's infrastructure from each dimension.



**Figure 4.4:** Selective coding process

The built on an installed base dimension was one example which illustrated in Table 4.10. The processes which applied in this stage began through using the dimension as a major code/topic. Minor codes were used as minor topics or headings that explain the nature of the e-Umrah system infrastructure and the developments which occurred throughout time which explained how the e-Umrah system infrastructure improves, relationships of old and new systems, sequences of change throughout time and former and existing barriers and challenges. In addition, the researcher developed a table as illustrated in

appendix 4. These tables organised the evidence which was gathered from the data. Thereby, the researcher used the most appropriate evidences which deeply clarified the e-Umrah system infrastructure installed base.

The same processes were also applied in the rest dimensions. For example, the approach taken when embeddness dimension was analysed is that the researcher used embeddedness as a major code/topic, followed by minor codes which occurred from the data which explored the nature of embeddedness and focused on the idea that infrastructure is sunk into technologies, structures and social arrangements. The minor codes provided an in-depth knowledge about the current design of the e-Umrah system where many entities which involved, their role and positions in the system, playing part of entities in the e-Umrah system, and the services they provided and the extent of interactions and involvement of these services and its operations to the e-Umrah system.

Consequentially, following this analytical approach had enabled the researcher to explain e-Umrah system infrastructure according to Star and Ruhleder (1996). In addition, the coding system enabled more explanations and clarifications added such as emerged ideas, themes, viewpoints and critical issues which found to increase the understanding of Star and Ruhleder's (1996) framework in addition it proposed additional information which enhanced more the understanding of infrastructure for each dimension.

#### **- Data Displaying**

Once the data reduction phase is complete, the data displaying phase takes place, by analysing the data by comparing, contrasting and discussing the information gathered from the previous stage. Moreover, the data display will be formulated in this part, showing the final categories, matrices, graphs, charts and networks and the interconnections among categories which will then be identified.

#### **- Data reporting**

The last phase is reporting the case study which was analysed from an interpretive stance. Conducting interpretive investigation's goal is not reporting facts, developing a theory or testing a hypothesis, but the goal is to display the

interpretation of the case study from the researcher's own interpretations of the participants' perspectives (Walsham, 1995). Therefore, this research study has adopted a framework (Star and Ruhleder, 1996) which consists of eight dimensions. Also, this framework enabled all phases of the case study, beginning with data collection, data analysis and including this phase reporting of findings, to organise the data for each dimension, as each dimension discussed a particular phenomenon of e-government G2B infrastructure. The framework also assisted this case study in the data analysis phase where the data coding system contributed to each dimension that is proposed by the eight developed dimensions of Star and Ruhleder (1996)'s framework.

The data credibility, validity and reliability are vital for conducting a case study. Walsham (1995) emphasised that building validity and credibility in front of the eye of the reader is an important issue to corroborate genuineness, accuracy and reliability of the data collected, analysed and reported in the case study. According to Knafl and Howard (1984) absence of a consistent format for reporting qualitative research is one issue that makes assessment and validation of qualitative studies difficult. However, Knafl and Howard (1984) suggested adopting a framework for qualitative research in the reporting phase in order to provide accuracy and consistency to the study that is under investigation.

Zhang et al. (2009) emphasised that validity, reliability and objectivity are fundamental issues in order to draw consistency when collecting, analysing and reporting the data which is generated from the case study. Hence, Zhang et al. (2009) suggested four key aspects that measure interpretive research which were proposed by Lincoln and Gupta (1985). These assessment criteria include credibility, confirmability, dependability and transferability and are important to provide trustworthiness in the conducted research. Credibility is described as a set of activities that assist in improving the general production of the research such as seeking members' assistance in checking interpretations that are based on coding, checking interpretations in coding data (relevant and irrelevant representation), case analysis, continuous observation of coding, etc. Therefore, checking the overall design, structure and processes of data collection, analysis, and reporting by others is essential to improve credibility of

case study (Zhang et al., 2009). The second way of measuring the validity of the research is through confirmability where the researcher seeks other members' assistance to verify the internal logic of the procedures and processes of the research process and findings (Zhang et al., 2009). The third criteria is dependability which is ensured by auditing the research processes and findings such as allowing others to review the materials that are used to assess the reliability of the structure of the process through assessment (Zhang et al., 2009). The fourth way of measuring a technique is by its transferability where the researcher provides the data set which consists of description and analysis, and allows others to review and judge whether the findings can be transferable to other contexts (Zhang et al., 2009).

To ensure validity and reliability in this research study, the researcher followed the principles for credibility, confirmability and dependability by adopting a systematic approach to design the interview questions (using the framework to guide the design) and data analysis (using Miles and Huberman's data analysis process and Neuman's coding system). In addition, the researcher asked interviewees to clarify and confirm their inputs before ending the interviews. Moreover, the researcher has also ensured the validity and reliability of this research study by receiving assistance in the form of checking, auditing, and reviewing from two experienced individuals in the field of interest (thesis supervisors). This was done for the purpose of checking and reviewing, step by step, the processes and procedures used during data collection, data analysis (data reduction and coding), reporting of findings and generalisation of findings (generalising the interpretive research). In addition, the researcher kept all the records (interviews transcripts, fieldwork documents) and memos including processes and procedures of the interpretations of all phases of this research study in his files. In addition, the results of this research study were checked through auditing and refining and by the interviewees with all 43 Umrah companies who participated in this research study.

## **4.5 Summary**

This chapter discussed the methods used in this research study under the headings research strategy and research design. The research strategy followed the scheme developed by Burrell and Morgan (1985) to examine the

philosophical assumptions of the research methods with an aim to identifying an applicable research method for this study. The chapter summarised the positioning of this research study which was based on philosophical assumptions. Also, the research paradigm for this study was found to fall into interpretive stance and the reasons for selecting the paradigm for this study were justified. The mixed methods approach was included as a research strategy for this study where it was explained and discussed in depth. Furthermore, this research adopted a single, exploratory case study as an appropriate strategy for this research method which falls into this paradigm and often used in IS research.

In addition, the design and procedures of the preliminary (Quantitative study) and primary study (Qualitative study) were explained and discussed. The research setting was in the western region of Saudi Arabia, specifically in three major cities: Jeddah, Makkah and Madinah. The main data sources of this research are interviews and documentation. The design for the data analysis of this research study utilised Miles and Huberman's (1994) three steps which consisted of data reduction, data display and data reporting to establish and follow a systematic and thematic technique of analysing data. The first step which is data reduction utilised Neuman's (2006) three coding processes open, axial and selective coding to deliver a summarised, presentable, systematic and sequential final report that is usable for understanding this case study.

The following chapter is the quantitative findings.

# CHAPTER

# 5

## Quantitative findings

**5.1 Introduction**

**5.2 Survey findings**

**5.3 Part I (user characteristics)**

**5.4 Part II (website design)**

**5.5 Part III (service quality)**

**5.6 Part IV (satisfaction)**

**5.7 Part V (e-government adoption)**

**5.8 Analysis of findings and further investigation**



## 5.1 Introduction

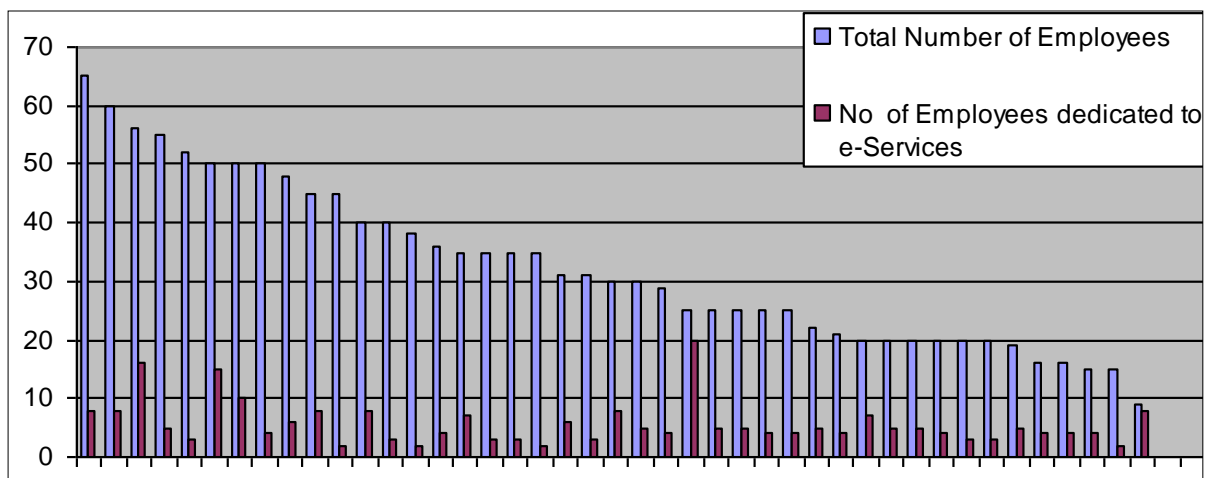
This chapter presents the results of the data analysis. The results are organised under the headings of: User Profile, User Characteristics, Website Design, Service Quality, Satisfaction and e-Government Adoption.

## 5.2 Survey findings

### User profile

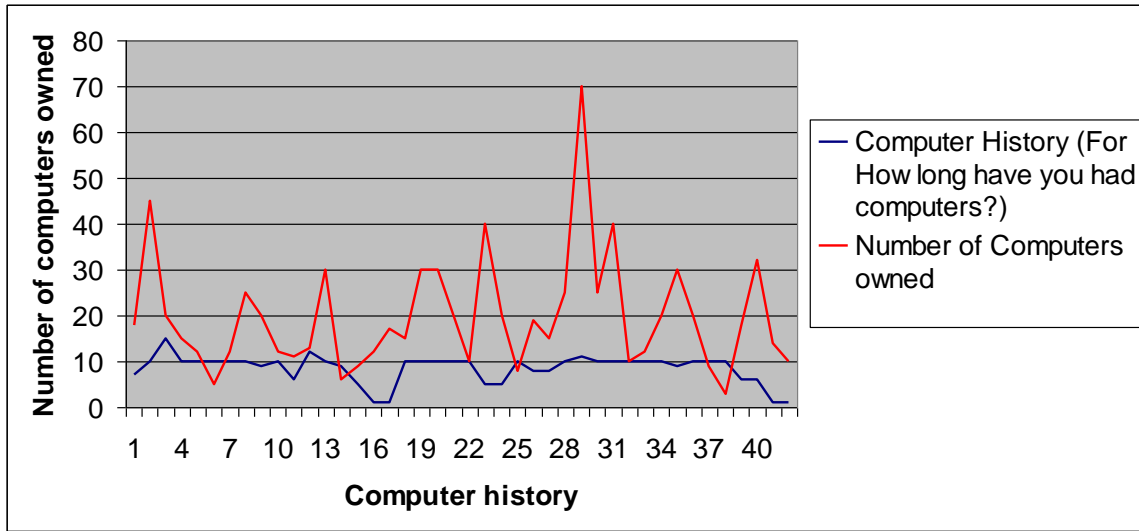
This section of the survey collects information about the participating Umrah companies including their experience of dealing with e-Umrah business, size of company and dedication of employees to e-services, history of using computers, number of computers owned and computer literacy among staff.

Table 5.1 shows that the most experienced company has been providing Umrah services to visitors for 45 years while there were companies providing services for only about 4 months. Out of 43 participating companies, most have been in business for about 15 years. All 43 Umrah companies are small sized companies and their employee number ranges from 9 to 65. The companies that have 16-25 (37 %) and 26-35 (20.9 %) employees are most common. The majority of companies (93 %) in this study assigned 2-10 employees to use e-services. Although it is logical to assume that the bigger the company the more people they assign to the e-service, however it is not the case here (Fig 5.1).



**Figure 5.1:** Size of Company and Employee Dedicated to e-Services

About 7 percent of companies have a long history of using computers for their business (11-15 years) but the majority of 74 percent have been using computers for 6-10 years. It can be seen from Figure 5.2 that there is no correlation between the numbers of computers owned with the history of using computers. As for the numbers of computers owned, they ranged between 3 to 70 computers. Most companies 51.2% own 11-20 computers, while 4.7% only own 41-70 computers.



**Figure 5.2:** Computer history and computers owned

To understand the qualifications and level of IT skills among employees in the Umrah companies which plays an important role in e-government adoption, it was important to find out computer literacy and average age of the employees.

Computer literacy among staff is another factor investigated in this study. The highest number of employees with advanced computer literacy among staff ranged between 25 to 35 employees while the lowest ranged between no employees to 5 employees. The majority of companies (67.4%) have low numbers of staff with advanced computer literacy (0 to 5 employees). The most common age of those with advanced computer literacy ranged between 30 to 35 years. (Table 5.1)

The highest number of staff with moderate computer literacy ranged between 40-50 employees while 2-10 employees was the lowest range. It was found that 39.5 percent of companies have 2-10 employees with moderate computer literacy and another 39.5 percent of companies have 10 to 20 employees with moderate computer literacy. The most common age of those with moderate computer literacy ranged between 25 to 30 years. (Table 5.1)

The highest number of employees with no computer literacy ranged between 15-20 employees with a percentage of 4.7 percent. On the other hand, the lowest number of employees with no computer literacy ranged between no employees to 5 employees with a percentage of 51.2 percent. The most common age of those with no computer literacy ranged between 40-45 years. (Table 5.1)

<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Experience in Business</b>		
4 months – 15 yrs	<b>38</b>	<b>88.4%</b>
16-25 yrs	<b>2</b>	<b>4.7%</b>
26-35 yrs	<b>1</b>	<b>2.3%</b>
36-45 yrs	<b>1</b>	<b>2.3%</b>
<b>Size of Company (Total Number of Employee)</b>		
9-15 Emp.	<b>3</b>	<b>7%</b>
16-25 Emp.	<b>16</b>	<b>37.2%</b>
26-35 Emp.	<b>9</b>	<b>20.9%</b>

36-45 Emp.	<b>6</b>	<b>14%</b>
46-55 Emp.	<b>6</b>	<b>14%</b>
56-65 Emp.	<b>3</b>	<b>7%</b>
<b>Number of Employee Dedicated to e-Services</b>		
2-10 Emp.	<b>40</b>	<b>93%</b>
11-20 Emp.	<b>3</b>	<b>7%</b>
<b>Computer History</b>		
1-5 Yr(s)	<b>8</b>	<b>18.6%</b>
6-10 Yrs	<b>32</b>	<b>74.4%</b>
11-15 Yrs	<b>3</b>	<b>7%</b>
<b>Number of Computer Owned</b>		
3-10 PC	<b>9</b>	<b>20.9%</b>
11-20 PC	<b>22</b>	<b>51.2%</b>
21-30 PC	<b>7</b>	<b>16.3%</b>
31-40 PC	<b>3</b>	<b>7%</b>
41-70 PC	<b>2</b>	<b>4.7%</b>
<b>Number of Computer Literacy Staff</b>		
<b>Advanced</b>		

0-5 Emp.	<b>29</b>	<b>67.4%</b>
6-15 Emp.	<b>9</b>	<b>20.9%</b>
16-25 Emp.	<b>3</b>	<b>7%</b>
26-35 Emp.	<b>2</b>	<b>4.7%</b>
<b>Moderate</b>		
2-10 Emp.	<b>17</b>	<b>39.5%</b>
11-20 Emp.	<b>17</b>	<b>39.5%</b>
21-30 Emp.	<b>6</b>	<b>14%</b>
31-40 Emp.	<b>1</b>	<b>2.3%</b>
41-50 Emp.	<b>2</b>	<b>4.7%</b>
<b>Not Computer Literate</b>		
0-5 Emp.	<b>22</b>	<b>51.2%</b>
6-10 Emp.	<b>3</b>	<b>7%</b>
11-15 Emp.	<b>3</b>	<b>7%</b>
16-20 Emp.	<b>2</b>	<b>4.7%</b>
N/A	<b>13</b>	<b>30.1%</b>
<b>Average Age of Computer Literacy Staff</b>		
<b>Advanced</b>		

18-25 yrs	<b>15</b>	<b>34.9%</b>
26-30 yrs	<b>7</b>	<b>16.3%</b>
31-35 yrs	<b>17</b>	<b>39.5%</b>
36-45 yrs	<b>1</b>	<b>2.3%</b>
None	<b>1</b>	<b>2.3%</b>
N/A	<b>2</b>	<b>4.7%</b>
<b>Moderate</b>		
20-25 yrs	13	<b>30.2%</b>
26-30 yrs	16	<b>37.2%</b>
31-35 yrs	7	<b>16.3%</b>
36-40 yrs	4	<b>9.3%</b>
None	1	<b>2.3%</b>
N/A	2	<b>4.7%</b>
<b>Not Computer Literate</b>		
20-25 yrs	4	<b>9.2%</b>
26-30 yrs	7	<b>16.3%</b>
31-35 yrs	3	<b>7%</b>
41-45 yrs	8	<b>18.6%</b>

46-55 yrs	2	<b>4.7%</b>
N/A	19	<b>44.2%</b>

(N/A= Not Available due to unanswered question)

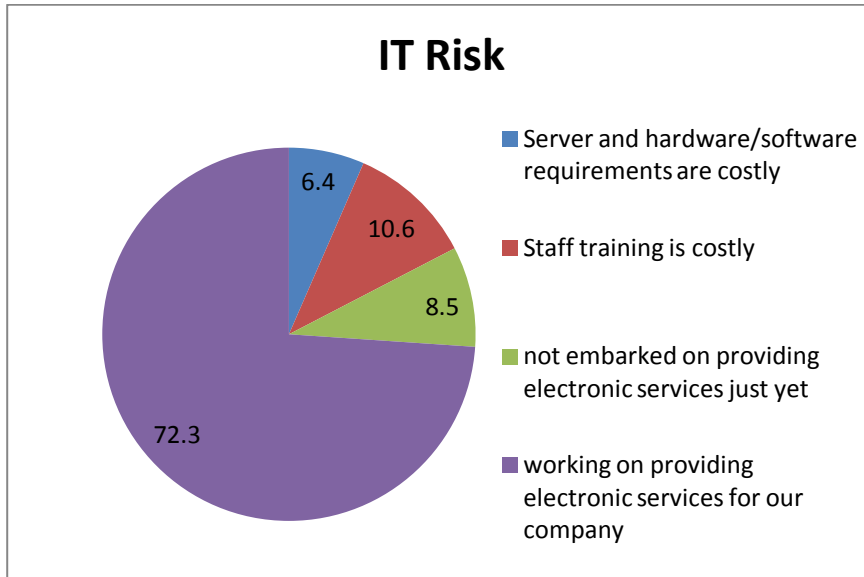
**Table 5.1:** Companies' profiles

### **5.3 Part I (user characteristics)**

The section presents the results of participating companies' perception of risk of using electronic service, perceived control and Internet and IT knowledge which includes IT readiness, view of IT training staff and skills development and view of the companies toward the government.

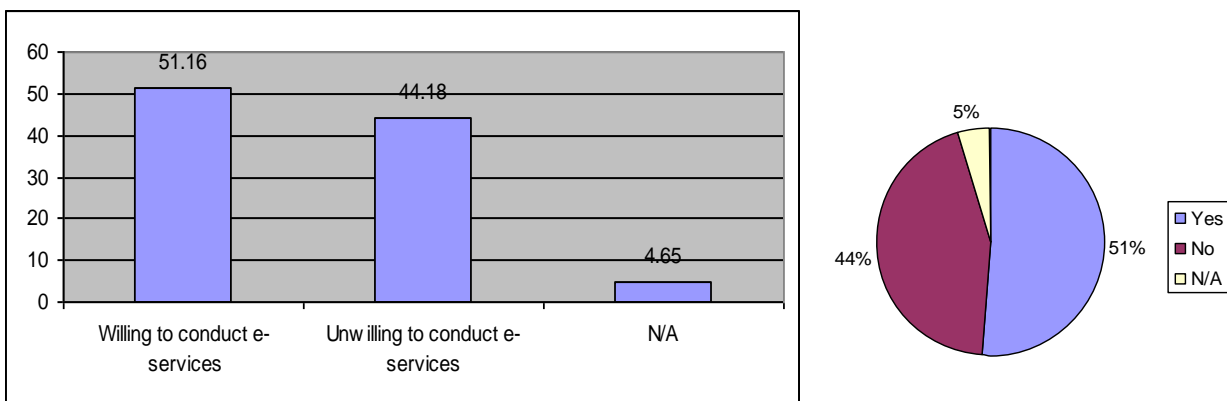
#### **A. Perceived risk**

Perceived risk of IT, staff training and privacy that the Umrah companies have is assumed to have an influence on their views and reservations toward electronic service offered by the government. As shown in Fig 5.3, about 72.3 percent of the companies reported that they do not have any reservations in providing electronic services for their companies and working on providing electronic service for their company. In addition, 8.5 percent of companies reported that they do not have reservations but they have not embarked on providing electronic services just yet. However, companies who have reservations due to IT risk have reported that many factors were involved such as staff training (10.6 %) which was seen to be costly and time consuming. In addition, server and hardware/software requirements were also perceived to be costly (6.4 %).



**Figure 5.3:** IT and electronic service risk

Fig 5.4 shows the companies' willingness to conduct electronic services/transactions where 51.1 percent of companies were willing to conduct electronic services even if it poses privacy risks to their companies. However, 44.2 percent were not willing to conduct electronic services due to the privacy risk and 4.7 percent of the companies did not answer this question.

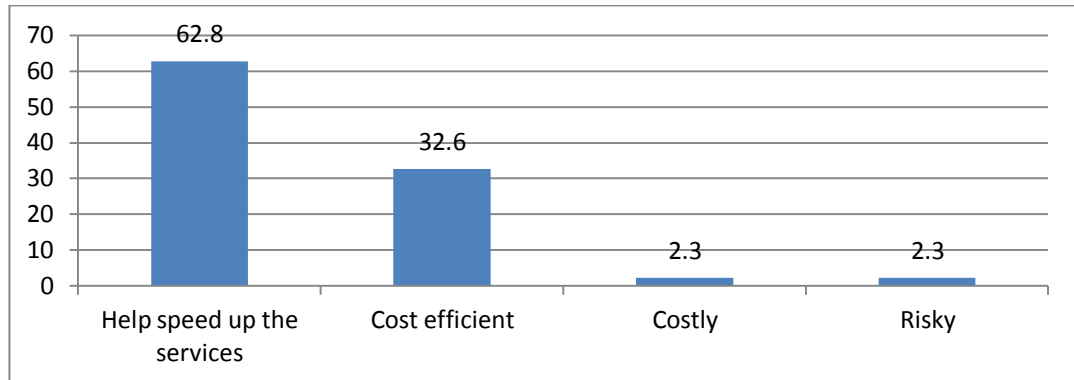


**Figure 5.4:** Privacy risk

The companies' views on electronic service delivery are shown in Fig 5.5. Around 62.8 percent of the companies think that electronic services help speed



up the services while 32.6 percent think they are cost efficient. On the other hand, 2.3 percent think that electronic services pose an online/transaction risk and another 2.3 percent view it as being costly.

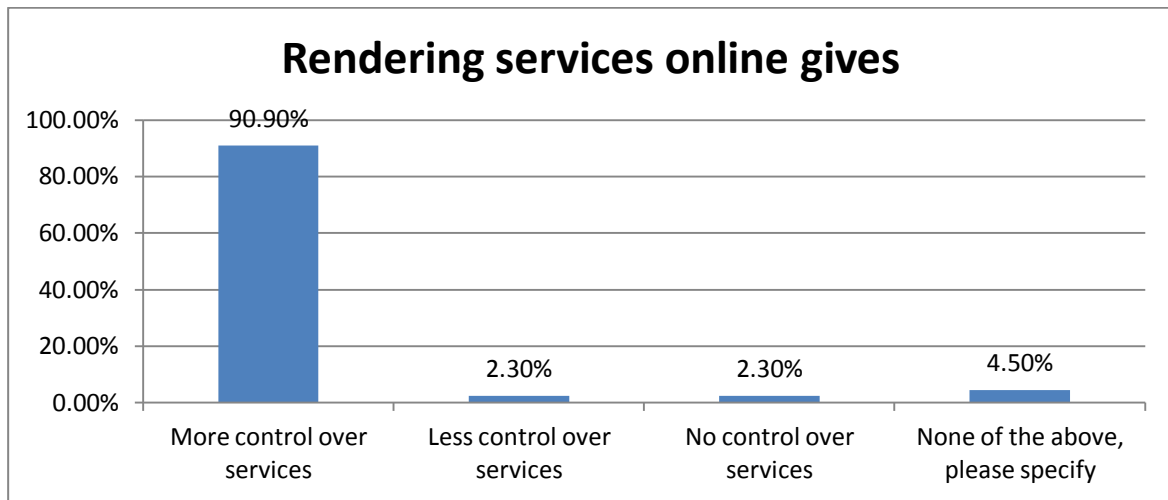


**Figure 5.5:** Cost, speed, and risk factors of electronic services

### **B. Perceived control**

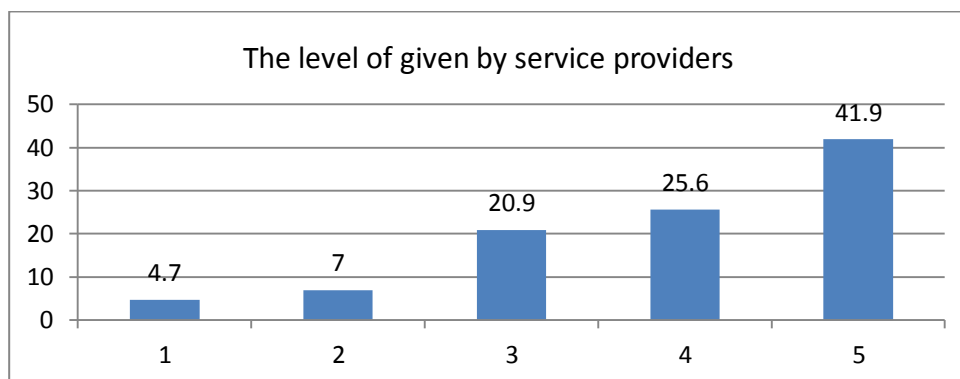
It is fundamental to understand how companies perceive their control over the website/system. Therefore, understanding the influence of the control factor among Umrah companies through gathering the information on the overall level of satisfaction of Umrah companies toward the level of control over electronic service was accomplished. In addition, it was important to understand the Umrah companies view toward the overall satisfaction over the level of control given by the service provider to the company in terms of the design and development of the electronic service.

According to Fig 5.6, the majority (90.9 %) of the companies thought that rendering online services give them more control over service whereas the minority thinks that online services give either less (2.3 %) control or no control (2.3 %). However, of the 43 Umrah companies two companies reported none of the above and did not include details to specify.



**Figure 5.6:** Umrah companies' perception of control over electronic services

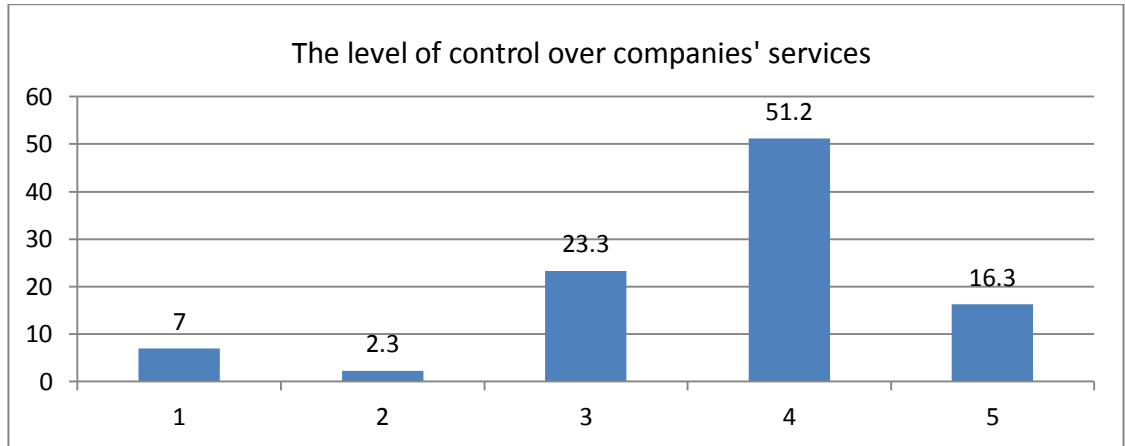
As shown in Table 5.7, is the rate the level of control of the design and development of electronic services given by the service providers to the companies from a scale of 1 to 5 with 1 being the lowest level of satisfaction and 5 the highest. According to the mean value given which was 3.9, most companies were satisfied giving a score of 3 and above with the level of control over their services using electronic services and about 67.5 percent of the companies were very satisfied.



**Figure 5.7:** Electronic services level of control provided by service providers

Similarly, when asked to rate the level of control over the companies' services due to the use of electronic service with a mean value of 3.7, most

companies had an affinity to satisfaction with higher percentages giving a rate of 3 and above (Fig 5.8).



**Figure 5.8:** Level of control provided by Umrah companies' services

### **C. Internet and IT knowledge**

The results presented here Umrah companies' IT Readiness, Staff IT training, and government and IT and Views of the government.

#### **IT readiness**

In terms of how ready the companies are for IT and electronic services usage, about 65.1 percent of companies' presidents/CEOs were very interested in IT which is the main reason why they shifted to electronic services. In contrast about 23.3 percent of the companies' presidents/CEOs had no interest in IT and online services while 11.6 percent reported neither agree or disagree. In relation to exploring the long term plan toward shifting to electronic services, it was found that 60.5 percent of the companies whose presidents/CEOs had deep interest in IT and electronic services had long term development plans. However, 27.9 percent reported having no long term plan to shift to electronic services while 11.6 percent neither they agree or disagree. In addition, about 72.1 percent of the companies whose presidents/CEOs had a deep interest in IT and electronic services and had long term development plan reported that they made changes in their organisational structure in order for them to adapt to

the system. However, 16.3 percent of the companies have not made changes while 11.6 percent reported neither agree or disagree.

It was found that 74.4 percent of companies have identified the needs of IT (i.e. websites, software, applications) that need to be applied/implemented as against those which were not needed before shifting to electronic service. Conversely, 25.6 percent did not identify the IT needs before shifting to electronic service. 90.7 percent of those companies who identified the needs on IT requirements also reported that they have clear and specific objectives in relation to the provision of electronic services (e.g. gradual shift from manual to online; intensive planning and training in light of the upcoming shift from manual to online). However, 9.3 percent showed not to have clear and specific objectives.

In addition 81.4 percent of companies identified services that need to be online against those that can be done manually. On the contrary, 16.3 percent did not identify their services while 2.3 percent reported neither they agree or disagree. Furthermore, it was observed that 76.8 percent of companies have their own websites while 20.9 percent do not have website. Moreover, 2.3 percent of companies did not answer this question.

When asked about employing online purchases, 39.5 percent of the companies were found to employ online purchases while 58.2 percent of the companies did not. About 2.3 percent did not answer this question. In addition, when asked about accepting electronic fund transfers, 81.4 percent of companies accepted while 18.6 percent did not.

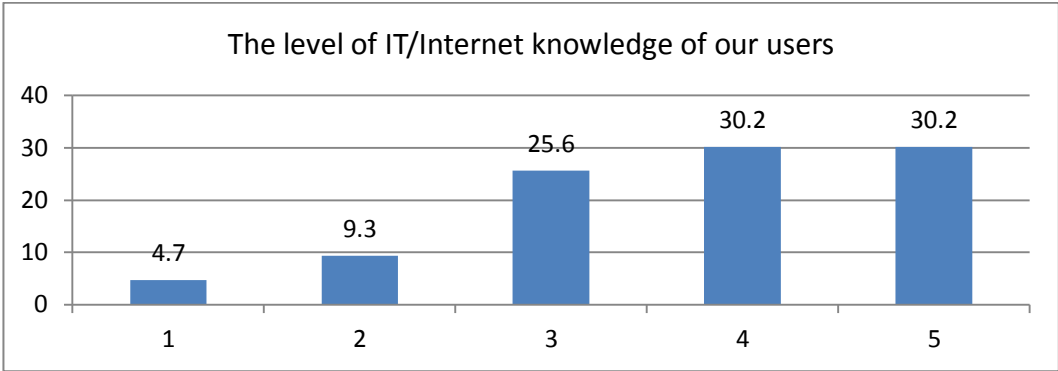
The level of transformation to full engagement into electronic services/transactions among Umrah companies was also investigated. It was found that 34.9 percent think that they have fully transformed to electronic services/transactions, while 65.1 percent have yet to shift to complete transformation. Table 5.6 is a summary of the level of IT readiness among companies. Table 5.2 is a summary of the level of IT readiness among companies.

IT Readiness	Perceive		Do Not Perceive		Neutral	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
President/CEO has deep interest in IT and online that is why we shifted to electronic services	<b>28</b>	<b>65.1%</b>	<b>10</b>	<b>23.3%</b>	<b>5</b>	<b>11.6%</b>
The shift to electronic services was part of the long term development plan of our company	<b>26</b>	<b>60.5%</b>	<b>12</b>	<b>27.9%</b>	<b>5</b>	<b>11.6%</b>
We have made changes in our organisational structure when we shifted to electronic services to adopt to the system	<b>31</b>	<b>72.1%</b>	<b>7</b>	<b>16.3%</b>	<b>5</b>	<b>11.6%</b>
Our company has identified the needs on IT (i.e. websites, software, applications) that need to be applied/implemented as against those we do not need.	<b>32</b>	<b>74.4%</b>	<b>11</b>	<b>25.6%</b>		
Our company has clear and specific objectives in relation to the provision of electronic services (i.e. gradual shift from manual to online; intensive	<b>39</b>	<b>90.7%</b>	<b>4</b>	<b>9.3 %</b>		

planning and training in light of the upcoming shift from manual to online)						
Our company has identified the services (e-Umrah Packages) that need to be online as against those that can be done manually	<b>35</b>	<b>81.4%</b>	<b>7</b>	<b>16.3%</b>	<b>1</b>	<b>2.3%</b>
Our company has an official website	<b>33</b>	<b>76.8%</b>	<b>9</b>	<b>20.9%</b>	<b>Blank=1</b>	<b>2.3%</b>
Our company employs online purchases	<b>17</b>	<b>39.5%</b>	<b>25</b>	<b>58.2%</b>	<b>Blank=1</b>	<b>2.3%</b>
Our company accepts electronic fund transfers	<b>35</b>	<b>81.4%</b>	<b>8</b>	<b>18.6%</b>		
Our company has shifted to fully electronic services/transactions	<b>15</b>	<b>34.9%</b>	<b>28</b>	<b>65.1%</b>		

**Table 5.2:** Umrah companies views of their IT readiness

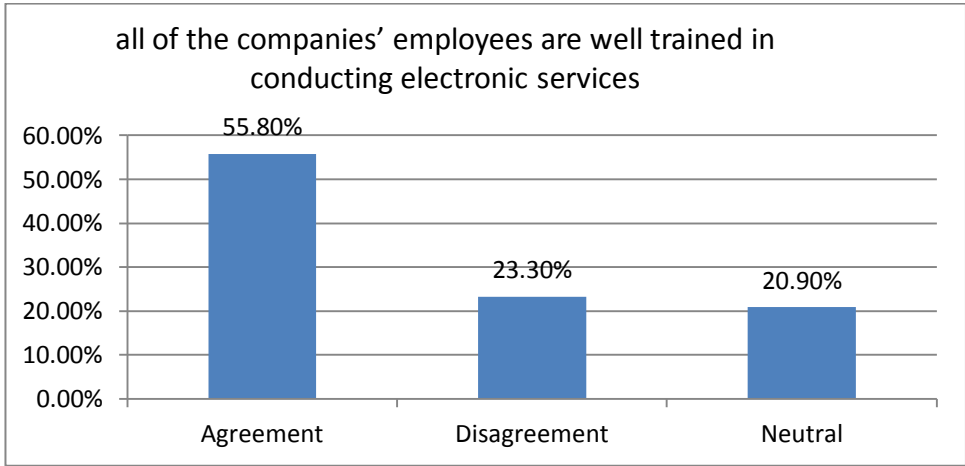
As shown in Fig 5.9, when companies asked to rate the level of IT/Internet knowledge of their employees from a scale of 1 to 5 with 1 being the lowest level of satisfaction and 5 the highest. According to the mean value given which was 3.7, most companies were generally satisfied with the level of IT/Internet knowledge of their users and 60.4 percent were very satisfied.



**Figure 5.9:** Overall satisfaction toward IT/internet knowledge (a scale of 1 to 5 with 1 being the lowest level of satisfaction and 5 the highest)

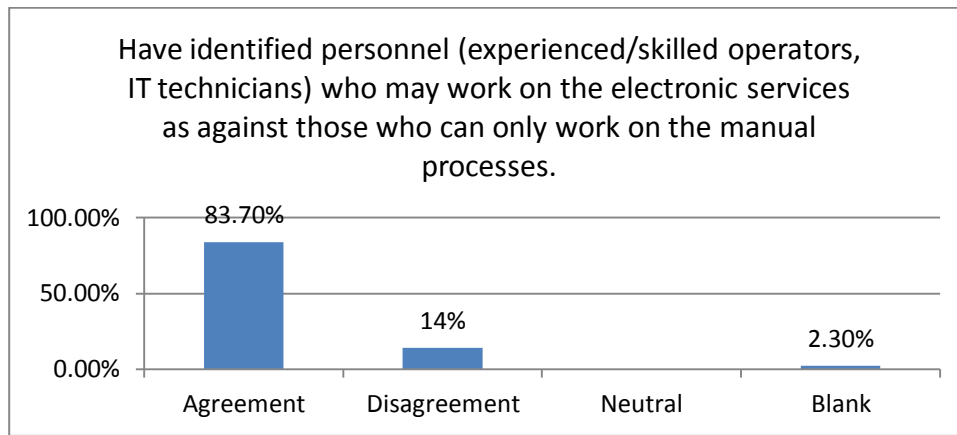
**View of IT training staff and skills development**

It was observed that 55.8 percent of the Umrah companies reported that all of their employees are well trained in conducting electronic services, whereas 23.3 percent reported that not all of their employees are well trained. 20.9 percent reported neither they agree or disagree (Fig 5.10).



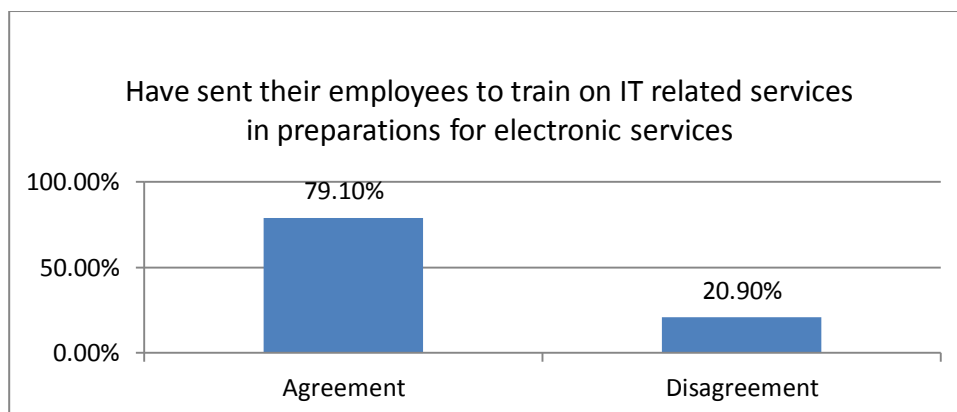
**Figure 5.10:** Training qualifications

In relation to staff classification (Fig 5.11), 83.7 percent of companies identified and classified their experienced and skilled operators and IT technicians who may work on the electronic services against those who can only work on the manual processes. On the other hand, 14 percent did not identify this while 2.3 percent of companies did not respond to the question.



**Figure 5.11: Staff classifications**

Regarding training programs arrangement, 79.1 percent of companies sent their employees to train on IT related services in preparations for electronic services whereas 20.9 percent reported no staff training for IT (Fig 5.12).



**Figure 5.12: Training programmes arrangements**

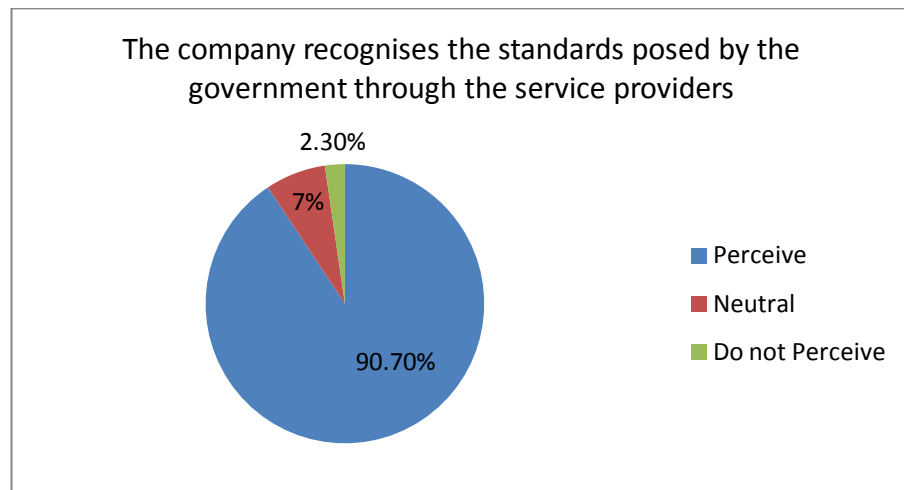
### Views of the government

Companies' view of the government is an important matter in this investigation because this is an e-government project initiated by the Ministry of Hajj which aims to enhance the efficiency of dealing with applications using electronic services. It was important to explore the interactional level between the companies and government to measure the level of support given by the government in term of fulfilling all the needs and requirements that relate to the Umrah services. The companies' views of the government includes views on



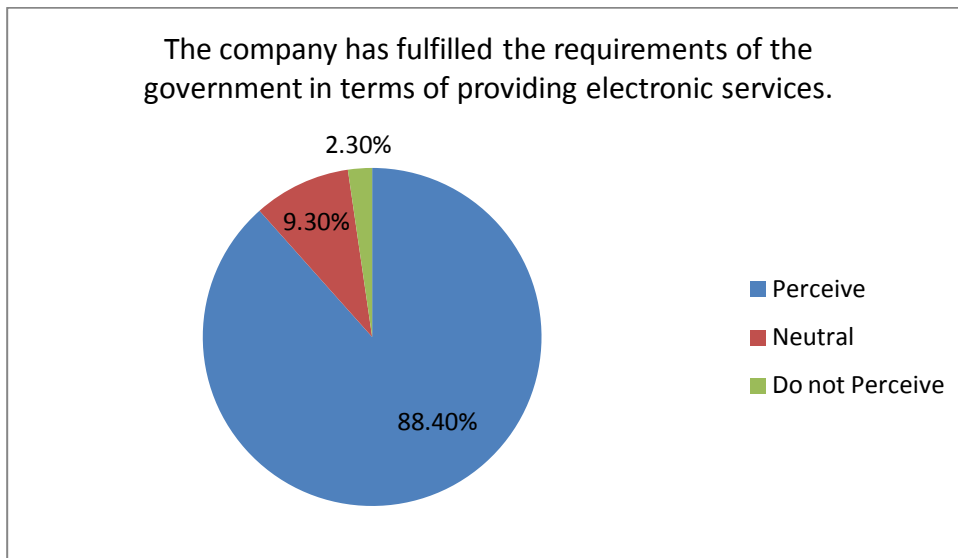
whether the companies have identified the standards posed by the government through the service providers, whether the company has fulfilled the requirements of the government in terms of providing electronic services, whether the company is in constant communication with the government, the support from the government in terms of IT and IT related services (i.e. web design, IT training etc), and the support given by the government (i.e. ease and flexibility in license renewals, Umrah permits, etc.).

The findings in Figure 5.13 reveal that the majority of companies (90.7 %) agreed that their companies have identified the standards posed by the government through the service providers, while a minority of 2.3 percent did not agree. On the other hand, 7 percent of the companies neither agree or disagree.



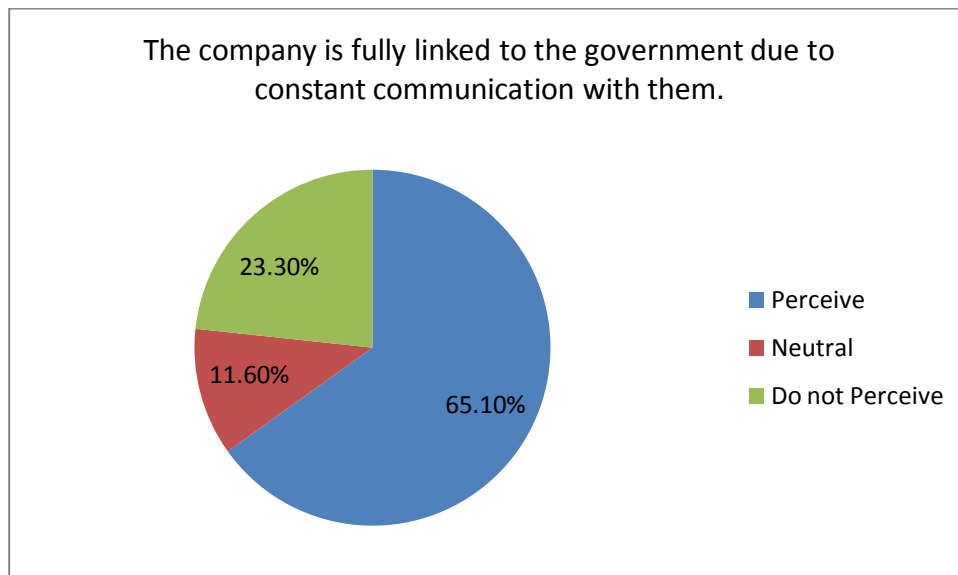
**Figure 5.13:** Views on posed standards

Regarding the compliance of companies in fulfilling the requirements placed by the government (i.e terms, conditions and specifications) related to providing electronic services (Fig 5.14), around 88.4 percent of companies fulfilled all the requirements of the government. However, 2.3 percent did not fulfil the requirements given by the government while 9.3 percent of companies neither agree or disagree.



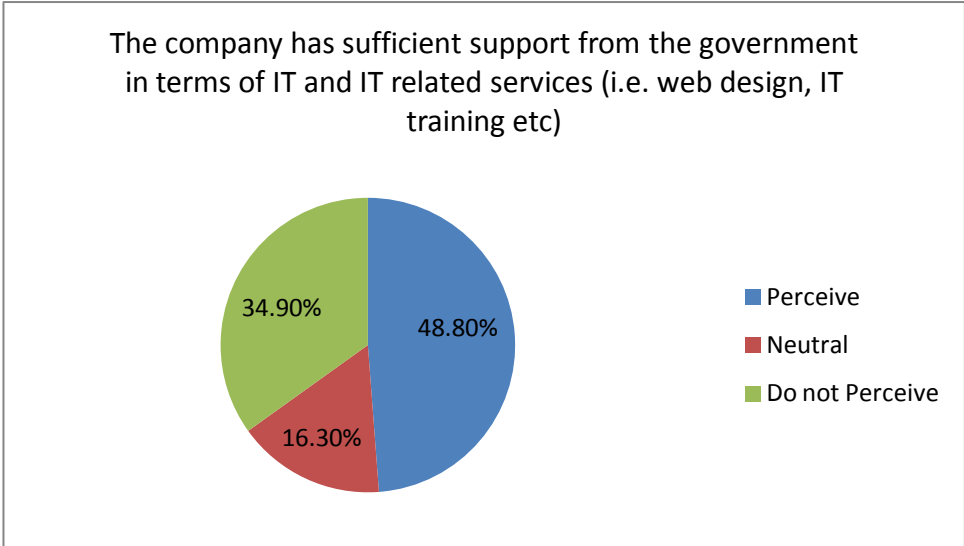
**Figure 5.14:** Views on fulfilling government's requirements

When asked about the constant communication with the government (Fig 5.15), it was found that 65.1 percent are constantly communicating with the government, whereas 23.3 percent of companies reported that they do not have constant communication with the government. However, 11.6 percent of companies reported neither at they agree or disagree.



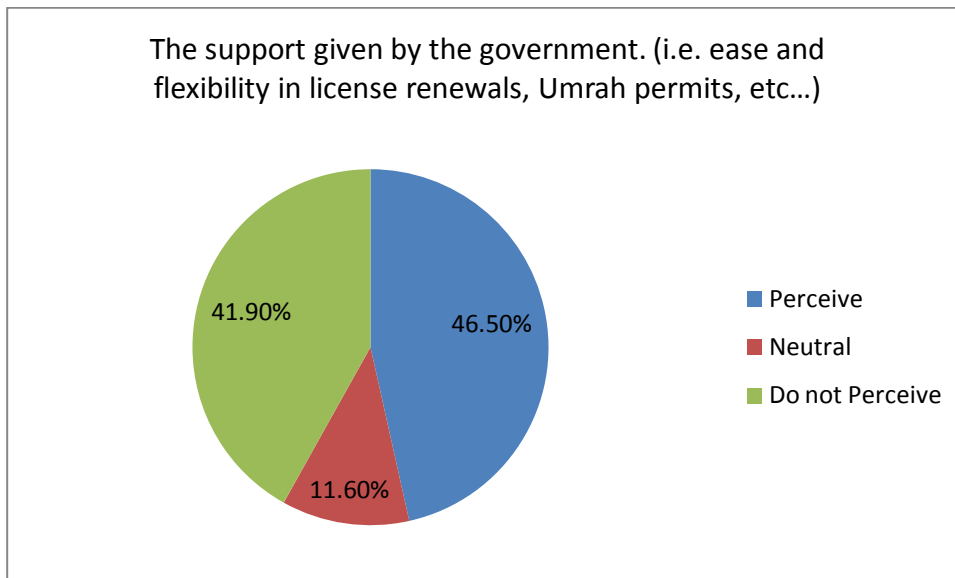
**Figure 5.15:** Views on constant communication with government

According to the support from the government in terms of IT and IT related services (i.e. web design, IT training etc), 48.8 percent of companies reported that they received support from the government concerning web design and IT training of their employees. However, 34.9 percent reported that they did not receive any support from the government regarding IT and its related services while 16.3 percent of companies reported neither agree or disagree (Fig 5.16).



**Figure 5.16:** Views on IT and related services support given by government

In relation to the support given by the government (i.e. ease and flexibility in license renewals, Umrah permits, etc.), 46.5 percent of the companies were satisfied with the support given by the government while 41.3 percent were not satisfied. 11.6 percent of the companies reported neither agree or disagree (Fig 5.17).



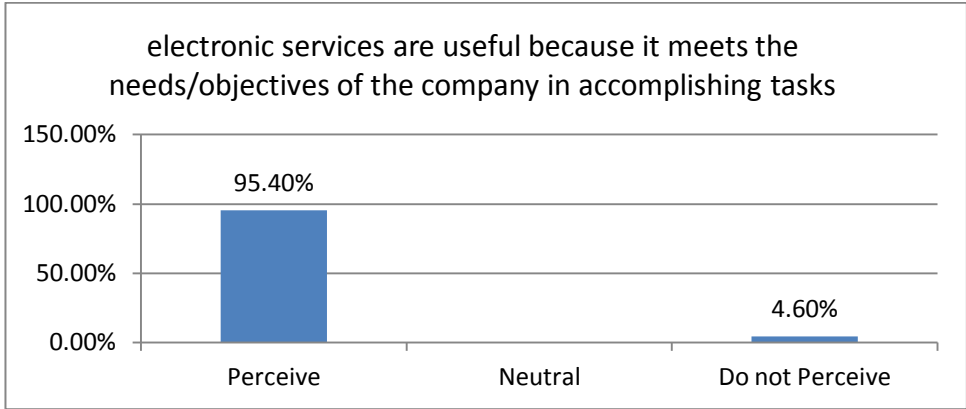
**Figure 5.17:** Views on overall support given by government

## 5.4 Part II (website design)

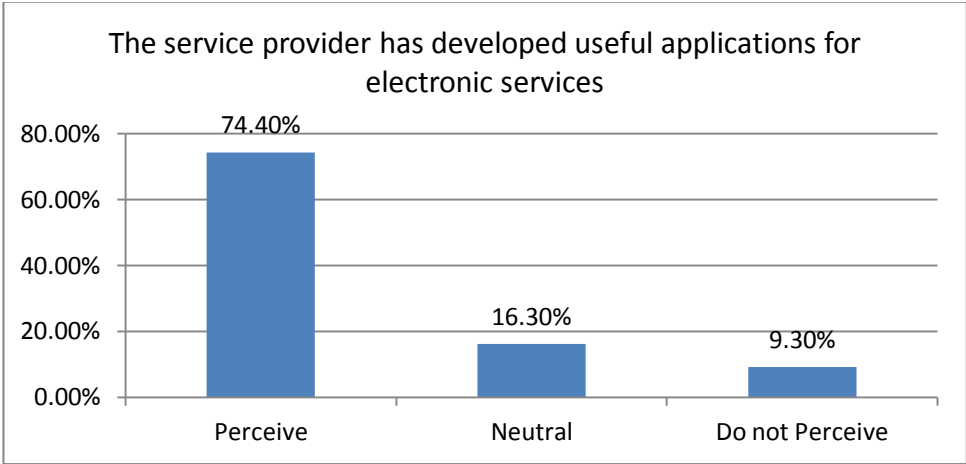
Perceived usefulness and perceived ease of use has been investigated in this research study to explore the views of the Umrah companies toward the website design. These two constructs are used to explore to what extent the websites serve the needs of the Umrah companies and whether they have direct influence on the adoption and satisfaction of e-government services.

### A. Perceived usefulness

Regarding the usefulness of electronic services all companies agreed that electronic service is useful (100%). 95.4 percent think it is useful because it meets the needs/objectives of their companies in accomplishing tasks; but 4.6 percent of the companies did not think that electronic services meet their companies' needs and objectives in accomplishing tasks (Fig 5.18). About 74.4 percent of companies reported that the service providers developed useful applications for their electronic services whereas 9.3 percent disagreed with that while 16.3 reported neither they agree or disagree (Fig 5.19).



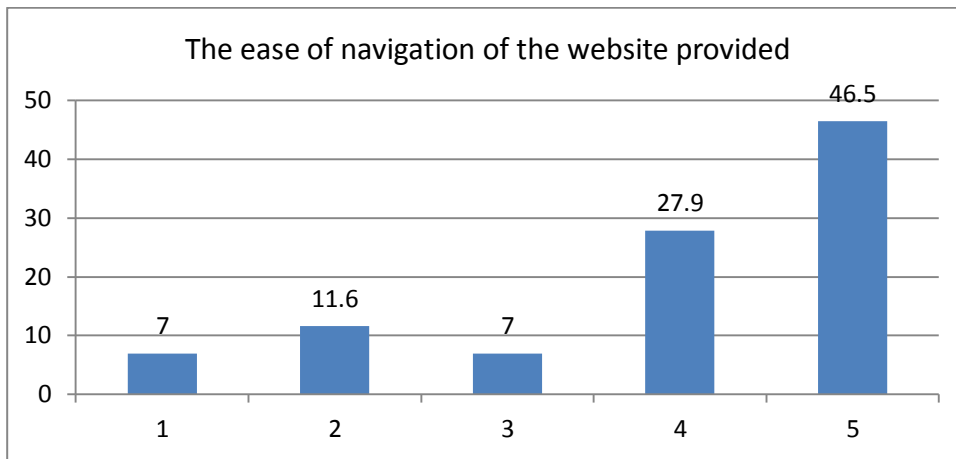
**Figure 5.18:** Usefulness of electronic services in meeting needs and objectives



**Figure 5.19:** Usefulness of electronic services applications

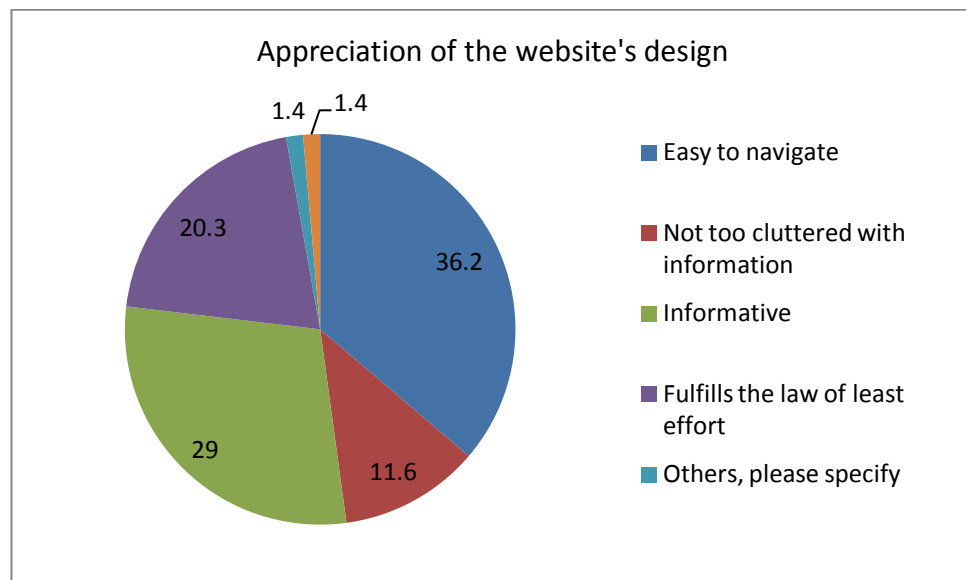
**B. Perceived ease of use**

About 74.4 percent of the companies were very satisfied with the ease of navigation of the website and observed to be above mean value of responses (4.0), while 7 percent were satisfied and gave a score of 3. However, the rest of companies were dissatisfied and below mean value of responses (4.0) as reported since some gave a score of 2 (11.6 %) and some gave a score of 1 (7 %). (As shown in Fig 5.20)



**Figure 5.20:** Umrah companies responses toward on the website's ease of navigation (a scale of 1 to 5 with 1 being the lowest level of satisfaction and 5 the highest)

The perceived ease of navigation of the websites can be explained by about 36.2 percent of companies who agreed that the structure of the websites is easy to navigate, 29 percent thought that the websites are informative; while 11.6 percent thought that the information on the website is not too cluttered. In addition to that, 20.3 percent thought that the web design requires the least effort from the users and provide and informative applications. However, 2.8 percent did not appreciate the service providers' web design and suggested that it needs some improvement in the design and requested to update information on a regular basis (As shown in Fig 5.21).

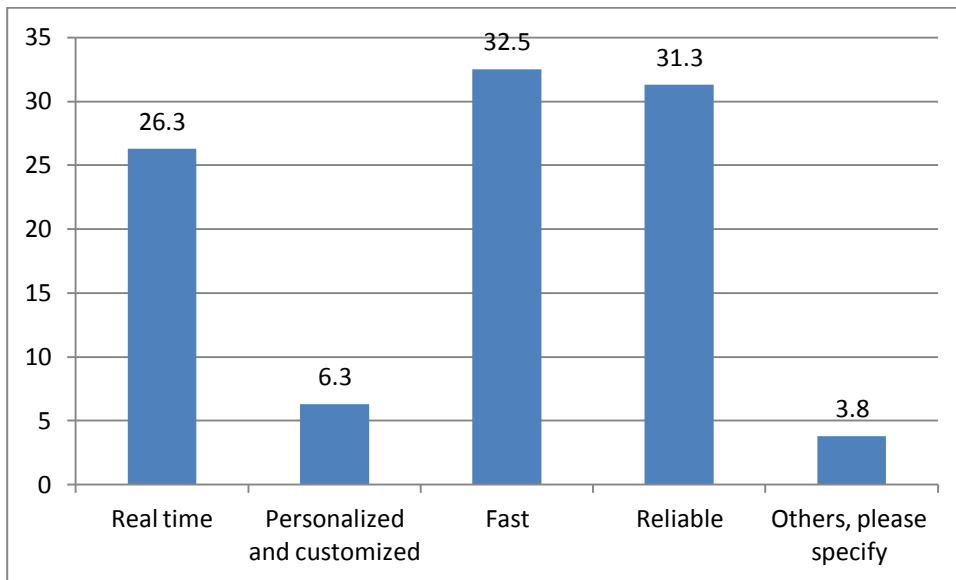


**Figure 5.21:** Umrah companies responses on the appreciation of the design of the website

### 5.5 Part III (service quality)

The views of the Umrah companies toward service quality were investigated in this study. Many factors related to service quality were explored such as reliability, the concept of speed delivery, the rate of use of the electronic services by customers, cost effectiveness, flexibility of service quality, enjoyment, customer servicing, requirement fulfilment and constant development. These aspects were used to understand the views of the companies toward electronic services quality which have an influence on e-government service adoption among businesses.

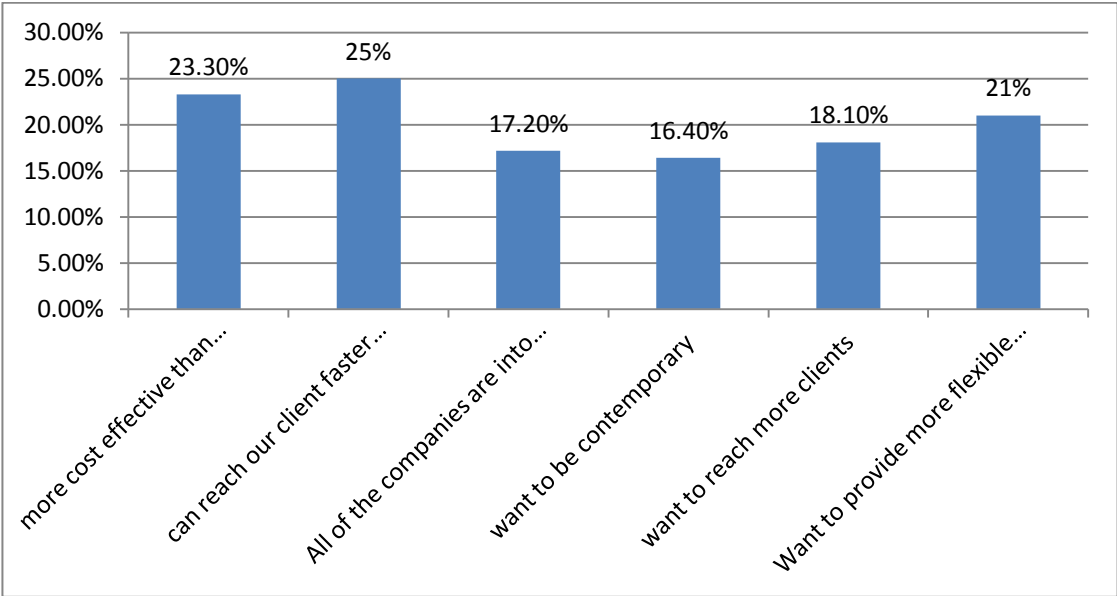
When asked about the companies' views toward service quality of electronic services (Fig 5.22), 26.3 percent reported that they provide electronic service that are real time, 6.3 percent reported that it is personalized and customized, while 31.3 percent thought it is reliable. In addition, 32.5 percent thought it is fast. However, a minority of 3.8 percent did not think that electronic services deliver any quality to their service.



**Figure 5.22:** Views toward service quality of electronic services

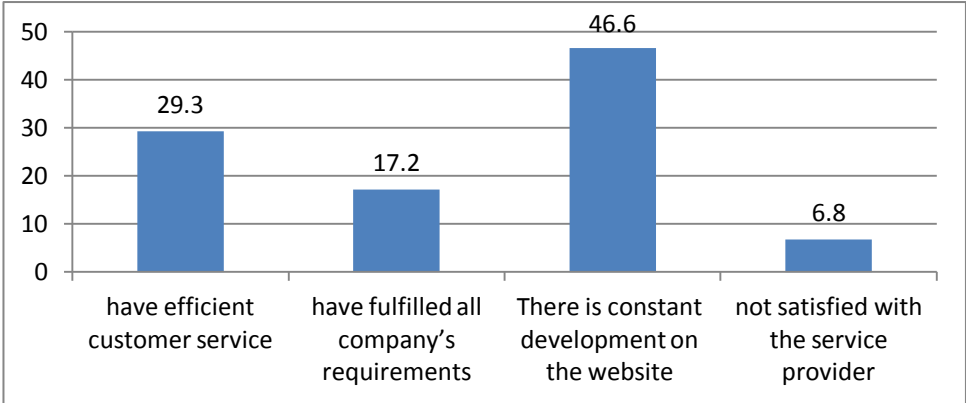
In addition, when Umrah companies asked about the reason for providing electronic services/transactions, 23.3 percent reported that they are more cost effective than manual services. 25 percent think it allows them to reach their clients faster and vice versa while 17.2 percent reported all of the companies are into electronic services and they wanted to follow in their footsteps. Furthermore, 16.4 percent reported they want to be contemporary and 18.1 percent reported providing/engaging in electronic services allows them to reach more clients. In addition, 21 percent reported they wanted to provide more flexible services (Fig 5.23).





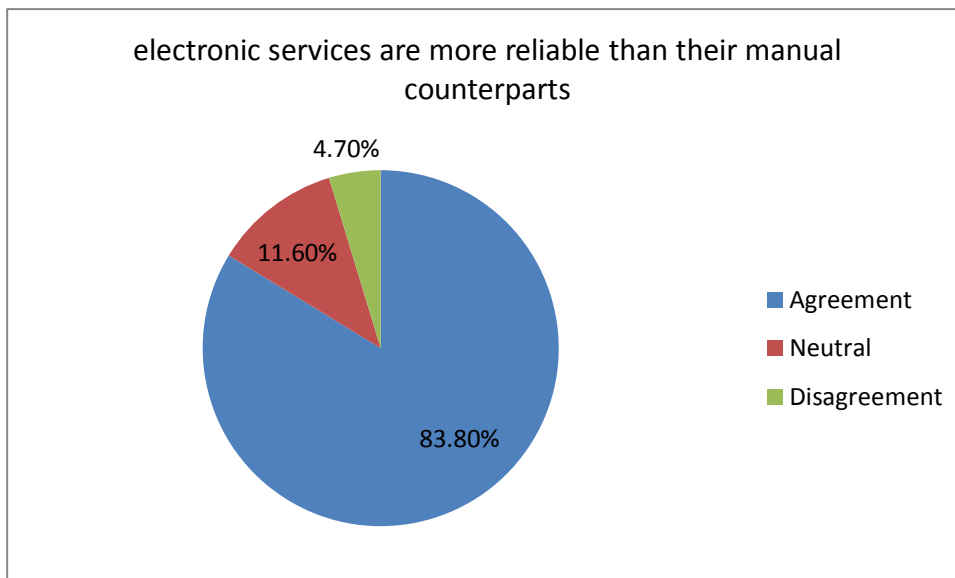
**Figure 5.23:** Reason for providing electronic services/transactions

The satisfaction of the companies with the service quality of the service providers was also investigated and reasons for this was found to be due to efficient customer service as reported by 29.3 percent of the companies. 17.2 percent reported that the reason they were satisfied with the service quality of the service providers was due to fulfilment of companies’ requirements. In addition 46.6 percent were satisfied due to constant development on the website. However, 6.8 percent of the companies were not satisfied with the quality of the electronic services provided by the service providers (Fig 5.24).



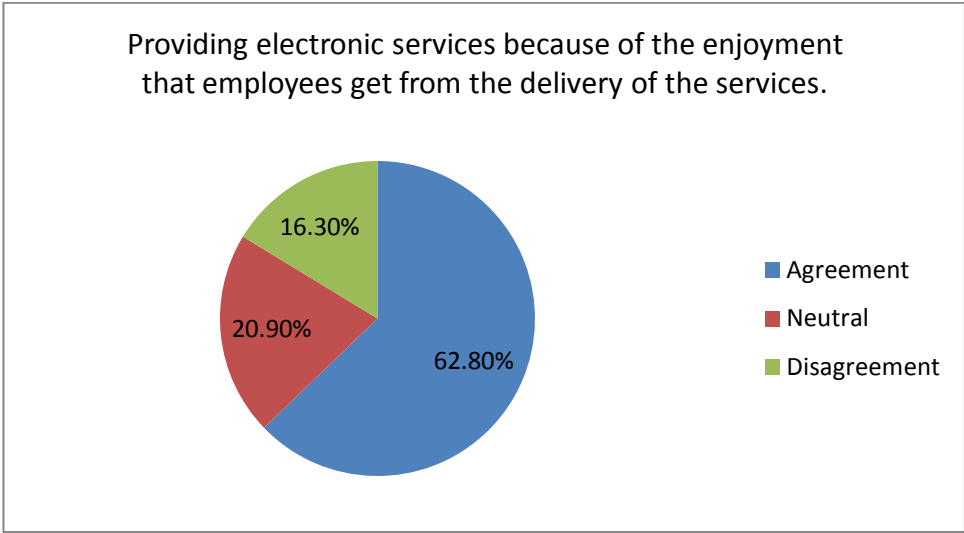
**Figure 5.24:** Views of Umrah companies toward satisfaction of the companies with the service quality of the service providers

The reliability of the services rendered online took part in the quality of service investigation to reflect the companies' views on the satisfactory level toward the reliability of electronic service. It was fundamental to distinguish the aspiration of the Umrah companies' views of the quality of service of electronic services that are rendered online and the manual counterparts. When comparing the reliability of services between electronic and manual services, the majority of Umrah companies agreed that electronic services are more reliable than their manual counterparts (83.8 %), while some companies reported they neither agree or disagree (11.6 %). However, the rest of companies (4.7 %) found manual services more reliable than electronic services (As shown in Fig 5.25)



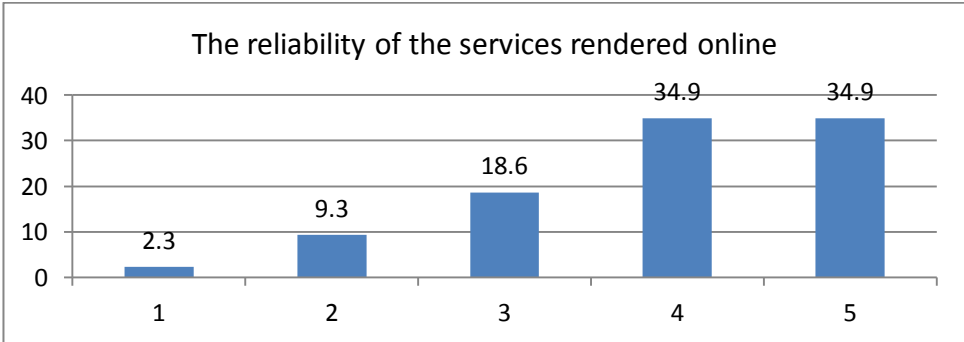
**Figure 5.25:** Views of Umrah companies toward agreements on reliability of electronic against manual)

In addition, the companies were asked whether their employees enjoy conducting electronic services. About 62.8 percent of the companies stated that their employees enjoy using electronic services while 20.9 percent of the companies reported they neither agree or disagree. On the other hand, 16.27 percent did not feel using electronic services was enjoyable (Fig 5.26).



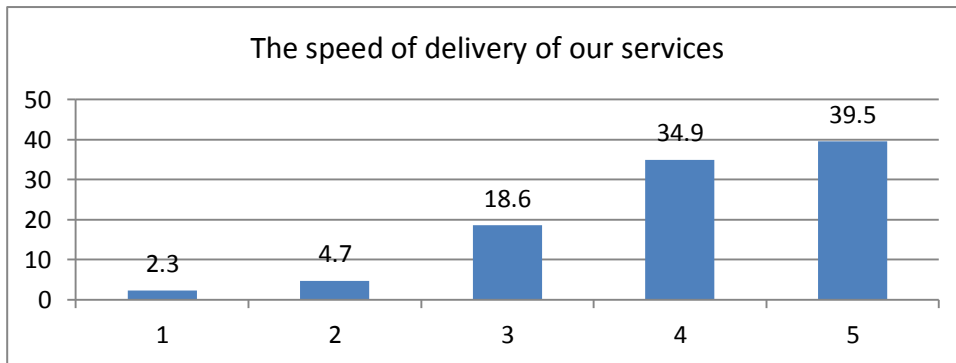
**Figure 5.26:** Views of Umrah companies toward agreements on enjoyment of electronic service delivery)

Fig 5.27 shows the level of satisfaction of the Umrah companies with various factors related to the quality of electronic services from a scale of 1 to 5 with 1 being the lowest level of satisfaction and 5 the highest in what relates to the companies insight towards rating the reliability of electronic services rendered online. The mean value of all responses was 3.9. Almost 69.8 percent were very satisfied and scored above mean value. Also, 18.6 percent were satisfied and gave a score of 3. On the other hand, 9.3 percent of the companies gave a score of 2 and 2.3 percent of companies gave a score of 1 and were dissatisfied.



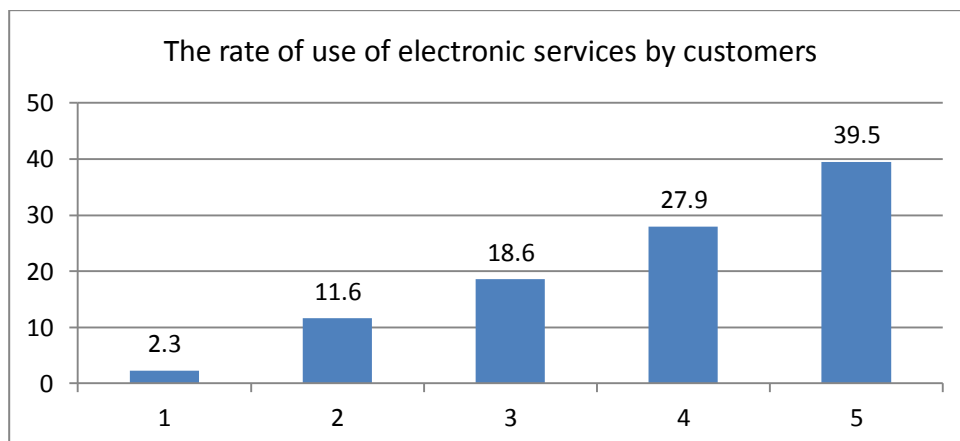
**Figure 5.27:** Reliability of services rendered online

When asked about rating the speed of delivery of the companies' services, most companies were very satisfied with the speed of delivery of services (74.4%) and were above mean value (4.0) of responses, and 18.6 percent were satisfied. On the other hand, the rest of companies were dissatisfied with the speed of delivery which reflected by 4.7 percent who gave a score of 2 and 2.3 percent who gave a score of 1. (Fig 5.28)



**Figure 5.28:** Speed of online service delivery

The companies' level of satisfaction over the rate of use of electronic services by customers is considered one of the aspects that reflect service quality. It was found that of most companies 67.4 percent were very satisfied and were above mean value (3.9). Also, companies who were just satisfied reported by 18.6 percent gave a score of 3. However, the rest of companies reported dissatisfaction with the rate of use of electronic service by customer reflected by 11.6 percent who gave a score of 2 and 2.3 percent (Fig 5.29).



**Figure 5.29:** Satisfaction over the rate of electronic services' use

## 5.6 Part V (satisfaction)

The level of satisfaction of the Umrah companies with the service providers was investigated. This included the views of the Umrah companies on several factors related to the service providers such as the participation of the service provider in the planning and maintenance of the electronic service, the fee charged by the service provider on the design and maintenance of the electronic service, the end product/overall system designed by the service provider, the overall website design from the service provider and the technical support given by the service provider. Therefore, this will reflect the companies' overall level of satisfaction with the service providers and provide an insight to some of the factors which may influence the adoption of e-government services among businesses.

The level of satisfaction of the Umrah companies with the participation of the service providers in the planning of electronic services such as designing and implementing electronic service over the website, developing electronic applications, and identifying the type of services which need to be included online against manual services was investigated. The feedback given by the companies revealed that 51.2 percent of companies were very satisfied with the participation of service providers in the planning of electronic services and were above mean value (3.3). Also, 23.3 percent of companies gave a score of 3 and achieved below mean value of responses (3.3). However, the rest of the companies were dissatisfied with the participation in the planning from their service providers and that was reflected by 11.6 percent of companies who gave a score of 2 and 14 percent who gave a score of 1 (Table 5.3).

The level of satisfaction of the Umrah companies with the participation of the service providers in the maintenance of electronic services such as technical issues that may occur on their website and online applications have also been studied. Of those companies who were satisfied and were above mean value (2.7), it was found that 28 percent of companies were very satisfied with the maintenance of electronic services and 20.9 percent of companies were satisfied and were above mean value. However, the rest of companies were

dissatisfied and that was reported by 18.6 percent gave a score of 2 and 27.9 percent gave a score of 1 (Table 5.3).

Fee charges on the design of electronic services and whether the fee charges given by the service providers had an effect on e-government adoption was also studied. It was found that 44.2 percent of companies were very satisfied with the fee charge on the design of electronic services and their responses were above the mean value of responses (3.3), while 32.6 percent were generally satisfied. However, the rest of the companies reported their dissatisfaction with the fee charged by the service provider on the design of electronic service which reflected by 14 percent who gave a score of 2 and 9.3 percent who gave a score of 1. Regarding fee charges on maintenance, it was found that 32.6 percent were very satisfied with the fee charge on maintenance and 27.9 of companies were just satisfied and their responses were above mean value (3.0). On the other hand, 16.3 percent gave a score of 2 and 18.6 gave a score of 1 were dissatisfied with the fee charges on maintenance (Table 5.3).

Regarding the satisfaction with the end product/overall system delivered by the service providers, it was found that 44.2 percent of companies were very satisfied and were above mean value (3.2). Another 25.6 percent gave a score of 3 and were generally satisfied. However, 20.9 percent of companies were dissatisfied and gave a score of 2 and another 9.3 percent of companies gave a score of 1 reflecting their dissatisfactions with the end product/overall system designed by service providers (Table 5.3).

In addition, the level of satisfaction with the overall website design from the service provider was studied. About 55.9 percent of companies were very satisfied with the overall website design and recorded above mean value (3.7). While 27.9 percent of companies were satisfied and gave a score of 3. On the other hand, 4.7 percent of companies gave a score of 2 and 9.3 percent of companies gave a score of 1 (Table 5.3).

Satisfaction with the technical support given by the service providers over the website and electronic service was investigated. It was found that of most companies 60.5 percent were very satisfied with the technical support given by

the service providers and their responses were above mean value (3.9), while 27.9 percent of companies were satisfied and gave a score of 3. However, 4.7 percent of companies gave a score of 2 and another 4.7 percent of companies gave a score of 1 and dissatisfied with the technical support given (Table 5.3).

Statement	Frequency					Percentage (%)				
	1	2	3	4	5	1	2	3	4	5
The participation of the service provider in the planning of the electronic service	6	5	10	14	8	14.0	11.6	23.3	32.6	18.6
The participation of the service provider in the maintenance of the electronic service (missing responses=2)	12	8	9	6	6	27.9	18.6	20.9	14.0	14.0
The fee charged by the service provider on the design of the electronic service	4	6	14	10	9	9.3	14.0	32.6	23.3	20.9
The fee charged by the service provider on the maintenance of the electronic service (missing responses=2)	8	7	12	4	10	18.6	16.3	27.9	9.3	23.3
The end product/overall system designed by the service provider	4	9	11	11	8	9.3	20.9	25.6	25.6	18.6

The overall website design from the service provider (missing responses=1)	4	2	12	10	14	9.3	4.7	27.9	23.3	32.6
The technical support given by the service provider. (missing responses=1)	2	2	12	10	16	4.7	4.7	27.9	23.3	37.2

**Table 5.3:** Umrah Companies responses on the overall satisfaction with service provider a scale of 1 to 5 with 1 being the lowest level of satisfaction and 5 the highest

## 5.7 Part IV (e-government adoption)

### (A) e-Government adoption in term of supporting the move to e-government adoption

It was found that the majority of the companies fully supported the move for e-government adoption. When asked to list the reasons for that, a high number of companies reported this was mainly due to speed of delivery, ease of use, saves time and effort, accurate, reliable and confidential. (Table 5.4)

There are many other reasons listed however by a lower number of companies which include work improvement, improving the progress toward the best electronic applications practices, credibility, public interest, follow up with tasks and constant follow up. In addition, increased productions, facilitation of all transactions, work in comfort, reducing manual labour (eg. wandering around ministries, service providers, etc.) and reducing traffic jams in the streets were some other reasons stated by some companies. Other reasons include reaching the highest level of quality in providing ideal electronic services, accomplishing objectives and keeping up with development and improving the services of clients were also mentioned. Lack of administrative corruption, keeping pace with the improvement of the electronic and information technologies, flexibility, increase the performance and to spread our services more broadly are also other reasons stated by some companies.



<b>Factor</b>	<b>Perceived By</b>
<b>Fast, Speed, Promptness and Quickness</b>	18 companies
<b>Ease, Easy, Easier</b>	23 companies
<b>Time Saving</b>	11 companies
<b>Effort Saving</b>	8 companies
<b>Accuracy</b>	4 companies
<b>Confidentiality</b>	3 companies
<b>Reliability</b>	2 companies

**Table 5.4:** Most common factors identified by a high number of Umrah companies that have fully supported the move to e-government adoption

Suggestions made by some companies for improving electronic services which may encourage its adoption include:

- 1) Carrying out a comprehensive survey to investigate in depth the nature of the electronic network in the field of Umrah.
- 2) Connecting all the electronic systems into one portal that gathers all relevant sectors which provide services to reduce any defects in a particular area.
- 3) Electronic services that are not in the same level of development in the different departments hence, unifying the level of development of the electronic services of the different departments would be useful and faster.
- 4) Eliminating the service provider and providing a direct contact with the Ministry of Hajj would be beneficial. Paperwork is still used, therefore reducing

the amount of paperwork and providing all communications electronically should be considered.

### **(B) e-Government adoption in term of the intention to implement the e-government services**

The majority of the companies have shown full intention of implementing e-government services. When asked to list reasons for this, it was found that this was mainly due to easiness and guarantee of confident deliverance, the safety and security that it provides in term of transaction completion, reaching the best online services, reducing work decelerations “slow work”, facilitating the administrative tasks and accomplishing tasks without referring back to paper-based processes. In addition, developing performance, being useful for accomplishing large number of daily work requirements, flexibility to terminate the transactions, providing accuracy and discipline, delivering better services, benefiting our interests and clients, providing more benefit than manual processes are all other reasons for implementing e-government services. Furthermore, being convenient, easy and containing correct information, absence of randomness, facilitating transactions and procedures, avoiding mistakes and reducing the number of task reviews are some other reasons. Similarly, keeping pace with the global development in the field of information technology, speeding communications between companies and their customers, eliminating the routine governmental transactions that take long time and effort are all other reasons mentioned by the companies.

A suggestion was made by some companies for improving electronic services which is to link all the involved departments in the field of Umrah together into one electronic system to save effort in accomplishing tasks. This would have a positive effect on the clients and would facilitate the procedures of delivering electronic service with confidentiality and would speed up the services of electronic transactions.

### **5.3 Analysis of findings and further investigation**

The findings of this quantitative study revealed that Umrah companies were aware of the benefits of adopting e-government services and were motivated

and willing to implement them. However, some Umrah companies had concerns over e-government adoption and suggested some essential issues that might improve electronic services in the private sector and may encourage its adoption. For example, one issue suggested by some Umrah companies was the idea of integrating all electronic systems and services into one portal that gathers all the need of Umrah businesses. Another issue indicated by some Umrah companies is that electronic services are not in the same level of development in the different departments of the government hence, unifying the level of development of the electronic services of the different departments would be useful and faster. A further issue indicated was the existence of paperwork; therefore reducing the amount of paperwork and providing all communications electronically should be considered. Furthermore, some Umrah companies suggested more studies on the government to business relationship in the e-Umrah system in order to identify the barriers and deficiencies affecting this relationship such as standardisation of services which will help improve the quality and overall process of the electronic services.

Consequentially, all these suggested issues in addition to Umrah companies' view on government in term of communication and support were found to guide this research to investigate not only the adoption of electronic services and the developed interface of the e-Umrah system and its electronic service delivery, but investigating profoundly what is behind this interface/portal through understanding infrastructure of the e-Umrah system. Therefore, there is still a need to understand the reasons for the presence of these issues/gaps which prevent the full implementation of e-government services among Umrah companies in Saudi Arabia which will also be addressed.

Following this chapter is the result chapter which analyses the qualitative case study of this research study.

# CHAPTER

# 6

## Results (Analysis and Interpretation)

- 6.1 Dimension (1): Built on an installed base (iB)**
- 6.2 Dimension (2): Embeddedness (E)**
- 6.3 Dimension (3): Transparency (T)**
- 6.4 Dimension (4): Learned as part of membership (LPM)**
- 6.5 Dimension (5): Links with conventions of practice (LCP)**
- 6.6 Dimension (6): Reach or scope (RS)**
- 6.7 Dimension (7): Becomes visible upon breakdown (BVUB)**
- 6.8 Dimension (8): Embodiment of standards (ES)**
- 6.9 Summary**

## **Introduction**

This chapter demonstrates the findings from the empirical research which was conducted to investigate the e-Umrah system. The chapter aims to analyse and interpret the e-Umrah system based on the eight dimensions which were proposed by Star and Ruhleder (1996), which consist of (1) built on an installed base, (2) embeddedness, (3) transparency, (4) Learned as part of membership, (5) links with conventions of practice, (6) reach or scope, (7) become visible upon breakdown and (8) embodiment of standards.

### **6.1 Dimension (1): Built on an installed base**

#### **6.1.1 Introduction**

As Star and Ruhleder (1996) defined installed base as infrastructure which already exists from a previous base inherits strengths and weakness. Installed base in this study takes shape from the nature and roots of the system. Describing chronologically the development of the system and traces its emergence and improvement throughout time. The installed base exists as a result of the sequence of changes occurring in the operations, tasks, work practices and activities before and after the development of the electronic system. Consequently, installed base inherits the strengths and weaknesses of the electronic system's designs, integrations and functions and identifies the existing barriers which hinder the system from being developed.

In the case of the e-Umrah system the current system has been built on the foundation of the old manual system after passing through various phases of development and improvement. During this transition, the system experienced many challenges which were resolved before reaching the current design. However, one challenge has remained from the old system which has not been resolved and, at the same time, new challenges have emerged related to the new system.

#### **6.1.2 Legacy system (the foundation of the system)**

The foundation of the system was based on self services where the Umrah visitors performed all Umrah arrangements by themselves. These arrangements

included applying for an Umrah visa at the Saudi embassy/consulate in their country, and making reservations for flights, transportation and accommodation. One of the Umrah companies described this as:

*'It used to be a list of paper based activities, where the Umrah visitor applied for a visa via embassies/consulates, and waited for the visa to be issued. The Umrah visitor was the person responsible for his Umrah programme, and the one who took care of flights, hotels, and transportation reservations.'* (Category (1), Company (8))

This traditional way was developed to include a paper based system or a "manual" system, where international travel agents were authorised by the Saudi Government (the Ministry of Foreign Affairs and the Ministry of Hajj) to collaborate with the Saudi embassies/consulates to mediate Umrah services. These services include issuing visas, providing visitors with full travelling packages including initial airline reservations, transportations within Saudi Arabia and accommodation.

The rise of the new, organised manual system authorised by the Ministry of Hajj facilitated the link between the international travel agents and the Umrah services in the Kingdom. One Umrah company described a typical procedure:

*'The work was all manual through letters and contracts between Umrah companies and international agents. We finally submitted the applicants' information list to the embassies/consulates and we got the visas, so there was no role for the Ministry of Hajj.'*

Following this, the Ministry of Hajj reorganised the Umrah services and began to develop an idea which would serve all Umrah beneficiaries, such as Umrah companies, international agencies, and Umrah visitors. The idea of the Ministry of Hajj involved rearranging and reorganising the manual Umrah processes and translating them into an electronic process. In addition, the Ministry of Hajj introduced four service providers to work as mediators between the Ministry of Hajj, Umrah companies and the Web Service Providers which deliver the e-Umrah system of online electronic applications to the Umrah companies. One company described the three phases (unorganised, manual and electronic systems) as:

*'There are three systems, or phases of system development. The first was about visa issuance from the embassies/consulates. An Umrah visitor who desires to come for Umrah applied to the embassy/consulate, received a visa,*

*came to the country and managed by himself for such things as looking for flights, transportation, and accommodation. He took full responsibility for the journey. Also, this first phase had no systematic procedures and relied on the individual Umrah visitor to apply for their own visa. Following that was the second phase, where the Ministry of Hajj established the manual system, in which all operations and activities were conducted through an organised and systematic paper base. In this second phase, the Ministry of Hajj put the manual systems in place by including international agents and Umrah companies to facilitate visa applications and travelling arrangements. The third phase is the electronic system, where the Ministry of Hajj introduced service providers, which enabled Umrah companies and international agencies to access the Umrah system through their web interfaces, and conduct operations.’ (Category (1), Company (36))*

In addition, one service provider explained:

*‘All the previous Umrah operations were translated into electronic operations and many things were added to the electronic system in a systematic, arranged, organised, and, most of all, electronic way. Then, as it developed, more features began to be added such as the Umrah Package/Programme, which ensures reception/farewell, accommodation, and transportation.’ (Category (2), Service provider (2))*

The Ministry of Hajj also set some basic technical requirements and specifications for the service providers to deliver services to Umrah companies and international agencies. One service provider explained:

*‘As for our dealing, the Ministry required dealing electronically through offering dual channels between us, and they required a special room for servers, specific security for servers, and a specific number of employees, which means there are certain known conditions which are routine and understandable.’ (Category (2), Service Provider (1)).*

The service providers piloted the e-Umrah system before they began to deliver services. Some service providers have developed their e-Umrah system in-house, as one service provider described:

*‘We as a service provider had our services developed by our technical experts to deliver easy and prompt processing for our clients when accessing and using of the system. Our speed became reasonable and the user became able to work from any place. The internet became a major issue in everything.’ (Category (3), Service provider (1))*

While some service providers developed the web interface system by their own efforts, other service providers indicated that their systems were built through outsourcing, with the assistance of international technology companies, and reported:

*'We began based on a study and contracted with international companies from outside the country and they built this system, met with Umrah companies, asked them about the issues which they would benefit from, and began a new integration.'* (Category (3), Service provider (2))

In addition the service providers ensured the system was flawless by meeting with the conditions and standards of the Ministry of Hajj. One of the service providers described the method of ensuring a flawless system, and reported this:

*'We make sure that we receive requests from the Umrah companies on time, and confirm that these requests, which we pass to the Ministry of Hajj, reach their destination. It is dependant on the Ministry every year to make adjustments, adding or removing new issues.'* (Category (4), Service provider (4))

### **6.1.3 Relationship of legacy and innovative system (old and new systems)**

Regarding the relationship between the old system and the new electronic system, Umrah companies have indicated that the electronic system was based on the old procedures and standards. One Umrah company described the nature of the relationship as:

*'The system was based on paperwork and over time it has improved greatly through the addition of the electronic services. However the system is founded on the previous paperwork system.'* (Category (2), Company (6))

The new electronic system has been adjusted by the addition of regulations and standards to enhance the Umrah system's base for the purpose of providing high quality services to Umrah visitors. One Umrah company described the relationship as:

*'The latter is built on the former, with many adjustments and additional regulations that serve the Umrah visitors.'* (Category (2), Company (8))

This was in agreement with the service providers' feedback. The majority of service providers indicated that the new system is an extension of the old system as one service provider explained:

*'The latter is based on the former which means the new system was built on the old one.'* (Category (7), Service provider (4))

This continuous progression of the electronic system has completely shifted the system to an efficient, enhanced and modern way of practice.



#### **6.1.4 Legacy and innovative system functionality (sequence of change before and after the New System)**

The Umrah companies noted that the old system lacked many elements, mainly because its only job at the time was to issue visas and nothing else. There was no service provided to Umrah visitors who were responsible for their own travelling plans and programmes. This was very tiring and time consuming for the visitors and often a complex job since there was no official party responsible for monitoring visitors' needs and supervising their journeys. Also, there was no assurance of rights or guarantees of packages, even after the international agencies and Umrah companies joined the Umrah services. Umrah procedures were very random and lacked sufficient organisation for the arrangement for services. With the rise of the electronic system, these gaps in the service were recognised and improved to guarantee the rights of the Umrah visitors, and to deliver efficient services that fulfil their demands. One of the Umrah companies explained this:

*'It has been changed far to the better. Everything is organised in the way of arrangements, communications, and electrical dealing. Now they go according to plans and schedules, due to the guarantee of packages from both parties, their international travel agencies and the Saudi Umrah companies.'* (Category (3), Company (1))

In addition, the electronic Umrah system has witnessed three major changes in system integration. The first was the vast improvement where the Ministry of Foreign Affairs was integrated into the e-Umrah system's infrastructure. Integrating the visa system into the e-Umrah infrastructure reduces the time and effort spent in obtaining a visa. One Umrah company elaborated:

*'Obtaining visas has become easier and faster now. It used to take about 72 hours to obtain a visa from the moment of submitting the application, then the processes was reduced to 48 hours, and currently it has been reduced again to complete the processes within 24 hours. This is the gradual development of the electronic visa system.'* (Category (3), Company (13))

The second major change involved the bank. The bank (Samba) was targeted by the Ministry of Hajj to be integrated into the e-Umrah system's infrastructure to enhance the system's base and to provide efficient services. In the past, Umrah companies had to send representatives to the bank to deal with payments, but after Samba bank became part of the infrastructure they could

conduct payments electronically. According to Umrah companies dealing with payments at Samba bank could be a time consuming business and the representatives might even fail to complete their tasks. As one described:

*'The old way of conducting payments used to be so slow. The payment process was conducted at the bank and there was no electronic service, so they used to print the vouchers and go to the bank and pay it. Employees used to face overcrowding which prevented them from paying the fees and sometimes affected the visitors' requests and delayed the process of issuing visas or excluded them from obtaining visas.'* (Category (4), Company (33))

The final major change was when the Ministry of Hajj introduced the Ministry of Interior as a fundamental entity to the e-Umrah system's infrastructure. The primal role of the Ministry of Interior was important since they were responsible for registering the records of the Umrah visitors' entry and exit from the country.

The Ministry of Interior introduced a new follow-up system in the e-Umrah system's infrastructure which supplies the Ministry of Hajj with data related to the entry and exit of each Umrah visitor. The reason for introducing this system was to notify Umrah companies of the status of their Umrah visitors and to enable them to follow their Umrah visitors' movements inside the country until they depart. Another reason for integrating the follow-up system was to reduce issues of illegal residence, disappearance, and failure to leave the country before the expiry date of the visa, thereby improving supervision over the Umrah visitors' movements. One Umrah company concluded:

*'The e-Umrah system varied greatly in term of providing efficient services and prompt processes, and became radically different since it was transformed from manual transactions to electronic. Now, within half an hour, you conduct a transaction and achieve its result. Also, the Ministry of Interior (Elm) has introduced the new follow-up system which supplies the Ministry of Hajj with the entry and exit data of each Umrah visitor. Allowing them to follow up and track their movements inside until they leave the country.'* (Category (3), Company (15))

The service providers shared the views described by Umrah companies. They indicated the considerable efforts needed to deal with the paper-based system, thus:

*'It has improved in term of paper becoming much less used than before. We used to use papers, with unbelievable numbers of papers coming in and out of companies, and this type of transaction has been totally cancelled, except for some procedures and processes such as visitors' progresses/movements inside*

*the country, which still use a manual, paper-based process.’ (Category (8), Service provider (4))*

### **6.1.5 Legacy and early electronic system barriers and challenges**

As the foundation of the Umrah system, the relationship between the current and the old systems, and the sequence of changes in service and operation were discussed, it is important to address the former challenges which influenced the expansion of the installed base, and hence hindered the progress of the Umrah system to develop an efficient and effective implementation.

One of the major challenges which existed after the development of the e-Umrah system was the continued existence of manual/paper-based tasks such as flights, transportation and accommodation. One Umrah company explained this situation as:

*‘The paper-based activities were the main problem, because of the loads of documents, which required a great deal of the employees’, time, and effort to process all applicants’ requests.’ (Category (4.1), Company (13))*

One service provider also explained the paper-based deficiencies, and added:

*‘The manual system was slow. There was too much cluttered information in the applications, and long and complex mechanisms and processes of work. The visa numbers (MOFA reference numbers) were not electronic and were paper-based, and sent in a diplomatic briefcase. Then the system was developed, and everything became electronic. One piece of evidence for the improvement is the percentage of visa visitors’ entries which used to be 1 million a year, and nowadays, with the electronic system, we can deal with more than 5 million applications. This indicates the difference and the performance’s acceleration, which has increased both the speed and the percentage of successful transactions, and increased visitors’ entries to the country.’ (Category (10), Service provider (1))*

The Ministry of Hajj was aware of the challenges which were caused by the workload of manual/paper-based tasks and their effect on the e-Umrah system’s work practices. Therefore, the development process required some time, since the Ministry of Hajj was developing the e-Umrah system’s base, gradually transforming the identified manual work practices into fully electronic practices. One Umrah company explained the influence of change in the work flow and the e-Umrah system’s base and explained:

*'The paper-based system was the main barrier, and when the percentage of electronic transactions increased, the percentage effectiveness, and efficiencies of work flow become much improved.'* (Category (4), Company (14))

Another challenge was technical and related to data entry. This type of challenge occurred when the system reached a further phase of development and most of the work practices which were conducted in a manual manner, transformed to electronic means. The Umrah companies entered all the data and details, in addition to providing manual documents to the Ministry of Hajj. This type of dealing was perceived to be exhaustive and consumed massive amounts of effort and required a great deal of arrangement. One of the Umrah companies explained:

*'The problems were in the data entry, which needed a massive number of employees and documents, because it was primitive system. The dates of visas and passports all needed to be entered, and the number of visitors was enormous. That meant that every section had at least 5 or 6 individuals who were specialists in entering the data correctly and had knowledge of all Umrah transactions, processes of operation and tasks related to their sections.'* (Category (4.2), Company (35))

Then the technical issues related to data entry were partially solved when the task was assigned to international travel agencies.

Another challenge, related to the Ministry of Interior, was an exiting issue. Before the emergence of the electronic system, the rate of Umrah visitors' disappearance or failure to leave the country was high. This was because there was no system to follow up and track Umrah visitors, no linkage between the ministries of Hajj and Interior and no data available. This led to the problem not being resolved, and no attempt being made to reduce the issue until recently. The introduction of the electronic system made it easier to follow up the visitors and supervise their entry and exit. One Umrah company explained that:

*'In the past, the escaped or 'not departed' case wasn't important and not a cause for concern because there was no way it could be tracked. However the electronic system transformed this issue, making it much easier to control and supervises.'* (Category (4.2), Company (40))

Another Umrah company explained:

*'What I would like to mention is that the rate of escape or disappearance of the visitors has been reduced and the rate has become lower and lower throughout the years.'* (Category (4.2), Company (2))

The issue of illegal residency was relevant to service providers with the collaboration between the Ministry of Hajj and the Ministry of Interior reducing the rate of people illegally staying in the country. One service provider explained this decrease:

*'Regarding the not departed visitor or disappearance cases, in the old times it used to be that in 20% the cases where permission to enter the country was granted, the Umrah visitors would disappear, escape, or not depart, which the Ministries of Hajj and Interior allowed. They reduced gradually the number to 15% and now the figure has reduced to 1% for each Umrah company or international agent and 1% for each country of origin. This means that for each country, if 1% of Umrah visitors disappear, escape, are lost or do not depart, the Ministry stops issuing visas for that country until the case is solved and the visitors have departed.'* (Category (6), Service provider (4))

#### **6.1.6 Existing challenges**

Two challenges were identified to the current system. One was the increased integration of the Ministry of Interior, and the other was related to the development of the e-Umrah services. One further minor barrier was also identified by a minority of Umrah companies which related to developing and improving the Umrah fieldwork activities.

The Umrah companies encountered problems when the Ministry of Hajj assigned the Ministry of Interior the responsibility of recording the entry/exit movements. This was because of improper data entry on the Ministry of Interior's behalf due to mistakes, errors and incorrect data entries by the Passport Department officers when they entered the Umrah visitors' data. As a result of this failure to record data, the Umrah companies found that Umrah visitors could still remain in the system and count as negative cases against the company. This issue caused many challenges to the Umrah companies and put the companies at great risk. In some cases it led to the suspension of the companies from practicing Umrah services until they proved that the visitors had actually departed. One of the Umrah companies described this:

*'The subject which concerns us most is those Umrah visitors who are recorded as non-departed in the Ministry of Interior's system (passport/immigration offices at Saudi ports) and who have actually departed to their lands' (Category(5), Company (8))*

The Umrah companies thought that the problems might arise from the processes undertaken by the Passport Department officers. The Passport Department officers conduct certain manual processes, such as stamping Umrah visitors' passports, then shift to electronically recording the Umrah visitors' passport information in the Ministry of Interior's system. This was perceived to be one of the issues causing problems. Also, these long manual processes conducted by the Passport Department were found to create errors and/or missing data since the Passport Department officers have enormous workloads and conduct these processes with hundreds or thousands of Umrah visitors during a day. One Umrah company reported:

*The linkages need to be enhanced and further developed to reduce the problems associated with visitors' entry and exit information. They should be scanned electronically rather than manually. These are ports' problems and we wish to find solutions for all ports where the visitors get a stamp. This is the problem which has caused most of Umrah companies to be closed.'* (Category (5), Company (38))

Unlinked ports (passport offices) have other problematic issues which also relate to the Ministry of Interior and cause problems that relate to the entry-exit processes. The Umrah companies became aware of the mechanisms and procedures taken at air ports to find a method of solving this case. However, the more challenging issue which faces Umrah companies was the mechanism to solve the problem of failure to depart issues in land and sea ports. One Umrah company specified that:

*'The non departure cases in all Saudi ports, other than airports, are some of the challenges that we still face. We are used to knowing the mechanisms and solutions for airport cases. However the land ports still have no solution and we are struggling with this still'* (Category (5), Company (9))

Another Umrah company provided an example of those Umrah visitors who enter from one port and exit from a different port:

*'Not linking all the Saudi ports (land, air, sea) together in the system causes other challenging issues. The government proposes linking all these ports together under one system. For example a UAE visitor has entered Saudi by land and left the country to India by air or sea. In that case the*

*passport/immigration office does not find his departure in the system because the Passport Department's land system is not connected with the air or sea systems. As a result they count this as non departure/escape/disappearance/failure to leave the country case against the Umrah company' (Category (5), Company (16))*

It was emphasised that this problem stems from the fact that the process of checks is conducted manually. The Umrah companies usually submit official letters requiring pledges and proofs of departures which they obtain from the international travel agencies. These proofs are obtained by the international agencies personally contacting the Umrah visitors to seek a copy of their exiting stamps. Finally, the Umrah companies send the proofs, which contain the stamps along with the airline flight manifests to prove that the particular Umrah visitors have left the country by these flights, to the Ministry of Hajj. One Umrah company explained:

*'The failure to leave the country case is a problem. We suggest that the process be made fully electronic, even the proofs we submit for the Umrah visitors who did not depart. They should be submitted through the system, even the pledges, if they can be made electronic it would be better' (Category (5), Company (15))*

Another Umrah company gave an example of their experience in proving these cases and emphasised the difficulties caused by slow responses and processes from the Passport Department side. The service providers also agreed that this issue of exiting is one of the significant problems and still has incomplete processes and procedures which require consideration by the Ministries of Hajj and Interior. The Umrah company reported this:

*'First of all the problem of passport and immigration offices' mistakes and errors are a barrier to the system. We had this year (2011) nearly 250 Umrah visitors who had failed to leave the country (non departure/escape/disappeared/lost) and have had problems with the Passport Department. We worked hard till we proved 100 cases but could not complete the procedures for the remaining 150 because of the routinely slow response and processes of the Passport Department.'* (Category (5), Company (16))

*'The major problem is those visitors who have actually left the country from a Saudi port but still exist in the system. You also have a problem with movements, as this stage in the system has incomplete processes and procedures and should be reconsidered and reorganised (they do not deal properly with cases such as when a visitor exits the country, or one goes into hospital, or has lost his/her passport). It might be that the Passport Department has internal problems such as inadequate staffing or they are untrained to work*

*with technology, or they are not adopting or keeping pace with latest technologies to improve the work.’ (Category (11), Service provider (4))*

The second major existing challenge which was reported by a majority of Umrah companies is the Umrah services. These issues relate to accommodation, transportation, operational plans and flight structures.

The accommodation problems rest with the classified and unclassified hotels. The Ministry of Hajj is working along with the Saudi Commission for Tourism and Antiquities to classify all the hotels in Makkah and Madinah. These hotels should meet safety and other standard conditions in order to be classified. The problem begins after Umrah companies have received the approval for their operational plans, but find that there is no accommodation for Umrah visitors because all available accommodation is occupied. They cannot use unclassified hotels to complete the Umrah visitors’ packages due to them not complying with the Ministry’s conditions, or they are still to be added to the e-Umrah system. One Umrah company revealed that:

*‘There are lots of unclassified hotels, and the system does not accept them. For example the city of Madinah has only 40 classified hotels. So before the Ministry can impose the use of only classified hotels in the electronic system, given the massive number of visitors who come annually to Saudi, they should complete all the classifications of hotels. The system is still under development, and we, as Umrah companies, suffer as we are unable to make appropriate packages/programmes for our clients.’ (Category (5), Company (16))*

Another Umrah company added:

*‘Regarding the mechanism of hotel classification, you have 4 thousand classified hotels and 10 thousand unclassified, and the Ministry orders you to deal with the classified only. The classified hotels are few and can not cater for the number of visitors. If they can find solutions for this it will solve a significant problem’ (Category (5), Company (32))*

The problem was also noted by a service provider:

*‘There is a lack of capacity in the hotels of Makkah and Madinah which have been classified by the Saudi Commission for Tourism and Antiquities. There are hotels, but they are not classified because it is necessary for each hotel to provide fire department licenses for security and safety. This problem still occurs. Makkah has only had 80 classified hotels and Madinah only 160 classified hotels and this is not enough.’ (Category (10), Service provider (4))*



Similar problems also occur where the capacity of the transportation does not match the number of Umrah visitors approved by the Ministry of Hajj. One Umrah company reported that:

*'The transportation companies should improve their services by increasing the number of their drivers and vehicles especially in seasons such as Ramadan. We have a vast amount of visitors and we need them to increase the capacity of the transportation to withstand them during that month. This service is not in the system and there are no categorisations or lists for transportation, which should be included in the system.'* (Category (5), Company (12))

Also, one of the Umrah companies indicated that the accommodation and transportation infrastructure is not included in the system's base as services, and the Ministry of Hajj is advised to develop these more, because these two services are major, related services. The company stated that:

*'I believe the Ministry of Hajj should reconsider the hotel and transportation procedures and insert the services into the system'* (Category (5), Company (23))

Another problem related to transportation categories. The Ministry of Hajj did not improve the transportation services to an advanced level and this still requires further development. Also, the system only serves groups of visitors and lacks services for the individual, even though programmes are set up for individual Umrah visitors. One Umrah company revealed that these issues should be reconsidered in the design of the e-Umrah system and reported that:

*'The system is built to deal with groups not individuals. They should reconsider the design of systems to include and serve individual visitors as well.'* (Category (5), Company (5))

Another issue mentioned by some Umrah companies is not knowing the method of evaluation for approving or disapproving operational plans. The companies indicated that the Ministry usually assesses the prior performance of each company and decides whether they can approve or disapprove their request. The Umrah companies also mentioned that the assessment processes are unclear. After the Umrah companies receive a disapproval they begin working through the issues using a manual, paper-based process and by sending their representative to discuss the causes of their requests not being approved. Furthermore, it was perceived that this issue can cause a lack of transparency in the operational plans since the Umrah companies submit a

request to the system and receive the result but the companies cannot interact through the system or receive comprehensive reports and evidence giving the reasons for not accepting their request. They often send their representatives to discuss the result personally with the Ministry of Hajj. These issues are major and perceived as problematic for Umrah services. One Umrah company gave a clear example of this problematic issue and reported that:

*'Another issue is the operational plan. You enter into the system every country you are involved with along with the number of Umrah visitors from each country, and you enter the international travel agents that you work with. Then the Ministry reduces the number that is requested. So this is another case where we face problems where there should be a certain mechanism/procedure/process. We wish they would reconsider this case and its mechanism because after we receive the approved numbers of clients and we find out that this is not the number quoted then we send an official letter and the process turns into a paper-based procedure. There is no transparency in the giving and taking of this' (Category (5), Company (16))*

Flight services is another type of service which has been mentioned as problematic since it is not included in the system, and where the Ministry of Hajj should extend the e-Umrah system's infrastructural base. The Umrah companies specified that flight information needs to be added to the system to enhance following up and supervision. It was also mentioned that the service providers should cooperate with the Ministry of Hajj and the airline sector to include flight services. This would enable the Umrah companies, when they set their package, to find all flight and airline details in the system, and enable them to offer faster services to their clients. One of the Umrah companies addressed this problematic issue clearly and reported that:

*'We also need schedules for the daily flights, to know the arrival flights and relate it to our groups that are coming in on these flights. This can be done by the service providers. The problem is that the flight information is inaccurate and as far as I know the service provider attempts to organise the flight schedules with the airlines but they do not receive a response. If the airline companies cooperate with the service providers and allow them to implement and update the airline companies' daily schedules into the system, this will improve the system.'* (Category (5), Company (6))

## **6.2. Dimension (2): Embeddedness (E)**

### **6.2.1 Introduction**

Embeddedness is the extent to which an infrastructure is embedded in other technologies, social arrangements, structures or services. It is where a set of services have emerged from, or have been incorporated within various larger environments. This same set of services may therefore be incorporated within the component structures of other involved entities. These different entities will be expected to have their own policies, processes and procedures which will govern the common services and contribute to creating the appropriate infrastructure arrangements and technologies. In addition, these different entities which have different policies and practices are expected to be integrated completely and not partially or manually, in order to be completely embedded.

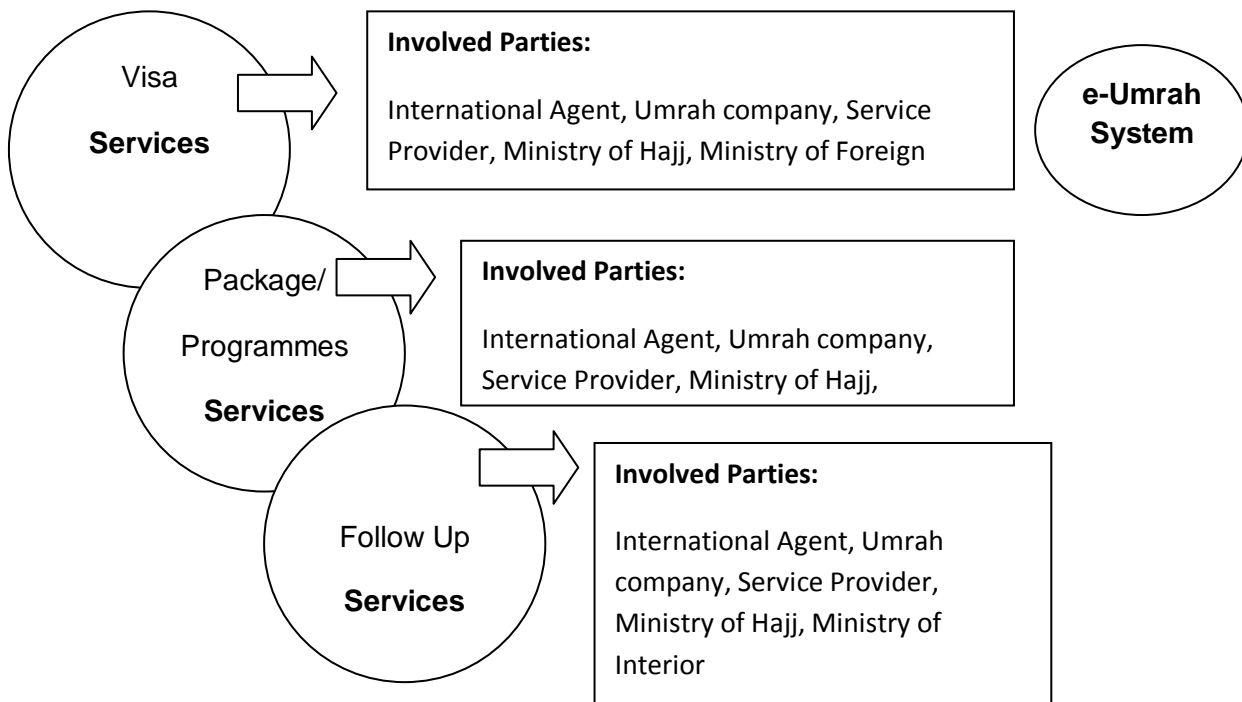
In this context, the e-Umrah system is an infrastructure which has embedded within a network of other infrastructures (e.g. e-Umrah system infrastructure is part of a bigger infrastructure which connects through the Ministry of Hajj the following entities: Ministry of Interior, Ministry of Foreign Affairs, Samba bank, and four service providers) which enable the e-Umrah system to provide useful services, tasks, operations and activities. Examples of such services include Umrah packages/programmes, visa issuances, e-payments, follow-up services, etc. These services are the result of heterogeneous systems, networks and policies of the Ministry of Hajj and the other entities. Thus, the embeddedness of entities and infrastructures within the e-Umrah system includes various procedures, arrangements, technologies and collaborations, which shape the e-Umrah system infrastructure and have a significant influence on the development or improvement of the e-Umrah system.

The analysis of this section considered five categories to increase the knowledge about e-Umrah system infrastructure. The five categories involve innovated system-current design, innovated system-dimension of design, innovated system current role/position of entities, innovated system playing part of entities in the overall bigger system, and the relations of activities and operations to e-Umrah system infrastructure. Hence, these five categories

expanded on the definition of embeddedness which was proposed by Star and Ruhleder (1996).

### 6.2.2 Innovated system - current design

This category described the electronic Umrah system's current design. Umrah companies have described the shape of the system and its existing components and functions. All Umrah companies shared nearly the same views of the e-Umrah system's current design which is shaped under three major parts/structures. The first part consists of the dealing with the visa services, the second part is the Umrah package/programme services, while the third part dealt with visitor's follow up services. Also, all these parts have involved parties where each party of each service is involved and has its own role/position, playing part, particular type of activities and operations, in addition to the relationships of their activities and operations in the e-Umrah system as illustrated in Fig 6.1.



**Figure 6.1:** Shape of current e-Umrah system's design

Furthermore, the current design of the e-Umrah system is still not functioning completely electronically and is under development and improvement. This is

because the Ministry of Hajj is still developing and improving the system through enhancing the current services of the e-Umrah system to be implemented in entirely electronic manner that facilitate the implementation of e-Umrah services. It was explained that:

*'The e-Umrah system's current design is still under development. The Ministry of Hajj is still improving the system when the Ministry identifies the barriers which hinder the implementation of services.'* (Category (1), Company (39))

### **6.2.3 Innovated system – dimension of design (Individual or part of an overall bigger system)**

Almost all Umrah companies identified the current structure of the e-Umrah system and added additional explanations on why this system became an individual or part of a bigger system.

The e-Umrah system was justified as an individual system dedicated for the Umrah activities. However, this individual system was perceived as a part of an overall bigger system because of the linkage, association and integration between many parts that are involved and shaped a form of unity under common principle which is deliverance of Umrah services. In addition, it was indicated that the chief part in the system is the Ministry of Hajj. This is because the Ministry of Hajj own the system and is considered as the major linking part which links the private sector along with the ministerial parts of the system. Also, the Ministry of Hajj works as a mediator with dual channels with all parts of the system through sending and receiving data from all entities of the system. Some of the Umrah companies specified that the Ministry of Hajj is the one who has the full control, guidance and supervision over all. In addition, this integration consists of ministries such as Ministry of Hajj, Ministry of Foreign Affairs (including embassies/consulates), and Ministry of Interior (Including passport departments in all Saudi ports land/sea/air). Also, the system includes the private sector which consists of Sejel company (Ministry of Hajj data and operations centre), service providers (technology solutions companies), Umrah companies (national operators), international travel agents (external operators), and a bank (Samba Bank). According to the companies' feedback, the primary subject of this whole system is the Umrah visitors who are the one who benefit

from the developments and improvements of the system since the more the system facilitates the more comfortable visitors become. One Umrah company explained that:

*'The e-Umrah system is a part of an overall bigger system which considers a network and the main link which connects all of its parts is the Ministry of Hajj.'* (Category (2), Company (12))

Furthermore, the e-Umrah system contains some parts that have their own systems and linked with the Ministry of Hajj to share and distribute information. One Umrah companies stated that:

*'The differences in its parts is another issues since each Ministry (Hajj, Foreign Affairs, and Interior) has its own system but the Umrah system is the major aspect of the whole system and the Hajj and Umrah data centre (Sejel) is the major linkage between all these Ministries in organising and arranging information for services delivery, supervision and control'. (Category (2), Company (21))*

#### **6.2.4 Current role, position, and playing part of entities in the overall system**

Here two categories are combined together as they are related to each other. These two categories are (1) current role and position and (2) playing part. The current roles and/or positions of other parties are essential in the e-Umrah system as it explains the fundamental role and position of all these involved entities. Each involved entity has a primary role and responsibility in the e-Umrah system which helps to facilitate Umrah services to visitors and serve the economy. One Umrah company explained this role and position as:

*'It is a system that link Ministry of Foreign Affairs, Ministry of Interior, service providers, Umrah companies, and International agents and provide all aspects of Umrah servicing and security. For example, the Ministry of Hajj is responsible for integrating all systems and services, the Ministry of Foreign Affairs is responsible for delivering visa services, and the Ministry of Interior is responsible for tracking entry and exit of all Umrah visitors and reporting their movements inside and outside the Saudi borders. So I believe that this system is more than just issuing visa but providing diverse services and many diverse entities are involved each has its role in this overall integrated system.'* (Category (3), Company (31))

This explains that the e-Umrah system is a collaborative network where each entity has its own technologies, social arrangements and internal structure. However, the primary role is played by the Ministry of Hajj since the Ministry of

Hajj is responsible for linking, distributing tasks and arranging the requirements and specifications of dealing and service delivery among ministerial and private sectors.

### **6.2.5 Relations of activities/operations to e-Umrah system infrastructure**

This category presented an interpretation to the relations of everyday activities and operations to the e-Umrah system. Furthermore, it identifies and discusses in depth the activities and operations conducted in the e-Umrah system and the barriers which arise among entities which hinder the operations activities to be completely sunk into the e-Umrah system infrastructure.

The purpose of developing the electronic Umrah has been to utilise modern information technology to improve the whole Umrah experience. This includes providing visa processing, flight reservations, reception/departure, transportation, accommodation, as well as tours to sacred attractions and catering. These depend on the specific requirements of the Umrah visitors. Also, the operational plan is a newly developed service which the Ministry of Hajj has recently rolled-out. Further e-Umrah requirements include following up operations which are designed to provide services for Umrah visitors who wish to extend their visa, visit relatives in the country, have been hospitalised, failed to depart the country, have lost their passport, died in the country or who are in jail. The following services have been identified by Umrah companies as constituting barriers which obstruct the flow and delivery of the service to its highest potential.

This critical analysis of the e-Umrah system's infrastructure aims to objectively examine the component services within the e-Umrah system. The investigation is intended to reflect the issues arising from the procedures and practices that belong to other entities and which are completely, partially or not sunk into the e-Umrah system infrastructure.

#### **6.2.5.1 Entry/Exit processes**

The Ministry of Interior was an essential entity in the e-Umrah system whose border control procedures, such as controlling visitors entering and exiting the country, were integrated into the e-Umrah system so that the system can have

up to date information about visitors' status. The rationale to integrate border control procedure into the e-Umrah system was to tackle the illegal immigration problem caused by those Umrah visitors who failed to leave the country after their visa expired. The mechanism of the procedure is that the Ministry of Hajj passes information from the Ministry of Interior about seemingly problematic cases to the service providers who then pass the information to Umrah companies for them to follow up their visitors who appear to have failed to leave the country. In other words, Umrah companies are accountable for and responsible for their visitors' entry to and exit from the country. This procedure is considered to be an important part of the e-Umrah system as is the visa issuing process.

Taking advantage of the information provided by the Ministry of Interior and the procedure of follow-up embedded in the e-Umrah system, the Ministry of Hajj can evaluate Umrah companies' performance in following up their visitors. However, the majority of Umrah companies claimed that there were communication problems between Umrah companies and both the Ministry of Hajj and the Ministry of Interior when following up the visitors, which have impacted on their relationship with the Ministry of Hajj and business operation. The reason for this is the rigidity of the e-Umrah system and the lack of service and network relationships between this system and the other entities. The design of the e-Umrah system did not link all the necessary procedures from other entities; therefore Umrah companies cannot solve any potential problems using the system but only manually, outside the system. This has drawn concern from the Umrah companies, as the manual procedures were complicated and time consuming especially when involving more than one entity. One Umrah company concluded:

*'We hope that some services can be taken into account and solutions found for the manual transactions. We want illegal residence cases to be fully electronic. For example the service does exist in the system, but for reporting purposes only, the rest of the process uses manual transactions.'* (Category (6), Company (4))

It is apparent from above that the process of entry and exit was not completely "sunk" into the e-Umrah system and the partial integration had an impact on e-government developments and implementations. In addition, the



partial incorporation was also found to affect e-government project specifically government to business (G2B) relationships when the Ministry of Hajj used the system to monitor Umrah companies' performance.

#### **6.2.5.2 Death procedures**

In death procedures, the Ministry of Interior is the responsible entity which has control over the procedures in the event of death in the Umrah field. In the e-Umrah system, Umrah companies are only able to formally report a death, but the detailed procedure is still conducted manually through paperwork, which is complex as it involves many entities such as the Ministry of Hajj, Ministry of Interior, the Social Security Office who seek the death certificate and the embassies or consulates of other countries. This process requires Umrah companies to use other means, especially paperwork such as letters, documents and certificates, to communicate with others in order to prove the Umrah visitors' status. An example of this was reported by one Umrah company:

*'In death cases we are required to shift from using the electronic system to paper work and the same applies to escape/disappearance/non-departed cases' (Category (6), Company (5))*

Furthermore, the Umrah companies are still struggling with death procedures due to involved entities such as the Ministry of Hajj and the Ministry of Interior not including full electronic solutions for the processes and procedures to be conducted within the e-Umrah system. This problem of death procedures and processes inside the system might be due to a lack of collaboration between the Ministry of Hajj, the Ministry of Interior, the Ministry of Foreign Affairs and the embassies/consulates. This was reported as follows:

*'The Ministry of Hajj and the Ministry of Interior have to reconsider the easiest procedures for proving death cases since it depends on the involvement of many government entities such as the Ministry of Hajj, the Ministry of Interior, the Social Security Office (to seek the death certificate), and embassies and consulates of other countries. We hope cooperation will find appropriate solutions to link all these processes in the e-Umrah system.'* (Category (6), Company (34))

Although the procedure for reporting death cases was "incorporated" into the e-Umrah system, there were some major constraints, such as reporting

electronically, but notifying the Ministry of Hajj and sometimes not receiving the documents from the ministries in order to complete the procedures electronically. These constraints do not allow the proper functioning of the service. Progress is hindered due to manual interference which follows the Umrah companies reporting the death electronically.

### 6.2.5.3 Operational plan

In recent years, the Ministry of Hajj has requested that Umrah companies submit their annual operational plan via the e-Umrah system. This operational plan includes information about the number of international agencies involved with the Umrah company and the number of Umrah visitors registered with each international agency. The Ministry of Hajj evaluates the operational plan especially the number of visitors requested by the Umrah company based on how the Umrah company dealt with its visitors in the past (e.g. whether it has managed to enter and exit the same number or whether there were failures in departing the same number of visitors who entered the country). If the Ministry disapproves the requested number, the Umrah company has the right to appeal. However, this appeal process is conducted manually, outside the e-Umrah system, and is time consuming and inefficient.

*'If the Ministry of Hajj doesn't approve of the number, then we can appeal by sending an official letter to the Ministry. It is a complex, paper-based and time consuming process.'* (Category (6), Company (16))

While the annual operational plans were made transparent in the system, the Ministry of Hajj's decision making is not as far as Umrah companies are concerned.

*'The system should provide all the details of the Ministry's decision not only the outcome. That is, more details about what methods the Ministry uses to evaluate the plan and how they reach the decision should be provided in the system, not just the outcome.'* (Category (6), Company (18))

Another Umrah company added:

*'The Ministry should not only consider the visitor entry and exit records when they evaluate a company's performance but also take into account the quality of services provided by the company and its overall performance with international agencies and Umrah visitors.'* (Category (6), Company (29))

To sum up, the operational plan is a process embedded in the e-Umrah system, yet it fails to be involved into the infrastructure completely, partly because the paperwork based, legacy systems are largely used by most entities involved. Another reason is that the relationship between the Ministry of Hajj and Umrah companies is intermediated through the service providers. That is, Umrah companies cannot have direct interactions with the Ministry of Hajj within or outside the e-Umrah system.

#### **6.2.5.4 Travel arrangements**

Details of the travel arrangements such as accommodation, transportation within the country between the cities (e.g. Makkah and Madinah cities where people go to perform Umrah) and flight information (arrival and departure time) are critical for visa applications. The information is provided by different entities and is not fully integrated and consolidated in the system currently. As a result Umrah companies often work with out of date information and are unable to make travel arrangements for their Umrah visitors, especially reservations for accommodation and transportation.

According to the e-Umrah system, there are three travel arrangements, flights, transportation, and accommodation packages which are based solely on documents sent electronically by the Umrah companies to the Ministry of Hajj in the form of contracts.

The flights service is partially included, based on electronically submitting flight contracts for Umrah visitor groups which include their arrival and departure information. The international travel agents submit these contracts to the Umrah companies in Saudi Arabia to allow the Umrah companies to pass the documents through the e-Umrah system to notify the Ministry of Hajj about the Umrah visitors' flight information. Also, the Saudi General Authority of Civil Aviation is responsible for organising everything concerning flight operation and airlines' arrangements and information. However, the Saudi General Authority is not integrated into the e-Umrah system, hence information which is needed cannot be provided in the e-Umrah system. Some Umrah companies specified that the information cannot be offered due to the absence of collaboration between the Ministry of Hajj and the Saudi General Authority of Civil Aviation.

Therefore, Umrah companies cannot find all the flight and airline details in the system quickly to facilitate offering faster services such as providing the airlines by which Umrah visitors are arriving and departing, flight numbers, exact dates, times and notification of any circumstances such as delays or cancellations to Umrah visitors' flights. One of the Umrah companies said:

*'We need schedules for the daily flights, to know the arrival flight numbers, and the exact date and time each group are coming,. This requires negotiation between the Ministry of Hajj and the General Authority of Civil Aviation and cooperation with the service providers so that we can be able to get exact flight information to track our Umrah visitor groups.'* (Category (6), Company (6))

Another Umrah company added:

*'I want to know from the system that the particular visitors are coming on this specific date so I can be aware, rather than relying on faxes, or even airlines updating the system by writing the name of the airlines. Also, if there are any delays they could inform us so I can see this information in the system.'* (Category (6), Company (33))

One service provider emphasised that there is a problem with the international agencies in term of practice where the design of the current e-Umrah system does not enable the international agencies to change the flight information in the system when they change flight dates and times. They also emphasised that this change causes problems not only in flight services but also for the accommodation and transportation services. Since all these services are linked with each other and have to be changed in accordance with dates and times of flights. Any change of flight days and times will affect the sequence of the Umrah visitors' packages/programmes. This is reflected in the following report:

*'There is something which the international agents are lacking, which is that they provide expected dates of arrival, not actual. In these cases all the Umrah visitors' packages/programmes change and this includes accommodation and transportation and this issue has a serious effect on arrangements. The Ministry of Hajj should be aware of this, since there should be in the system some mechanism concerning changes in flights and packages/programmes.'* (Category (5), Service provider (4))

*'The Umrah system has many negative issues such as accommodation, transportation, and airline flights. The system has still not comprehensively included these services and not reached the completed level.'* (Category (6), Company (31))

Another service implemented by the Umrah companies after setting up the flight services for Umrah visitors, is transportation. The Umrah companies accomplish this service manually and directly with the transportation companies by making agreements and contracts to offer the requested transportation from one city to another and inside the cities. The Saudi Syndicate for Cars is the responsible entity for all the information concerning transportation, such as standardising and authorising transportation companies by permitting them to work in the field of Umrah, once they fulfil the Saudi Syndicate conditions and requirements for offering transportation service delivery. However, this entity is not integrated into the e-Umrah system, so the Ministry of Hajj only receive the information of authorised transportation companies from the Saudi Syndicate for Cars through paper-based letters in the form of lists. Then, the Ministry of Hajj's role is to send these letters by fax to the Umrah companies via service providers to inform them that the transportation companies are ones that they are allowed to deal with. Also, Umrah companies perceive the transportation service as lacking. One considerable issue that needs to be highlighted is the lack of a database containing information such as the transportation companies, their types of vehicles and the availability and capacity of vehicles for Umrah. Some Umrah companies highlighted that these services should be dealt with electronically in the e-Umrah system rather than making agreements and contracts outside the system and submitting the documents into the system which is time consuming and the cause of considerable effort. One of these Umrah companies emphasised this and explained:

*'There is no database for transportation, such as transportation companies, their types of vehicles, and available vehicles so instead of submitting these in a form of manual contracts and documents we can conduct these operations through the e-Umrah system.'* (Category (6), Company (12))

Furthermore, some other Umrah companies added that there is no link between the available capacity of transportation companies and the number of Umrah visitors approved by the Ministry of Hajj. There is an essential need to integrate services between the Saudi Syndicate for Cars and the e-Umrah system to further improve and enhance the e-Umrah system. The Ministry of Hajj usually receives the transportation contracts from Umrah companies by uploading documents into the system. Hence, the practice in the e-Umrah system should enable the Umrah companies access to choose the

transportation company and inquire about the available capacity that the transportation companies can offer. One of these Umrah companies which highlighted this capacity barrier related to transportation emphasised this issue as follows:

*'There is a need for modification or the adding of some standards and procedures in transportation, since we are experiencing difficulties in capacity for Umrah visitors and transportation companies in the seasonal months.'* (Category (6), Company (20))

Also, a minority of service providers perceived these services as new to the system. Therefore, the Ministry of Hajj is still coordinating with other entities to design these services and include the information in the system. One service provider explained:

*'There are recent features in the system. These features include the transportation and accommodation services. These services are under development, which might take time since the data comes from other sources outside the system and these sources are still have not integrated into the e-Umrah system.'* (Category (5), Service provider (3))

The last service implemented by Umrah companies after the completion of flight and transportation packages is the accommodation service. This service enables Umrah companies to provide the agreed accommodation to their Umrah visitors. The Saudi Commission for Tourism and Antiquities is the entity responsible for all information concerning accommodation, such as providing the 'classification lists' of hotels, motels and furnished apartments to the Umrah field. The Ministry of Hajj usually updates the accommodation classifications list using the data which is provided by the Saudi Commission each time the Saudi Commission update classified and unclassified accommodation. The lack of a database dedicated to the accommodation information is certainly a major issue as this leads to the high numbers of visitors straining the capacity of available accommodation. Therefore, not integrating the Saudi Commission and designing and engineering this service in the e-Umrah system might hinder the system from expanding to contain the accommodation infrastructure and enable Umrah companies to effortlessly meet the Umrah visitors' requirements through the e-Umrah system. This issue was claimed by the majority of Umrah companies as one Umrah company emphasised:

*'The system does not include a database related to accommodation. We hope that the Ministry of Hajj and service providers will offer these services, because I think that we need to be integrated with other entities, such as the Saudi Commission for Tourism and Antiquities that offer accommodation.'* (Category (6), Company (32))

This incomplete service has created tension in the work practices between Umrah companies and the Ministry of Hajj. This tension exists due to Umrah companies being unaware of the accommodation services, due to the unexpected changes which occur in the accommodation classification list. Also, the Ministry of Hajj was perceived to still be in the process of determining the accommodation classification with other entities such as the Saudi Commission for Tourism and Antiquities which are not included in the system, and the coordination takes place outside of the e-Umrah system. One Umrah company emphasised:

*'The other consideration is the mechanism of hotel classification. You have 4 thousand classified hotels and 10 thousand unclassified. The Ministry orders you to deal with the classified only. These are few and do not cover the number of Umrah visitors. If they can find solutions for this it will solve a significant problem.'* (Category (6), Company (18))

Consequentially, the unavailability of information for travel arrangement services lead Umrah companies to conduct negotiations and agreements randomly between the Umrah companies and the airline, transportation and accommodation companies. There are no data in the system which includes these services to enable Umrah companies to access and chose the services' availability. In addition, these problems of travel arrangements exist due to the Ministry of Hajj not being linked with the other entities such as the Saudi Commission for Tourism and Antiquities, who are concerned with organising and arranging accommodation, Saudi Syndicate for Cars, which is responsible for transportation availability information, and the Saudi General Authority of Civil Aviation, which is responsible for airline companies' data.

#### **6.2.5.5 e-Payment**

Another service found not to be fully embedded in the e-Umrah system is e-payment. This result in the procedure being complicated and time consuming when Samba bank occurs delays. One problem concerning e-payment identified by an Umrah company is the following:

*'Sometimes the visa billing statement becomes delayed, and we do not know the reason for the delay. So the service providers investigate and inform us of the source of the delay if it is from the Ministry of Hajj side or the bank.'* (Category (6), Company (7))

Also, when delays occur from Samba bank, the Umrah companies cannot be acknowledged about the reason for delay, because Samba bank can only offer reports of payment confirmations in the e-Umrah system. The Umrah companies do not always understand the causes of the delays due to their inability to interact with the bank directly. In these cases, they need to contact the service providers, which are the connecting link to the Ministry of Hajj and therefore to the bank. An explanation of the difficulties has been given by a service provider. It should be taken as a basis for an improved e-Umrah e-payment facility:

*'The Umrah companies sometimes face problems when following up a payment electronically through the bank website. The problem is that sometimes the bank systems break down and the Umrah companies are required to send representatives to the bank to accomplish the task manually. We suggest the bank service be conducted through e-Umrah to make it simple and fast since it is part of the Umrah service.'* (Category (5), Service provider (2))

From the perspective of the Ministry of Hajj, this would be the best way of integrating the Ministry and Samba bank. One of the Ministry of Hajj's objectives when developing the e-Umrah system was to integrate Samba bank as a fundamental entity which would deliver all the payment data in order to send it to the Ministry of Foreign Affairs, to maximise the speed of the visa issuance process.

It is worth noting that this particular process is partially embedded into the e-Umrah system. However, it lacks features such as offering alternative ways to provide information on payment confirmations when delays occur internally in the bank, or notifying the Umrah companies about the details of delays and the possible timescale for passing visa payment confirmations.

#### **6.2.5.6 e-Coordination**

A minority of Umrah companies identified another deficiency in the e-Umrah system involving e-coordination. This service is required for directing the Umrah visitors inside the airport to their representatives from the respective Umrah



companies. This service is operated by “Tasheel” which is a company contracted temporarily by the Ministry of Hajj. This company provides reports to the Ministry of Hajj about Umrah visitors who cross the Saudi borders. However, there are limitations to this service in relation to the e-Umrah system. Firstly it is not integrated in the e-Umrah system and is still operating manually. This has been reflected by one of the Umrah companies who stated:

*‘The Ministry of Hajj should consider including the services provided by Tasheel in the e-Umrah system. This company plays an important role which is conducted outside the system.’ (Category (6), Company (40))’*

A second limitation to this service is that it only provides reports of Umrah visitors who entered the country through airports and not those who entered onto Saudi soil or through ground or sea ports. One Umrah company commented on this:

*A limitation related to Tasheel is that they do not have offices in the ground and sea ports to confirm Umrah visitors’ arrivals.’ (Category (6), Company (25))*

A third limitation is that Tasheel provides reports on visitors entering the country but not reports on visitors who have left the country. Umrah companies would benefit from getting these reports to avoid mistakes by immigration officers who might forget to stamp the passport so that the visitor would therefore appear in the system to still be in the country but in reality they would have already exited.

*‘Tasheel has only information and documents for the Umrah visitors who have entered the country. They do not have information of those who exited the country.’ (Category (6), Company (25))*

### **6.3. Dimension (3): Transparency (T)**

#### **6.3.1 Introduction**

Transparency in the context of this study concerns whether e-Umrah system remains the same for each service or task without being changed or reinvented each time to accommodate the needs of different entities and services. Also, this section will identify through how and why are some entities and/or services’ tasks are required to be reinvented and reassembled each time to support

these tasks. In addition, transparency in the e-Umrah system will reflect the level of interaction, communication and support within this system.

### **6.3.2 Innovated system transparency (Overall transparency of e-Umrah system's infrastructure)**

The e-Umrah system is considered by the majority of Umrah companies to be generally acceptable, meaning that most of the services are stable and not required to be reassembled each time for supporting tasks. However there appear to be gaps in the transparency of the e-Umrah system as infrastructure was not found to be transparent in some services provided by the e-Umrah system due to some entities are not embedded or partially embedded in the e-Umrah system. Examples of such services include accommodation, transportation, flight and e-coordination which are considered to be the least transparent, while passport procedures and operational plans are considered to be partially transparent.

#### **6.3.2.1 *Travel arrangements (Umrah packages) and e-coordination services***

##### **Travel arrangements (accommodation, transportation, and flight (Umrah package))**

Accommodation, transportation and flight details are services which can be considered to be operating outside the e-Umrah system. Umrah companies make official agreements and contracts with relevant airlines, transportations companies and hotels as to deliver Umrah packages for Umrah visitors outside the e-Umrah system. The only contact with the e-Umrah system is when scanned copies of the contracts with the hotels, transportation companies and airlines are provided. This reflects that work has to be conducted outside the system because of the partial or non interaction of the practice. The work conducted outside the system is not necessarily shared by all entities involved and as a result information is not always available to everyone. Also, the reason for this appears to be due to the fact that the Ministry of Hajj has not added the entities responsible for these services such as the Saudi Commission for Tourism and Antiquities responsible for delivering accommodation services, the

Ministry of Transportation responsible for providing transportation services, and the Saudi Aviation Authority responsible for offering flight services into the e-Umrah system's infrastructure. This was explained by some Umrah companies as follows:

*'The Saudi Aviation Authority, Ministry of Transportation, and Saudi Commission for Tourism and Antiquities have to be in the electronic system because we deal with them and they have operations which relate to the system. Adding these entities will increase the interaction between Umrah companies and these responsible entities for delivering flight, accommodation and transportation services and will enable us to have a comprehensive electronic system containing all the Umrah components without needing to refer back manually.'* (Category (11), company (37))

*'We contact the Ministry of Hajj by phone and fax to relate new information or emergent issues concerning some Umrah services, such as hotel or transportation details.'* (Category (6), Company (6))

*'Sometimes we face a lack of information about hotels, flights, or transportation so we check with the Ministry of Hajj and the Ministry directs us to the service provider to conduct the operation from their side.'* (Category (2), Company (28))

The majority of Umrah companies perceive that the information has to be in the system and the insufficiency of information has an effect on the Umrah companies' business plans and operations. In addition, they stated that the insufficiency of information affected the relationships between Umrah companies and their partners (International agencies).

It is important to also note that Umrah companies receive the accommodation classifications updated list via fax and in the form of paperwork documents. However, Umrah companies do not receive updates constantly, due to delays in migrating its data from the two entities, the Saudi Commission and the Ministry of Hajj. Some Umrah companies claimed that:

*'We cannot gather accurate information from the service provider's websites that relate to accommodation, transportation, and airlines. I think the Ministry of Hajj should reconsider these services' details because they are responsible for integrating all Umrah services and such services are not in the system. We get the update manually through notifications received by fax from the Ministry or by requesting updates from the service provider.'* (Category (11), Company (8))

*'I think the information related to accommodation needs to be in the system since many changes occur during the year related to accommodation which sometimes affects our services with our partners, such when they classify*

*hotels (approve and disapprove hotels). Solving this will enhance the e-Umrah system, making it more transparent.'* (Category (11), Company (16))

*'There is insufficient information related to accommodation details such as classified and unclassified hotels. This type of information is held outside the system and the system does not provide the information in the form of a list in the system.'* (Category (11), Company (12))

Another example reported by other Umrah companies is the absence of information on transportation and flights in the e-Umrah system. The Umrah companies emphasised the positive value of adding these two services as core services in the e-Umrah system's infrastructure, since they continuously deal with it and require it to be updated with the transportation companies' classification list when they set up Umrah packages.

*'Transportation and flight information is not in the system and there is an absence of information related to these services. There is no deal with other entities for providing this information.'* (Category (11), Company (13))

*'I want to know from the system that the particular visitors are coming on this specific date so I can be aware, rather than relying on faxes. Even if the airlines update the system by writing in the name of airline, and if there are any delays, so I can see the information in the system.'* (Category (6), Company (33))

### **e-Coordination**

The e-coordination service with Tasheel is another service that has to be reinvented each time for task. Umrah companies have to reinvent process each time when they interact with Tasheel. Furthermore, the Ministry of Hajj has still not determined Tasheel's tasks and the protocol of communicating with this company. This shows that the service still needs to be reinvented and assembled. This was summarised by some Umrah companies as follows:

*'This service is not transparent because the service is not included in the system and we deal with Tasheel manually through paperwork and documents.'* (Category (11), Company (22))

*'We need to be connected and coordinated with Tasheel company electronically and receive the information that concerns Umrah visitors' entries and Tasheel company's representatives details since we deal with them in the airport. So I believe that Tasheel company is part of the system and it has to become part of the e-Umrah system in order to strengthen the electronic coordination to be able to benefit from the data that concerns Umrah visitors' entry along with the arrangements for manual operations which we engage in at each Saudi border.'* (Category (11), Company (33))

### 6.3.2.2 Passport, death, and operational plan service procedures

This involves a group of services such as entry, exit and death procedures. These procedures of the services were found to impede Umrah companies in accomplishing the tasks of these services. Also, different Umrah companies may have different ways of achieving these tasks because these procedures are conducted outside the e-Umrah system and not shared by everyone in the e-Umrah system. The reason lies in the rigidity of the system which depends on reporting cases instead of extending the procedures to solving them in the e-Umrah system. This is because the Ministry of Hajj and Ministry of Interior have still not provided all the required procedural and informational aspects that would fulfil the electronic use and reduce manual operations, making the services fully transparent and supporting their tasks. This was explained as:

*'The e-Umrah system does not cover all procedures and processes within some services, so we have to shift to working manually through official letters. This can be seen in the Umrah visitors' departure and death procedures and processes. I think these issues are not making the system transparent because there is no electronic solution for the Umrah company and this impels us to go over to the manual procedures outside of the electronic system.'* (Category (11), Company (25))

#### **Passport procedures**

The Passport Department is one example found not to be transparent in the use of the procedures for Umrah visitors' departure services. This is because the e-Umrah system does not incorporate the full procedures for solving issues related to Umrah visitors' departure. This is because of the mistakes or inaccurate information received from the Ministry of Hajj regarding the information of Umrah visitors' departure. For example, when Umrah companies find mistakes in information related to existing Umrah visitors' in the system when they already departed, the Umrah companies have to solve these inaccurate information outside the e-Umrah system. Therefore, delay in updating the information with the Ministries of Hajj and Interior causes the Umrah companies to fall under penalties. This was explained by some Umrah companies as follows:

*'The departure case has two scenarios. The first scenario is that it is true that some Umrah visitors have really remained in the country and in this case we*

*have to report it to the Ministry of Hajj through the e-Umrah system. The second scenario it is inaccurate information Each scenario has its own processes and over time we learned how to deal with both but the second scenario is the most difficult one.'* (Category (11), Company (39))

### **Death procedures**

Death procedure is another example found not to be transparent in the sense of reinventing tasks, similar to the Passport Department issues. This is due to problems related to reporting the details of the death of the Umrah visitor which are linked to different entities not involved in the e-Umrah system, such as the Social Security Department, the Ministry of Interior, the Passport Department and embassies/consulates. The Umrah companies are required to disconnect from the e-Umrah system and work manually with these unrelated entities. This gap prevents the process from being completed within the e-Umrah system and causes the Umrah companies considerable efforts since death procedures have complex practices and its mechanisms require vast improvement. Some Umrah companies claimed that:

*'Reconsider the easiest procedures for proving death cases, since it depends on the involvement of many government entities such as the Ministry of Hajj, the Ministry of Interior, the Social Security Office (to seek the death certificate), and embassies and consulates of other countries. We hope that cooperation can find appropriate solutions to link all these processes in the e-Umrah system.'* (Category (6), Company (34))

*'The death procedures issue requires time and effort to solve. When a death occurs we have to report the case to many entities such as the Ministry of Hajj, the Social Security Department (to retrieve the death certificate), and embassies/consulates. The Ministry of Hajj should find an electronic solution to make this service available in the e-Umrah system since its procedure is difficult.'* (Category (11), Company (22))

### **Operational plan**

Not knowing the procedures for evaluating the operational plan when approving and disapproving services is one of the issues mentioned by some Umrah companies. The Ministry usually assesses the performance of each company and decides whether they can approve their request or disapprove it. Umrah companies perceive this assessment processes to be unclear and when they receive disapproval they do not know the reasons for this. Furthermore, they cannot interact through the system after this and need to send their

representatives to discuss their result personally with the Ministry of Hajj. It was suggested by many Umrah companies that the Ministry should clarify the method of assessment of Umrah companies' operational plans and set out the standards of services and the procedures on how they make decisions. This would help them understand the Ministry of Hajj's processes and procedures when approving operational plans. One Umrah company gave a clear example of this problematic issue and reported that:

*'Operational plans should be transparent in the sense that there should be more engagement and interaction between the Ministry of Hajj and Umrah companies to discuss the Ministry's decisions. This can be happen through opening a dual electronic channel between us and the Ministry through the service providers' portal, enabling us to engage in the Ministry's decision and reflect our feedback, instead of using manual/paperwork interactions.'* (Category (11), Company (17))

*'I think the Ministry should reconsider the procedure for this service and include operational plan information in the system, also the assessment methods so that we can work on meeting the conditions and don't get a disapproval when we apply.'* (Category (11), Company (6))

### **6.3.3 Feedback mechanism (transparency) in the e-Umrah system's infrastructure**

The investigation of transparent infrastructure in this case study as analysed in the previous section had provided more understanding on how infrastructure became transparent. However, not only understanding transparency of infrastructure from the prospective of supporting tasks is essential but also the analysis added to the definition of Star and Ruhleder (1996) a further understanding which is the method of interactions between the government and private sector in dealing with each other. This was perceived through the emerged categories which are as follows: providing feedback design, process of providing feedback, forms of communications, inputs considerations, supports and its types, circumstances of supports and system improvements which contain problem recognition and problem solving mechanisms

#### **6.3.3.1 Process and design of providing feedback**

Providing feedback from the Umrah companies in the e-Umrah system is an important issue. This is because the Umrah companies are the major beneficiary of using the system as the e-Umrah system was built to facilitate

and organise their operations and enable them to accomplish the tasks and fulfil the requirements of Umrah visitors who desire to come for Umrah. Therefore, the Ministry of Hajj designed the method of feedback by enabling Umrah companies to provide their feedback to the Ministry of Hajj through the service providers.

Nearly all Umrah companies responded that they get asked to provide their feedback by the Ministry of Hajj and service providers. This reflects that the Ministry of Hajj works to increase the level of transparency through receiving the suggestions, comments, or complaints of Umrah companies regarding the electronic Umrah operations. One Umrah company replied:

*'They ask for feedback in term of improvement, suggestion, or problem we encounter that relate to Umrah activities.'* (Category (2), Company (35))

Examples of feedback can be in the form of comments, suggestions, insufficient or incomplete information and/or transactions, enquiring about specific transactions, errors and mistakes related to tasks/operations, requests and ideas for improving the system, new issues emerge or should be considered or included in the e-Umrah system, etc. One Umrah company reported:

*'Yes, in case we encountered any problems or receiving insufficient information or error in the portal's pages so what we do we directly send one of our employees who is specialist in discussing and deliver our views and feedback to the service provider. Most of the feedback carry in its contents the obstacles which Umrah companies face, views on improving complex processes or procedures, correcting data mistakes, or discussing insufficient information in the system.'* (Category (1), Company (24))

Although Umrah companies have opportunities to give feedback on the system and help the service providers to improve the systems they however are not aware of the problems that other Umrah companies encounter with the systems because there is no communication channel between Umrah companies. This could lead to two problems (1) Umrah companies who encountered the same problems had to reinvent solutions for the same problems themselves (2) Umrah companies gave the same feedback on the system to the providers and were unaware of the same problems have been reported. One service provider reported:



*'It is restricted according to the instructions of the Ministry of Hajj's deputy minister. There are problems sometimes cannot be solved through the system which Umrah companies face. Some Umrah companies give same feedback and some have to work with solving the encountered problem directly with the Ministry. In this case the work shift manually and Umrah companies begin dealing with official letters describing the problematic issue.'* (Category (8), Service provider (4))

### **6.3.3.3 Form of constant communication among entities**

Approximately all Umrah companies agreed that there is a form of constant communication between them and service providers. These communicational tools are listed under telephone, email, Mobile, SMS, Online/Internet/portal/e-Umrah system, fax, mobile, Toll Free Number/phone services and Meeting/Self visit. The telephone and email are the most useful tools to communicate with service providers. However, some Umrah companies indicated that there is a variations between service providers in terms of communication since some service providers are more advanced than others in terms of technology. This is because some service providers have developed a communicational system attached in their websites/portals. This effortless communicational tool works as a form of email or messaging system/service to enable service providers who are more advanced to rapidly interact more with the Umrah companies demands and enable Umrah companies to communicate electronically through submitting their inputs and receiving feedback. Also, this communicational system was found useful since it allows the Umrah companies to have direct, rapid and official claims when they have enquiries, suggestions, problems related to work tasks or complains. Some Umrah companies explained:

*'We communicate with service provider through the communication system which attached in their website. This communication system works as the email where it enables us to easily submit our claim and they deal promptly with our requests.'* (Category (3), Company (15))

*'The type of communication is different from one service provider to another. Last year we were working with one service provider and this year we shifted with another so each one of them have their own features and characteristics and it differs. We found difference because when we shifted we found that the current service provider is more advanced than the previous one in term of features which provided and communication. The reason why we shifted to other service provider because nearly at the end of season the general manager requested from them to come and discuss some issues to implement and they did not response so this was the reason of the problems because they were not responsive.'* (Category (3), Company (26))

One service provider explained:

*'Recently we developed a messaging services where allow Umrah companies to send their feedback to us through the system.'* (Category (2), Service provider (1))

Another service provider reported:

*'Our customer service always follows up through telephone, email, fax, and SMS messages, or self visit.'* (Category (2), Service provider (2))

#### **6.3.3.4 Input consideration**

Most of the Umrah companies were affirmative when they responded about the feedback consideration, however there are limits to feedback considerations. Considering input depends on Umrah companies' ideas of adding, adjusting, removing, or improving and developing services or issues which relate to work practices. Some of these ideas/comments/suggestions can be adopted and implemented while others cannot. These issues which can be implemented concern work practice improvement only. On the other hand, there are some issues which concern the Ministry of Hajj where service providers cannot implement improving services since they have limited permissions and authorisations in controlling the e-Umrah system such as adding, removing or adjusting some features and aspects of the e-Umrah system. The Ministry of Hajj instructs service providers on what they can develop and implement and what they cannot and this is why sometimes they cannot implement services, processes or features because it is out of their range of developing or improving services.

Therefore, there is some limitations of input considerations and communications between the Umrah companies and the Ministry of Hajj where some Umrah companies are said to have a direct link between them and the Ministry in order to receive their input and find solutions since some of these concern complex problems which are not only faced by one Umrah company but approximately affecting most of the Umrah companies liable to fall due to these problems. One Umrah company explained:

*'Service provider considers our inputs with limited authorisations. This is because some issues relate to the Ministry of Hajj and service providers cannot implement. For example Umrah companies share the same problems such as*

*the incomplete processes of some services, absence of some entities in the system which turns the work from electronic to manual in order to achieve, or mistakes in information which comes from other entities. All these issues we claim to service providers but cannot solve and the only way to deliver our inputs is through finding a direct way to communicate with the Ministry of Hajj and that is through telephone or self visit.’ (Category (4), Company (16))*

*‘We really need a direct channel to enable us to communicate with the Ministry of Hajj to deliver our feedback in the cases of improving the system and solving encountered problems because we communicate manually with the Ministry of Hajj when we have problems that cannot be solved in the system because the system does not cover all the services and its processes and procedures. Some services are fully and electronically designed in the system, some are partially designed, and the rest are not designed in the system because their entities are not included in the system.’ (Category (4), Company (37))*

### **6.3.3.5 Receiving support, kind and circumstances in the e-Umrah system**

Most of the Umrah companies responded that they receive support. These were found directly and indirectly. The service providers deliver a direct support to Umrah companies due to the direct electronic connections through their websites. While the indirect support was found between the Ministry of Hajj and the Umrah companies which take a manual approach through a phone or fixed arrangement via meeting and self visit. These two were the methods of accepting supports by the government ‘Ministry of Hajj’, their partners ‘service providers’ and the private sector ‘Umrah companies’. One Umrah company explained:

*‘Yes. We send our supports through two ways direct and indirect. The direct support we usually have is the one between us and the service provider since we are linked directly with them through their e-Umrah system. However, the indirect support is the one that between us and the Ministry of Hajj where we deal manually and have to arrange for a meeting with their officials to deliver our issues regarding the Umrah work practice.’ (Category (5), Company (4))*

According to each kind of support, technical and informational support are the types which Umrah companies experience. The technical support concerns the challenges of practicing the e-Umrah system in the service providers’ portal/website. Also, this kind of support is direct between the Umrah companies and service providers where service providers provide technical solutions to overcome the issues arise from their portals concerning the e-Umrah system. However, the informational support is considered the most

significant support since it concerns all entities in the e-Umrah system where service providers receive the input of Umrah operations and activities from the other entities the Ministries of Hajj, Foreign Affairs and Interior and update their e-Umrah system with this delivered information. Some Umrah companies explained:

*'We experience two types of supports which are technical and informational supports with all what relate to data. The technical support is provided by the service providers when we face difficulties in uploading documents or having errors and mistakes in the data entries. The informational support comes from the Ministry of Hajj and the other involved ministries Foreign Affairs, Interior, and the bank's data. Sometimes we receive errors in this information, sometimes we have missing information in some transactions, and sometimes we have insufficient information. In this case the service providers cannot support and we have to communicate manually with the Ministry of Hajj to deliver our enquiries.'* (Category (6), Company (28))

Umrah companies have circumstances of delivering and receiving support. These circumstances were explained in three major conditions. The first condition is when the Umrah companies have enquiries about some issues relating to work practice. The second condition is when the Umrah companies encounter problems or complexities related to work practice when implementing Umrah operations of some services. While the third condition happens when Umrah companies have new ideas to improve or enhance particular services or its processes or procedures in the system. One Umrah company explained:

*'There are three types of circumstances of receiving support. The first is through is when we have ideas which improves the work practice, the second is when we face problems related to Umrah tasks, while the third is when we need to get information which help us to achieve tasks. So we give our feedback whenever we need or something come up from our side that need to be enquired, improved, or solved.'* (Category (7), Company (2))

It is interesting to note that the Ministry of Hajj does not set an annual meeting or periodical occasion to gather the whole feedback from Umrah companies and discover obstacles and barriers and classify them to solve the major and minor issues that need to be improved, developed or causing difficulties. One Umrah company explained:

*'We receive these types of support when necessary or when a problem or complex situation emerges. We do not have a periodical or annual arrangement to meet with the Ministry of Hajj to deliver our feedback and discuss the*

*problems which need to be improved in the system so we suggest to have this kind of arrangement with the Ministry.’ (Category (7), Company (4))*

#### **6.3.3.6 System improvement after feedback**

Most of the Umrah companies indicated that the service providers consider their feedback with limited considerations since the service providers are limited with improving or developing the system and only work on enhancing the existing implementations of existing processes and procedures in the system that are related to the practices. One Umrah company explained:

*‘Yes. We find improvements after delivering feedback to what relate to work tasks that exist in the system. However, the service providers cannot consider all feedback such as adding, adjusting, or remove some existing services or practices and change it in a more advanced style because these issues are the base of the system and standardised in the system by the Ministry of Hajj and only concerns the Ministry of Hajj.’ (Category (8), Company (14))*

Consequentially, the above analysis which concern interactions of feedback design and delivery between the Ministry of Hajj and Umrah companies revealed some problematic issues when interacting and there are limited transparency between the government and private sector. This is because there are four service providers which are activated and permitted by the Ministry of Hajj to offer services and connect Umrah companies to the e-Umrah system. This indirect communication showed that there is weak communications between Umrah companies and there is no form of communications of exchanging knowledge and experiences and gathering of ideas related to improving work practices, services, procedures or processes in the e-Umrah system between the Ministry of Hajj and Umrah companies. Therefore, these problems prevent the private sector to participate in improving the Umrah services or interface/website/portal design and implementation of the current system but only with limited pattern. Also, the only method of delivering feedback to the Ministry of Hajj by Umrah companies was found to take a manual approach through manual arrangement outside the electronic system.

## **6.4 Dimension (4): Learned as part of membership (LPM)**

### **6.4.1 Introduction**

This dimension refers to the learning processes and procedures of a community of practice. It is the way that users familiarise themselves and develop a level of knowledge in the system. It is the interactions and collaborations of new comers and old comers over the tasks, work's activities and solving problems related to work which shaped the existing processes of learning, familiarity, besides gaining the adequate knowledge, information and skills that enable them to practice and operate in the large scale system.

In the e-Umrah context, this dimension concerns the influence of relations among entities and the affect of these relations over the development of level of knowledge and familiarity of the e-Umrah system's companies within the e-Umrah system. It explores the existing community of practice which is shaped by the e-Umrah system. It also describes the role of the Umrah companies as members in this community of practice through exploring the interactions of new comers and old comers over the activities which shaped the existing processes of learning and familiarity, besides gaining the adequate knowledge, information and skills that enable them to practice and operate Umrah services. On the other hand, being a part of membership also identifies the issues lacking and complexities that complicate the understanding of the system and affect the learning processes and hence hinder its improvement.

### **6.4.2 Learning process and the impact of the relations of tasks to the e-Umrah system infrastructure**

Two types of the learning process were observed in this study: intra- and inter-learning process. The intra-learning process refers to a learning process that takes place within the Umrah company itself; and while the inter-learning process where the learning process occurs between the Umrah company and other Umrah companies or between the Umrah company and other entities such as service providers, ministries, Samba bank, etc. (Cross learning). Furthermore, the learning process passed through different phases in the Umrah field. In the beginning, during the manual practice, the learning process

was situated learning or self learning, meaning that learning takes place through problem solving and experience. Then after the initial development of the e-Umrah system, the learning process was instructive guided by the e-Umrah service providers. Following this, the learning process is currently a combination of instructive and situated learning.

#### ***6.4.2.1 Learning process during manual system's practice***

During the manual practice, the learning process had two major factors; practice and experience. Hence, Umrah companies gained their knowledge and became familiar through situated learning. This was by individual searching, based on the occurrence of situations and consequences faced, or when Umrah companies required specific knowledge such as when inquiring about information, standard process, procedure, or mechanisms that enable them to accomplish their Umrah activities. Also, Umrah companies indicated that there were other ways of situated learning such as learning from their previous mistakes and errors by which they gained knowledge of what works and what doesn't. In addition, the situated or what is called self learning was found an effective method during the manual system and was the only means of learning due to lack of guidance or the presence of specific instructions in the form of instructive learning.

Furthermore, during the manual practice phase, an intra-learning process was conducted mainly within the Umrah company itself. This is due to the fact that each Umrah company was internally responsible for understanding the process of Umrah activities as there was no other guidance. For example, visa issuance departments in Umrah companies had to develop knowledge of visa issuance processes and procedures so that they would be able to accomplish visa issuance tasks. Similarly, sales and marketing departments had to develop knowledge of how to establish alliances with international agencies, perform agreements and conclude contracts for gathering Umrah visitors around the globe and setting their Umrah packages/programmes. Finance departments had to develop their knowledge and experience through increasing their understanding of all the requirements of what can be achieved through Samba bank to complete the processes of visa issuance payments, and operations. The follow up department was in charge of acquiring fieldwork knowledge when

physically executing Umrah visitors' packages and following up with their reception, transportation and accommodation in the cities of Makkah and Madina in accordance with their Umrah packages/programmes. One of the Umrah companies explained:

*'Each department has to gain familiarity with the tasks they conduct in the manual system and this is dependant on each department in the Umrah company and its duties and usage. For instance, finance concern themselves about the number of visitors and conducting visa payments only, the administration concern is about the number of those who did not leave the country and other statistics concerning visitors and their data because of the company's risk of being suspended from providing Umrah services. Marketing and sales were concerned about strengthening ties with international agencies and working on setting up agreements, contracts, and Umrah packages, and the operation and follow up work in the field and implementing physically Umrah visitors' packages. So each department in the company had to increase their knowledge of the Umrah tasks that they are assigned to conduct.'* (Category (1), Company (19)).

#### **6.4.2.2 Learning process during the initial development of e-Umrah system**

After the transformation from manual to electronic practice, the learning process in the Umrah field faced a significant shift when the Ministry of Hajj became a principal element and took control over developing and arranging the Umrah field. This transformation began when four service providers were engaged to offer electronic services through their websites. Hence, those four service providers were responsible for embedding all the services that related to Umrah, translating these services electronically, and updating the Umrah companies with all the standards, decisions, service features and notifications which were imposed by the Ministry of Hajj. In addition, the service providers were advised to offer adequate training, support and instruction to allow Umrah companies to learn all the e-Umrah system's features, the process of practicing electronic Umrah activities and the requirement of service delivery in addition to receiving the obligatory information for achieving their tasks. Therefore, training and instruction were the methods used to increase Umrah companies' degree of knowledge of using the e-Umrah system. Hence, Umrah companies shifted from practicing situated learning to instructive/informative learning via the four assigned service providers. Furthermore, each Umrah company was required by the Ministry of Hajj to initiate an Information Technology (IT) department to



act as a responsible element among Umrah company's other departments, to be linked with the service provider and to adopt technology which was imposed by the Ministry of Hajj. Also, the initiation of IT departments was requested to establish the facilitating, organising and arranging of all technical and informational requirements between the Umrah companies and service providers, and, in addition, to enhance communications between Umrah companies and the Ministry of Hajj electronically via the service providers. Moreover, the learning at this early stage of the initial development of the e-Umrah system was found to be more in the form of an inter-learning process which is defined in this case as a learning process which occurs between the Umrah company and other entities such as service providers, ministries, Samba bank, etc. (Cross learning). This was because the e-Umrah system witnessed the introduction of new entities/members in the Umrah field and the integration of these into the electronic system. The Umrah companies at this time experienced newly developing relationships with other entities such as service providers, the Ministry of Hajj, the Ministry of Foreign Affairs, the Ministry of Interior, and Samba bank by electronic means. These relationships will be discussed in details in the following section.

During the current stage, the integration of entities in the e-Umrah system was found to develop a combination of different learning process that can be found when examining how entities interact with the system. Also, this combination of different entities of different learning processes was found to include in the e-Umrah system a combination of an instructive/informative learning process followed by a situated learning process. The existence of instructive learning followed by situated learning represents both inter and intra - learning processes. This is because Umrah companies are interconnected with service providers and the Ministry of Hajj in addition to all other entities which provide a degree of guidance. However, Umrah companies still have to shift from an instructive learning process/inter learning process to a situated learning process/intra learning process due to the limitations of the system. These limitations concern various services which cause the companies to deal with their variable situations and consequences.

*'When the e-Umrah system was implemented by the Ministry of Hajj and service providers we took time to become familiar with the system's features*

*and how to use it accurately. We received intensive training, instruction, and guidance from the service provider at the early stage of the system. But we still were not familiar with some services in the electronic system because the Ministry of Hajj did not cover all the service processes in the electronic system and we have to achieve some of the service processes around the system, and this is less familiar to us.'* (Category (1), Company (22))

In addition, the Umrah companies emphasised the gap in the learning process in the e-Umrah system. This is mainly focused on the inter-learning process. Lack of communication between the different companies and between the Umrah companies and entities other than the service providers are the main limitations. It is found that the inter-learning processes between Umrah companies and between entities did not exist. This is because the e-Umrah system was not designed to connect Umrah companies and enable them to share knowledge, information or experience of their use of the system and of problem solving. Therefore, Umrah companies found difficulties in accomplishing due lack of instructions and guidance in the e-Umrah system. Hence Umrah companies had to learn through situated learning process to accomplish these tasks due to the unavailability of the whole processes of some procedures of tasks or services in the e-Umrah system. It was stated by an Umrah company:

*'We do not have any form of communication between us and other Umrah companies. Some Umrah companies have been working with the system since the establishment of the system and have extensive knowledge and a high level of familiarity. We also need some form of communication between us and other Umrah companies to share the Umrah activities experience because this will increase our familiarity with solving problems.'* (Category (1), Company (37))

Another issue raised was that Umrah companies are not connected efficiently with other entities other than the service providers which also affect the learning process. Umrah companies were not found to have had adequate instructions from the service providers or the Ministry of Hajj. Therefore, this forced the Umrah companies to search for the missing information by other means, hence situated learning.

*'The service providers provided adequate support and guidance in the electronic system, however we are still dealing with other parties outside the e-Umrah system because the e-Umrah system does not provide full processes for some services to be conducted in the e-Umrah system. So we have to find ways to achieve these tasks and provide these services.'* (Category (1), Company (13))

Examples of the issues arose from the inter-learning processes between Umrah companies and between entities were found in the following services.

**- Passport procedures**

Umrah companies still endure problems in the departure sector in the e-Umrah system. An Umrah visitor officially depart from the country but his/her details still remain in the system due to either technical or human error, the Umrah companies have to go through a long processes to provide evidence of their departure (with the assistance of international travel agencies and airlines companies). They have to prove that the Umrah visitor is not in the country by providing the appropriate documents to the Ministry of Hajj. If proof is not provided, the Umrah company receives a penalty and may be suspended from practicing in the Umrah field. The way the Umrah companies have dealt with such circumstances is by situated learning by experience. The lack of instructive learning in this case is due to the limited knowledge of the service providers in providing guidance or in tackling this issue. Nevertheless, the Ministry of Hajj doesn't provide a clear strategy to deal with such cases electronically.

As a result, the situated learning process which occurs in the Umrah companies takes place by them contacting international agencies and requesting the original passports to be posted as proof to confirm the departures to the Ministry of Hajj. In cases where Umrah visitors refuse to send their original passports, Umrah companies request from international agencies copies of passports with the departure stamps. Another way the Umrah companies have learned how to deal with this situation through experience is by communicating with the airlines by which the Umrah visitors departed and requesting a list of boarding passengers. This list would provide proof the Umrah visitor had officially checked out and departed by these flights.

Some Umrah companies emphasised that:

*'The other issue is the visitor departure cases where we have visitors who departed from the country but they did not remove them from the system and of course these cases are conducted manually. If the system facilitated this to be fully electronic so that I could attach all the required information in a certain*

*way, so that even the Passport Department could find easy ways to accomplish this operation.’ (Category (6), Company (34))*

*‘The one thing we need is related to those who have physically exited the country but did not exit from the system. First of all we request the international agent to give us a copy of their passports clearly showing the exiting stamp from Saudi which they send to us by email and then we bring copies of the flight manifests from the airlines indicating that the Umrah visitor had travelled on board. The problem is that the Ministry counts these cases in our record as an escape/failure to depart case and suspend the company’s license to practice the Umrah activities until these problems are solved.’ (Category (6), Company (21))*

**- Travel arrangements information (flights, transportations, accommodations)**

Other examples of issues affecting Inter-learning process between Umrah companies and other entities are the information of the travel arrangements which consists of flights, transportations and accommodations. It was found that flight information is a service with limitations that cause difficulties in receiving the information. The reason for this is because the service is not integrated in the e-Umrah system and is still operating manually.

For example, providing details of an Umrah group’s flight status in advance, such as reporting changes, delays or cancelation of flights is important since these flight details have connections with the Umrah package and have implications for other connected services such as airport arrangements (Tasheel), transportation and accommodation arrangements. Once changes, delays or cancelations occur, unless it is known well in advance by the Umrah companies, it affects the other connected services significantly and causes the Umrah companies to reset or adjust the groups’ package which sometimes proves very difficult. The service providers were observed to play no part, due to the lack of coordination between the Ministry of Hajj and the Saudi Civil Authority for Aviation. Thus, the service providers are not able to provide proper instructions that guide Umrah companies in dealing with an update of airline information and therefore no instructive learning takes place. In such a situation Umrah companies gain knowledge on how to deal with changes in flights, delays or cancelations through situated learning. The international travel agencies are the responsible entities when changes in flights occur from their side. The action taken by the Umrah companies is constantly checking with the

international agencies on the actual Umrah visitor groups' flights. This constant checking takes place by giving instructions to the international agencies to inform the Umrah companies by phone, fax or email about the actual dates of flights. Therefore, this action enables Umrah companies to take the appropriate decisions and make appropriate adjustments when resettling the Umrah visitor groups' packages/programmes. On the other hand, when delays or cancelations occur because of the airlines, Umrah companies communicate constantly with the airlines in order to be updated with the actual times and dates for the flights. This constant follow-up allows Umrah companies to expect the actual Umrah visitor groups' flights and enables them to rearrange other services which are linked with the flight information.

Similarly, the transportation services share a common issue with flights and are linked with other services arrangements such as flights, arrival, and accommodation. Once adjustments related to these services occur, all these arrangements have to be changed manually and this is by the efforts of the Umrah companies alone. These limitations were perceived to affect Umrah companies' practices. Again, the service providers have only a limited role since neither they nor the Ministry of Hajj are connected to the Ministry of Transportation or the Saudi Syndicate for Cars. This leaves no choice for the Umrah companies but to start working through a situated learning process when resolving the situations caused by delays or cancelations. This is done by following up manually with airlines and international agencies as well as updating the transportation companies with all the adjustments and changes of plan. Therefore, these missing processes which are conducted outside the e-Umrah system was found to affect the current learning process in the e-Umrah system as the work's progress depend upon it. These claims of flight and transportation services were emphasised by some Umrah companies as follows:

*'The flight information is not included in the system and included in this type of form. So the form should describe in detail when they are going to come and the number in the group that is arriving and a list of Umrah visitors, when exactly it will arrive in the airport, when it will depart, and when they will finish their Umrah journey. So we need exact and accurate dates and this information should be included for each group created in the system.'* (Category (6), Company (6))

*'The transportation or hotels, for example, should be inside the system. Once we have these services implemented and practiced within the e-Umrah system then we can say that we have integrated all the services that concern the Umrah field and if we link all services, that means we have created companies inside companies.'* (Category (6), Company (11))

*'The details of flights are not available in the system. I want to know in the system that the particular visitors are coming at this specific date so I can be aware rather than relying on faxes or even by the airlines updating the system by writing the name of airlines and if there is any delay, they inform us so I can see this information in the system.'* (Category (6), Company (33))

Similarly, the main limitation associated with accommodation service is that the information is not available electronically within the e-Umrah system. This lack of information hinders understanding of the complete process of the service. The information must be obtained and the service conducted outside the e-Umrah system. One problem arising from this is the constant changes in the hotel classification may not be known to the Umrah companies in time due to its unavailability in the system and hence the Umrah companies have to refer back to the Ministry of Hajj and request an update of the accommodation's classification in the system. This affects Umrah companies' practice, because Umrah companies require the accommodation classifications list well in advance to set up appropriately the Umrah visitors' packages/programmes from the service providers. Hence, the service providers are responsible for passing the recent classification list on to Umrah companies. However, service providers do not frequently communicate with the Ministry of Hajj to receive updated classifications. This might be because service providers are unaware of changes in the classification lists. Consequently, with these random changes which occur from time to time in the accommodation classification and an absence of instructions which should be offered by the service providers, Umrah companies practice situation learning.

This situated learning process is learning through experience. The process of learning begins when Umrah companies start to set up the Umrah packages/programmes. The Umrah companies begin to take action by contacting the service providers and requesting the latest classification list. Once they receive the classification list, they assign specialists whose duties are to follow up with Ministry of Hajj, by contacting them via telephone or self visit to verify the list obtained from the service providers and the latest list

obtained by the Ministry of Hajj. Once they confirm the latest classification list, Umrah companies begin to set up the Umrah packages/programmes in accordance with the verified and updated version. Communicating with the main source of information (the Saudi Commission for Tourism and Antiquities) in order to obtain the recent update of the classification list is another process which some other Umrah companies perform. Some Umrah companies explained:

*'Hotels and transportation processes are not entirely in the system and should be in the system to fulfil the development of the system.'* (Category (6), Company (5))

*'Linking hotels in the system by linking the Saudi Commission for Tourism and Antiquities, because they are the one who feed the Ministry with the hotel classification data, and permitting them to consider the classification of hotels.'* (Category (6), Company (30))

*'We are not aware of the hotel classification list which is delivered by the Saudi Commission for Tourism and Antiquities. The Ministry of Hajj provides us with the list through notifications sent by fax or through service providers. It is not electronically included in the system and there are many changes and updates which occur in it and we become unaware if the Ministry of Hajj and service providers are delayed in submitting it.'* (Category (6), Company (33))

#### **- Operational plan**

A further example of Intra-learning process is the details of the operational plan service. It was found that part of this service conducted manually outside the e-Umrah system the service providers' role in this service is only to display the results of the decisions which are received from the Ministry of Hajj in the e-Umrah system. However, some Umrah companies are affected by this decision when the Ministry of Hajj refuses their operational plan and approves another plan instead. In this case they can only negotiate this outside the e-Umrah system as there is no application for this in the e-Umrah system. Situated learning occurs in this case through experience where the Umrah companies find that they have to arrange an individual meeting with the Ministry of Hajj to defend their operational plan rather than surrender to the decision made by the Ministry of Hajj with no objection. This was explained as follows:

*'The Ministry of Hajj should reengineer the quotes procedure. This part is not yet fixed to fulfil the entire operational plan task in the e-Umrah system. The problem lies in the processes, which seem insufficient and do not fulfil the task,*

*to be conducted fully in the e-Umrah system. We submit the operational plan and we wait for the decision. If the Ministry refuses to accept our plan we have to have a self visit and negotiate to convince them that we deserve this submitted plan by updating them with our records of Umrah visitors departure statuses' (Category (6), Company (8))*

*'We need to have the knowledge to understand the mentality of the Ministry when making decisions, such as how does the Ministry standardise the operational plan mechanism.'* (Category (6), Company (31))

#### **- e-Coordination**

One more example identified by Umrah companies which concern Inter-learning process is the work between Umrah companies with the service provided by Tasheel. This type of work was found to implement outside the e-Umrah system. Also, the type of working that was provided by Tasheel was to arrange the Umrah visitors groups numbers and their flight details (containing their arrival, terminal, etc.) and to coordinate with Umrah companies to link their representatives with the Umrah visitors groups who are arriving at the airports. However, Tasheel is not connected into the e-Umrah system and their role is not existent in the e-Umrah system. Hence there is a lack of organisation, coordination and accurate planning for the operation which takes place in the airport. The learning process that occurred in this case is situated learning because the Umrah companies have to deal with this situation. No instructive learning takes place due to a lack of guidance from service providers and this is only to be expected as Tasheel is not included in the e-Umrah system and therefore service providers cannot offer instructions on how to deal with this issue.

As a result, Umrah companies learned through experience by constant interaction with the Tasheel company to form the ideal port arrangements and coordination. This is done by building ties with Tasheel to enable them to communicate directly with Tasheel's company representatives. These ties were found to shape the existing arrangements and coordination in the ports and enabled Umrah companies to obtain the details of Umrah visitor group lists, flights details (which specify flight number, terminal and airline of arriving Umrah visitors groups), locations of Tasheel's offices and contacts of Tasheel representatives at the airports.



*'We need coordination with Tasheel to be in the electronic system so that we can be informed about their plans and arrangements in the Saudi ports. We need the details of operations in the airport, the authorised representatives which are responsible for entering the groups and handing them to us and their contacts. Sometimes we face problems such as the groups of Umrah visitors arriving in the airport when we don't know who is responsible for the group. This causes crowdedness in the airport because there are many groups of Umrah visitors from other Umrah companies and we need to be linked with our own Umrah visitors' group.'* (Category (6), Company (8))

### **6.4.3 Further understanding of learning methods in the e-Umrah system's infrastructure**

This section analyses in addition to the learning processes which critically analysed in the earlier section some additional issues which found to increase the understanding of learning as part of membership. It contains further categories such as familiarity, process of familiarity, degree of engagement, extent of usage and system usability.

#### **6.4.3.1 Familiarly in the e-Umrah system**

Umrah companies became familiar with the system throughout time. Most of the Umrah companies established their business before the electronic system and passed through all the developments which occurred to the field of Umrah and Umrah activities. This experience was found to enable these Umrah companies to have more privilege and higher level of familiarity than the newcomers (the recent Umrah companies) which joined the Umrah field. This is because these old Umrah companies gained their level of familiarity through practice and experience and witnessed all the changes and barriers which occurred before, during and after the establishment of the new electronic system in the field of Umrah which enabled them to understand the methods of dealing through situational learning to achieve their tasks. This old account of knowledge which ancient Umrah companies gained has also permitted them to build their learning scheme. Also, after the establishment of the new e-Umrah system, the Ministry of Hajj imposed Umrah companies to deal through instructive learning with Umrah companies through the services providers. This instructive learning method was thought to be the solution which enables all Umrah companies to be instructed and guided by service providers through

sharing and implementing commonly the same system, services, processes, procedures, standards and regulations.

However, the Umrah companies emphasised that the existence of paperwork/manual operations, the problems of information which comes from other entities and the information which is required from entities that are not integrated in the system are some of the issues which still lack the instructive learning. Hence Umrah companies have to shift from fixed instructive learning to situational learning and deal manually with the Umrah operations and tasks outside the electronic Umrah system. Some Umrah companies explained:

*'We became familiar using it and it became a routine practice. We established our company long time ago and we witnessed all process of developments which occurred in the Umrah field beginning before the existence of the Umrah system and after the manual and electronic systems were established. Throughout that time we became familiar of how to achieve our tasks and gained the knowledge of tackling problems and accomplish the Umrah operations. Even when the electronic system was established there are still some gaps which preventing the system to deliver complete demands such as automatically correcting the mistakes of information which come from other entities such as Ministry of Interior or delivering electronically the insufficient information which required from other entities so we had practical experience on how to tackle these issues outside the electronic system through communicating indirectly with the Ministry of Hajj or other entities to overcome these issues.'* (Category (1), Company (18))

*'As we recently established our Umrah business, each department in our company has to identify the tasks and critical issues which cannot be solved in the e-Umrah system and gain familiarity of the tasks they conducts and solve these issues manually. For example, finance concern about number of visitors and conducting visas' payments only and when issues occur and cannot be solved in the system they report to the administration to find solutions with the Ministry of Hajj. So each department in the company has to increase their knowledge with the Umrah tasks that they are assigned to implement in order to fulfil the demands of Umrah activities.'* (Category (1), Company (19))

*'Yes, we became familiar with the system even with its problems and limitations. This familiarity has built because we became able to deal with and around these limitations and problems of the e-Umrah system such as the services which conduct in the e-Umrah system and the rest of services which conduct outside the e-Umrah system.'* (Category (1), Comapny (40))

#### **6.4.3.2 Process of familiarly**

Umrah companies have also revealed on the methods of becoming familiar and emphasised that service providers work to promote all members of the e-

Umrah system (Umrah companies) to become familiar when engaging to the e-Umrah system. Also, the influence of knowledge, practice and experience on the level of familiarity in the e-Umrah system was one significant issue that influence the familiarity of e-Umrah system's members (Umrah companies) as most of the Umrah companies encountered when they began implementing services when the e-Umrah system was developed. Some Umrah companies explained the experiences of their employees in the early electronic system:

*'By the time and with extensive practice and experience they become used to the system and know all the process and procedures taken to complete their transactions with no errors.'* (Category (2), Company (7))

It was also found that the influence of the e-Umrah system's design is an important factor on learning and familiarity. This is because when the new participants (Umrah companies) find the system visible meaning that the service providers deliver all processes of Umrah activities to the e-Umrah system in a clear and easy design and presentation this enable those new participants to engage easily in the system and increase the knowledge of using the system in an appropriate way with less mistakes, faults and/or difficulties. One Umrah company emphasised:

*'The design of the e-Umrah system is one of the important aspects of familiarity. If the design of the system is complex and does not deliver services and its applications in an easy manner this create difficulties from our side and make us refer to the service providers to enquire about implementing services and its process until we understand how the system works.'* (Category (2), Company (34))

Another Umrah company explained:

*'The service provider work on providing an easy design where you can access to their e-Umrah system and implement services easily since their work depends on facilitating all Umrah activities in the e-Umrah system and also there are competitions among service providers if we are not happy with the services design of services by our service provider we shift to another service provider which is more efficient services and easy design for the e-Umrah services.'* (Category (2), Company (18))

One more identified issue which was found to influence familiarity was the influence of association and supports inside and outside the new Umrah companies. Receiving support internally/inside between the Umrah companies' departments and among employees and externally/outside from the service

providers or Ministry of Hajj was another issue which have an impact on familiarity. The Umrah companies create an internal atmosphere where all departments and employees share the knowledge and promote each other to achieve the common goals of implementing Umrah services and accomplish their Umrah companies tasks. One Umrah company emphasised:

*'Engaging in the e-Umrah system means that all departments do share services, processes, and procedures of Umrah activities. For example, the marketing department work on the procedures of visa issuance, setting Umrah packages and passes the responsibility to finance department where they are in charge of conducting the payments of visa fees and the settlement of Umrah packages with the international agencies and the bank, then comes the role of the follow up department where they begin to physically implement these services actually in the field of Umrah and begin to execute the arrangements of reception, transportation, and accommodation and follow up with the Umrah visitors from the moment they arrive till they depart back to their homelands. So each department is interlinked with the other and all staff work together as teams to fulfil the Umrah services demands.'* (Category (2), Company (1))

According to the external/outside association and support, this takes place between the Umrah companies and service providers or Ministry of Hajj. Ancient and new Umrah companies were found to gain the support and association with service providers and Ministry of Hajj from two ways. The first is electronically through receiving instructions and guidance from the service providers with all what relate to Umrah services and operations within the e-Umrah system. The service providers in this case provide association and guidance through instructing the Umrah companies over the process of implementing services. In addition, offering the appropriate guidance, enlightening, educational, instructive, appropriate tools and system's manual, appropriate training, and supervision over conducting operations are some of the ways revealed by Umrah companies which service providers deliver. This way of association and support was found to enhance the familiarity of Umrah companies as one Umrah company added the importance role of instruction and guidance from the service providers' side:

*'Most of the Umrah companies have experiences and knowledge and the new companies become familiar after receiving intensive and appropriate guidance, instruction, and practice and become knowledgeable throughout time about the process of implementing operations in the system.'* (Category (2), Company (10))

While on the other hand, both association and support comes from the Ministry of Hajj comprising a manual process. This kind of association and support exists when the Umrah companies face barriers in a form of challenging, complex, difficulties or complains are encountered whereby they directly communicate with Ministry of Hajj. The absence of electronic channel which electronically link the Umrah companies with the Ministry of Hajj to pass and discuss these issues in the e-Umrah system, resorted Umrah companies to this kind of association and support outside the e-Umrah system where they became familiar in distinguishing the services which implement electronically, and the rest which require manual association and support since it cannot be solved except from the Ministry of Hajj and other entities. One Umrah company emphasised:

*‘There are two types of supports we became familiarised with one is from the service providers and the other we receive from Ministry of Hajj. The service provider support concerns our implementations and dealings in the e-Umrah system where the service providers guide us and correct the errors and mistakes of the information from our side while the Ministry of Hajj support consists of the errors and mistakes which we found from other entities. From those two types of support we built efficient familiarity and became able to know how to achieve our tasks and fulfil the demands of Umrah activities. However, the Ministry’s support is much more difficult and requires time and efforts to accomplish.’ (Category (2), Company (3))*

#### **6.4.3.3 Extent of engagement and usability of practicing in the e-Umrah system**

The majority of Umrah companies stated that they have been using the e-Umrah system since the establishment of system use (2001-2002) and indicated that they have been working in the Umrah field long-term before the electronic system was established when the transactions were conducted manually. On the other hand, the range of engagement with the e-Umrah system among recent Umrah companies was between two to eight years. Umrah companies also revealed that the new participants who are newly engaged in the e-Umrah systems require some time to become familiar with this system. Some thought it is a matter of weeks while others thought that it requires months in order to become familiar with the e-Umrah system. This extent of time to become familiar was found to depend on the capabilities of the new Umrah companies in term of adopting and adapting to/with technology, IT

and computing capabilities among staff, and understanding the Ministry of Hajj's conditions, standards, and instructions when practicing in the e-Umrah system. One Umrah company explained:

*'Technology is a significant factor and most of the new Umrah companies like us became rapidly familiar of using the system because they established their business depending on the factors of adopting technology through implementing all operations electronically and through computers and hiring staff who have computing and IT skills. These two factors are important to create efficient and effective work environment in addition to understand the Ministry of Hajj's regulations and standards to implement correctly the Umrah services and operations.'* (Category (3), Company (20))

Furthermore, all Umrah companies reported that they use the system everyday and on a daily basis. They also indicated that they use the system all over the season since the beginning of the season till the last day (11 months) except in the month of Hajj because they shift from Umrah services to Hajj.

*'The electronic system requires daily work from all departments (administration, IT, finance, marketing and sales, and operations and follow ups). Each department access to the system to conduct services, follow up with conducted services progress, and receiving the inputs and outputs of the Ministry of Hajj of our requests.'* (Category (5), Company (22))

## **6.5 Dimension (5): Links with Conventions of practice (LCP)**

### **6.5.1 Introduction**

The e-Umrah system shapes and is shaped by the conventions of a community of practice. These conventions of a community of practice involve diverse services and work practices which include electronic and manual operations. In addition, this community of practice also involves diverse ministries such as the Ministry of Hajj, the Ministry of Foreign Affairs, and the Ministry of Interior. However, not only the ministries are involved but other parties from private firms are also involved in the conventions of the community of practice and have influence, such as Samba bank, Tasheel, service providers, Umrah companies, and international agencies all over the globe. Also, these diverse entities of diverse services and work practices were found to shape the current e-Umrah system. In turn the current e-Umrah system was also found to be shaped by the production of the existing system(s), communication networks, operations, rules, regulations, work practices and

processes; these shaped issues by the conventions of practice in turn reflect how the infrastructure is enabled to shape the current community of practice. Therefore, this dimension explores the effect of the conventions of those entities: 'the community of practice' on the e-Umrah system and at the same time how the e-Umrah system affects the conventions of practice.

### **6.5.2 Views on constant development in the e-Umrah system**

The Ministry of Hajj worked with extensive efforts throughout the years and is still working to develop and improve the Umrah activities aiming to offer, organise and facilitate all services under the umbrella of the e-Umrah system where all services and what relate to Umrah processes and procedures to be practiced electronically. This vision which created by the Ministry of Hajj was essential to build the foundation of the e-Umrah system and continue throughout the years to uncover the obstacles, gaps, and insufficient issues which exist in the e-Umrah system. All Umrah companies emphasised on the significant role of the Ministry of Hajj in developing and improving the e-Umrah system. One Umrah company explained:

*'The service provider has nothing to do with the constant development and improvement except what improves the works practice of the company and facilitate displaying the data and provide all the required information but the Ministry of Hajj is the one who have decide of the development and if they have something new to add in the system. Adding new features, suggestions, comments, or new standards are the forms of developments.'* (Category (1), Company (26))

The initial step of development was launched when the Ministry of Hajj began to integrate the primary entities electronically to the e-Umrah system. This electronic integration of entities (Ministry of Hajj, Ministry of Foreign Affairs, Ministry of Interior, Samba bank, Service providers, Umrah companies and International agencies) had built the system with the major services which are required and without one of these services the Umrah operations cannot be fulfilled.

Secondly, throughout the years, the Ministry of Hajj became also aware of the importance of other types of services which implemented by Umrah companies and considered as recent development of services such as operational plan, flight, transportation and accommodation. These recent

services were implemented manually and were required to be integrated and implemented to enhance Umrah practice achieving full electronic services in the e-Umrah system. Then the Ministry of Hajj began to develop the Umrah companies practice in the system and shaping these services by instructing the service providers to design these services in the e-Umrah system. Hence, the service providers began to design these services as instructed and according to the Ministry of Hajj's regulations and standards. Throughout the years and practicing in the e-Umrah system, the Umrah companies revealed that some issues still encountered and occurred from the primary and recent integration of services which found to shape the current e-Umrah system, hence the e-Umrah system is shaped to offer these services as designed.

### **6.5.3 Views on other electronic systems of other involved entities (integration and description of connectivity of other systems)**

According to the view of current design which was shaped by the Ministry of Hajj to the current e-Umrah system, Umrah companies perceive the current integration and connectivity as invisible and indirect since they are not linked directly with any of the involved entities except the service providers. The service providers have also disconnection with all entities except one direct connection with the Ministry of Hajj. This direct connection was shaped by the Ministry of Hajj to receive the input of the Umrah companies and in turn enable the Ministry of Hajj to distribute the input of Umrah companies to the involved entities and receive the results of these inputs and forward back as outputs through the service providers. This existing shaping of the e-Umrah system explains that the e-Umrah is shaped as the Ministry of Hajj is the dynamic centre and the processor which receives, forwards and replies back operations from/to all entities of the system. One Umrah company explained:

*'All entities are sharing in the e-Umrah system which begin when the international travel agents create the requests and submit them to Umrah company, then Umrah companies verify data and submit it to the service providers, the moment the requests are released by the service providers, the other entities of other systems begin to receive these data throughout the Ministry of Hajj, each involved part of the system takes what concerns them and send the results of the requests as outputs to the Ministry of Hajj and the Ministry of Hajj start interacting with Umrah company through these outputs.'*  
(Category (3), Company (6))



Also, the current shaping of the system explains that there is no direct connectivity between Umrah companies and Ministry of Hajj in the case of discussing or complaining about the barriers which Umrah companies encounter. Even the service providers do not have this feature designed in their portals. Consequentially, this absence of a channel leaves no choice to Umrah companies except dealing manually to discuss the issues of obstacles or complains which occur in a form of insufficient, mistake, or errors from other entities. An example of this was explained by one Umrah company:

*'When having issues with the Ministry of Interior (passport department) such as a number of visitors appear to have not left the country in the system and they actually left. The company has to communicate with the Ministry of Hajj through letters and do manual works in order to proof (through providing them with copy of the flights number and a copy of exit stamps from visitors passport) that the visitors have left the country and this suppose to be added in the system since it is dealing officially with the ministries'. This explains that the companies still communicate manually to solve it and when it is solved the Ministries of Hajj and Interior update the information to their systems.'* (Category (3), Company (1))

#### 6.5.4 Type of works/operations when dealing with other systems

The type of practices/operations according to table 6.1 was also discussed. Each part of the e-Umrah system was found to have an engagement in the services' deliveries in a form of applications or information/data to deal with their duties and responsibilities in the e-Umrah system. These practices can be long-established such as these found with the international agents, service providers, and the Ministry of Hajj in addition to the other entities of the system such as the Ministry of Foreign Affairs, Interior, Samba bank, and Embassies/Consulates. Furthermore, Umrah companies deal with other entities in a number of services and practices summarised in table 6.1.

e-Umrah system entity	Type of work/operation/transaction offers
	Everything related to Umrah's activities, operations and services, Set up packages (flight, accommodation, and transportation), operational plan activities, approval of visas, approval of visa fee payments, updating all entities records

<p>Ministry of Hajj</p>	<p>which receive from ministries of Foreign Affairs and Interior, certifying agreements and contracts, visitors requests of visas extensions, hosting by others, death and hospital cases, loss of passports, submit official documents to the Ministry of Hajj to discharge from the case in case if there is something with the Interior, primary player where they receive requests and distribute them to the other stakeholders and vice a versa, documenting the contracts and activate licenses after following up with Umrah companies in the operations of hotels and transportations, the Ministry's field work committees are the one who follow up with Umrah companies,</p>
<p>Ministry of Foreign Affairs</p>	<p>e-Visa issuance, facilitate the visa issuance and transform the visa issuance to the embassies and consulate in all over the countries</p>
<p>Ministry of Interior</p>	<p>Entry/exit of Umrah visitors, supervision and follow up Umrah visitors entry/exit records provided by the service providers through the Ministry of Hajj, inform with the arrival and departure of visitors status, supply the Ministry of Hajj with the data which concern entry and exit of visitors</p>
<p>Bank (Samba)</p>	<p>e-Payment (visa payment's vouchers)</p>
<p>Service provider</p>	<p>Connect companies with the Ministry of Hajj and international travel agents, offers visa applications, package/program applications, upload all applications which consist of visa, contracts of accommodation, transportation and employees, display all information of ministries and bank to Umrah companies, display the Ministry's of Hajj's notifications and instructions, offer all technical solutions and all what facilitate Umrah field and relate to Umrah services</p>

International Travel Agent	Uploading Umrah visitors applications, setting up e-packages/programmes, following up with Umrah visitors progresses, conducting e-Visa payments, certifying agreements and contracts' partnerships, the source of information where we receive the information and verify and confirm it and send it to service providers and then to Sejel and end up to the Ministry of Foreign Affairs.
Saudi Embassies	Visas verifications and collections

**Table 6.1:** Long-established practices (Umrah companies views on the services and operations conducted by e-Umrah system's entities)

In addition to long-established practices, there are newly-established practices/operations which have been recently developed in the e-Umrah system as listed in Table 6.2. These practices concern the operational plan where Umrah companies provide the annual Umrah operations' plan to the Ministry of Hajj, travel arrangements which consist of flight, transportation and accommodation. One more identified practice was the e-coordination which consisted of the implementation of arrival and departure operations and arrangements between the Umrah companies and Tasheel officers to receive and depart Umrah visitors from/to air/sea/land ports. However, this type of practice was not included in the system (as analysed in embeddedness dimension).

e-Umrah system service	Type of practice (work/operation/transaction)
Operational plan	Umrah companies in this service submit electronic application and documents related to the annual Umrah plans which consist of number of countries that the Umrah companies deal with, total number of International agencies and number of international agencies from each country, and estimations of the number of Umrah visitors that Umrah

	companies are planning to offer Umrah packages.
Flight	Umrah companies in this service submit electronically in the e-Umrah system the documents of flight tickets which issued for each Umrah visitors.
Transportation	Umrah companies in this service submit electronically in the e-Umrah system the contracts with the transportation companies.
Accommodation	Umrah companies in this service submit electronically in the e-Umrah system the contracts which concluded between them and the hotels, motels, furnished apartments, etc.
e-coordination	Umrah companies in this service practice manually outside the e-Umrah system the arrangements and communication of receiving and departing Umrah visitors.

**Table 6.2:** Newly-established services (Umrah companies views on the practices and operations conducted in the e-Umrah system)

### 6.5.5 Rules/Conventions affecting the use/design of the system

These previously mentioned practices which identified and revealed some continuous and new barriers, occur in the current design of the e-Umrah system due to how these entities or services are shaped and in turn the e-Umrah system is shaping the current design to system's users therefore affecting the design and implementation of the system. This can be seen in the following services:

#### 6.5.5.1 Passport processes

Before the e-Umrah system was built, the rate of those who remained in Saudi was tremendously high, reaching hundreds of thousands. Years after, the Ministry of Hajj as a primary player adopted the field of Umrah. One of the

Ministry of Hajj's objectives was to link the Ministry of Interior as a major player to receive the reports which were submitted by the Passport Department, of those who fail to depart the country. This step was significant in that it enabled the Ministry of Hajj and the Ministry of Interior to strengthen their control over the failure of the departure rate and to work with Umrah companies and their partners (international agencies) to follow up these cases until the departure of those who still remain in Saudi illegally. This practice was perceived to significantly improve the phenomenon of the departure barrier since it helped to reduce the rate of non departed Umrah visitors in the previous Umrah seasons from hundreds of thousands to just thousands.

Nevertheless, this service which was provided by the Ministry of Interior was found to have an effect on the current use of the e-Umrah system. The departure service was electronically designed to offer two services. The first was to enable Umrah companies to report Umrah visitors who failed to depart. While the second was to deliver the reports of those who failed to depart the country through the Ministry of Interior. However, the second practice was found to affect the use of the e-Umrah system.

This effect results from informational errors in manual practice. This is due to reports received by the Passport Department which sometimes contain errors indicating the existence of Umrah visitors in the country when in reality they have departed. Also, the lack of electronic procedures to confirm departure information was found to hinder the solving of the issues of Umrah visitors' departures electronically, leaving no choice but to practice this operation manually with the Ministry of Hajj outside the e-Umrah system. Hence solving this problem requires taking manual action by providing proof of departure via paperwork. Some Umrah companies responded thus:

*'System and Information errors are some of the affecting issues and these are a vast problem, such as non departed/disappeared/escaped cases because you find them in the system but physically they have left the country.'* (Category (2), Company (4))

*'This case has long procedures and becomes manual, where one of our representatives must attend to the Ministry or else they do not assist us if we do not present personally.'* (Category (2), Company (21))

Consequentially, this practice's process is affected by the current design as some of the procedures and processes are not in the system and Umrah companies claimed that it is necessary to be in the electronic system to complete the practice and processes of this service.

#### **6.5.5.2 Death procedures**

This service was designed in the e-Umrah system because Umrah companies are required to report the status of Umrah visitors such as when Umrah visitors die in the country. Hence, the Ministry of Hajj enabled Umrah companies to report in the e-Umrah system the Umrah visitors who died with no additional information or procedures. Furthermore, this type of service involves various entities in order for them to communicate and accomplish the death process. These involved entities incorporate the Ministry of Hajj, the Ministry of Interior, the Social Security Department (to obtain Umrah visitors' death certificates), Umrah companies, international agencies and international embassies and consulates.

However, the procedures for this service affect the use of the e-Umrah system. The e-Umrah system is designed only to report the death with no consideration of other applications related to the procedure of fulfilling the requirement of this service. This is because the Ministry of Hajj does not acknowledge in the current design of the e-Umrah system the additional information which fulfils the death procedures and this influenced the design of the e-Umrah system.

On the other hand, obtaining a death certificate from the Social Security Department and arranging or receiving the decisions from embassies/consulates which are responsible for those Umrah visitors who have died are not practiced in the e-Umrah system. In addition, obtaining a death certificate requires considerable effort due to Social Security Departments' processes which vary from one city to another (some cities are quicker than others).

*'The main things that affect the use of the system are the ports/immigration/passport department beside death cases procedures especially in Madinah. When someone dies it takes 3 months to receive the*

*death certificate there is a big difference in the government departments between Makkah and Madinah. I think Makkah is more flexible with the processes and procedures of transactions than the governmental departments of Madinah.’ (Category (2), Company (6))*

Furthermore, the Ministry of Hajj does not arrange with embassies/consulates, and international agencies inside and outside the e-Umrah system the methods of solving the death procedures. Hence, communicating with embassies/consulates and international agencies to inform them of the occurrence of death and the wait for their decisions of burial in or outside the country requires additional effort and is time consuming (embassies/consulates and international agencies have to communicate with the families of those who died to seek their permission to bury them in Saudi or send them back to be buried in their home countries). Consequentially, the current design of the death procedure is claimed to be insufficient to provide the whole procedures due to absence of integrating some entities which cause an effect to accomplishing death requirements in the e-Umrah system.

#### **6.5.5.3 Travel arrangements (flight, transportation, accommodation)**

The travel arrangements services which consist of offering Umrah packages such as flight, transportation and accommodation were designed in the e-Umrah system to only upload the documents of these services as proof of delivering the Umrah services to Umrah visitors by the Umrah companies. The Ministry of Hajj designed the electronic Umrah system to only receive these documents as confirmations of fulfilling the requirements of Umrah visitors’ demands. Therefore, the current design of the e-Umrah system was found to lack the complete practices of these services. This is because some Umrah companies claimed that the e-Umrah system should not only offer Umrah companies to report documents only but to include in its practices all the processes which relate to these services.

For example, flight service is a service was designed in the e-Umrah system for providing the expected reservation codes which international agencies enter when filling in the Umrah visitors’ visa applications. The expected reservation codes and details of Umrah visitors are required by both the Ministry of Hajj and the Ministry of Foreign Affairs in order to accept the visa applications. These

details contain the airlines where the Umrah visitors have purchased their tickets, the expected flight numbers and the expected arrival and departure dates.

However, the practice of this service was found not to be efficient when changes of flight details, delays and cancelations occur. This is because the flight information in the e-Umrah system contains only the expected flight details and not the actual flight dates, since the visa applications require only the expected dates of arrival and departure for approving visa applications. Hence, when changes in flight details by international agencies occur, the practice of this service is affected by these changes since all the related reservations which concern transportation and accommodation have to be adjusted.

Furthermore, the e-Umrah system is not connected with the Saudi Civil Aviation Authority or the airlines in order to receive updates of flight information. Therefore, any cancelations or delays of flights by airlines are not displayed in the e-Umrah system causing the need for this information to be retrieved manually outside the e-Umrah system.

*'We have some problems concerning flights. These problems occur when delays or cancelations occur from the airlines which affect the arranged packages/programmes of Umrah visitor groups. The Ministry of Hajj should reconsider this service as there should be conventions between the Ministry of Hajj and the airlines when there are problems concerning delays or cancelations in flights' (Category (2), Company (22))*

Another service developed by the Ministry of Hajj in the e-Umrah system is transportation. Umrah companies are only allowed to submit electronically scanned copies of transportation contracts for the purpose of proving to the Ministry that the Umrah companies have met the commitment of offering transportation services to Umrah visitors.

However, there is something lacking in arrangement in stet unis practice between the Ministry of Hajj, the Ministry of Transportation and the General Syndicate of Cars. The Ministry of Hajj sometimes imposes new regulations or adjustments to existing regulations and policies of transportation based on the conventions agreed by both the Ministry of Hajj and the Ministry of Transportation or General Syndicate for Cars. These changes which concern



transportation occur in this service's information, process, procedures and regulations. These changes occur randomly without notification in the e-Umrah system as there is no official application for transportation information in the e-Umrah system except transportation contract submission.

*'As concerns transportation, the Ministry of Hajj should consider the arrangements for transportation as they began to consider the hotels. Including all accommodation and transportation entities and services in the future.'* (Category (2), Company (28))

Therefore, the changes reach Umrah companies by manual letters which affect the practice in the e-Umrah system as they are not prepared for these changes and packages that have already been set up according to the old regulations.

The accommodation service is practiced in a similar format to transportation. This service was developed in the e-Umrah system by the Ministry of Hajj to submit solely scanned copies of accommodation contracts as proof of accommodation availability and confirmation. This service was also designed in the e-Umrah system to ensure that each Umrah visitor was offered the desired accommodation according to the agreed Umrah package/programme between the Umrah visitor, international agency and the Umrah company.

However, the implementation of this service was found to be affected by the relations between the Ministry of Hajj and the Saudi Commission for Tourism and Antiquities. This is mainly due to the unidentified arrangements between the Ministry of Hajj and the Saudi Commission concerning accommodation classifications in the e-Umrah system which leads to unexpected changes which occur in accommodation classifications. These changes of accommodation classifications are concerned with the decisions and conventions which are posed by both the Ministry of Hajj and the Saudi Commission. Consequentially, the e-Umrah system is not rapidly updated with all the information that concerns accommodation classifications.

Therefore, there is an incompatibility of this service with other services such as operational plans, flights and transportation, because all these services are linked together and a change in one of these services will affect the other services.

Some Umrah companies stated:

*'Sometimes there are decisions released from the Ministry which are disrupting for two or three days because it affects our work, since the decisions which contain hotel organisations cause delays. The capacity of hotels is another issue since our work requires us to have ratified contracts from the Chamber of Commerce so we have interruptions in the accommodation case.'* (Category (2), Company (17))

*'We are used to the hotel's tariff (capacity) per room being for 25 visitors per month and all of a sudden the Ministry of Hajj changes the accounting procedures and what if you have already set up packages/programmes for one month the month that you made the packages/programmes for visitors, and paid for this? You find out they have released a notification or decision that is incompatible with the plan that you have already made and this is something that can cause significant effects.'* (Category (2), Company (37))

#### **6.5.5.4 Operational plan**

The operational plan has a significant affect in improving the work practice. Before this service was designed in the e-Umrah system, Umrah companies used to fill in applications and submit them manually on paper. Then the Ministry of Hajj developed the service to be more efficient by allowing Umrah companies to enter the proposed plan for the forthcoming year electronically. The reason the Ministry of Hajj developed the operational plan was to receive statistical information on the seasonal plans of Umrah practice from each Umrah company. Hence, Umrah companies have to provide statistics to the Ministry of Hajj which include the number of countries and number of international agencies which the Umrah companies will deal with, and the number of Umrah visitors who desire to perform Umrah through international agencies.

However, one practice in this service was found to affect the use of the e-Umrah system. This practice concerns the decisions of the Ministry of Hajj in approving the operational plans for the Umrah companies. This is due to the reliance of the Ministry of Hajj, when taking decisions about approving operational plans, on the departure reports only, which are delivered by the Ministry of Interior indicating the previous season statistics of Umrah visitors who failed to depart.

In addition, there is a lack of a full analytical report by the Ministry of Hajj on the decisions which they made regarding the Umrah companies' operational plans in the e-Umrah system. This leads to negotiations and discussions taking place manually to clarify and resolve the decision.

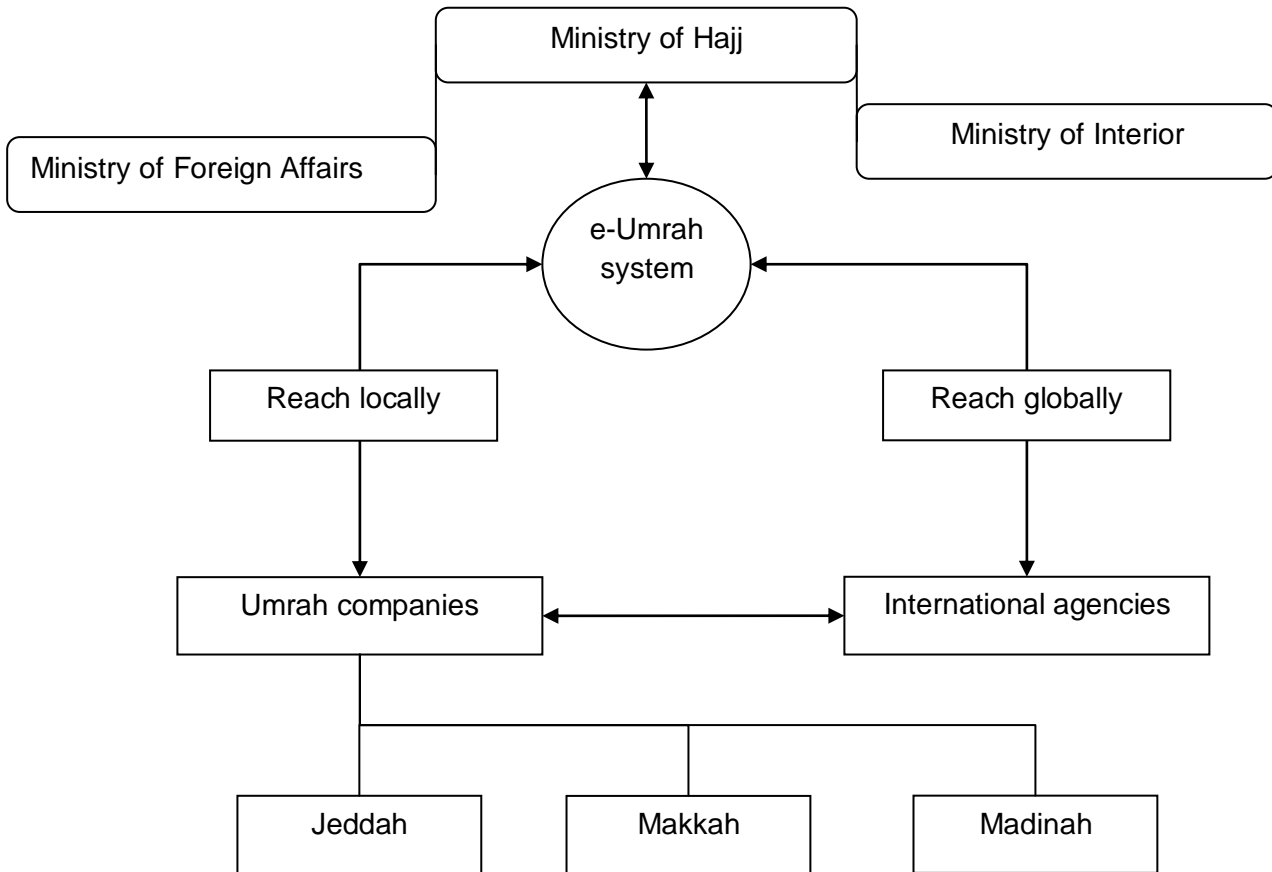
*'Arrangement and the design are the two most important elements which affect the use of the system, and these two cases can be seen from the cases of operational plans and the visitor exiting cases.'* (Category (2), Company (8))

## **6.6 Dimension (6): Reach or Scope (RS)**

### **6.6.1 Introduction**

Reach or scope of the e-Umrah system refers to the e-Umrah system as a base which connects all users to practice Umrah activities using a single site which is the e-Umrah system. This relation between the e-Umrah system and its users can be examined in two dimensions: spatial and temporal.

The spatial dimension of the e-Umrah system from different locations: locally and globally. The local reach is concerned with whether the e-Umrah system reaches or connects all entities. The e-Umrah system can be reached by Umrah companies locally in either a common or a different manner, in terms of implementing transactions in e-Umrah. While the global reach is concerned with the manner of interaction by international agencies globally (As illustrated in Fig 6.2).



**Figure 6.2:** Spatial infrastructure/practice in the e-Umrah system

On the other hand, the temporal dimension involves the impact of change over time in the use of and access to the Umrah field before, within and after the development of the e-Umrah system, consequentially investigating the practices in the Umrah field and the continuation of problems that occur in the current stage of the e-Umrah system.

### 6.6.2 Views on the system's reach or scope of the current e-Umrah system

As discussed in previous dimensions, the main aim of inventing the e-Umrah system by the Ministry of Hajj was to enable all entities to reach one single site which is the e-Umrah system and implement Umrah operations and tasks electronically. This aim had scopes which were found to be sequentially achieved and temporally developed throughout time. Undoubtedly, all Umrah companies agreed that the e-Umrah system has not achieved full electronic reach or accomplished the scopes of complete electronic Umrah system's services. This is because the system is still in the process of development and

improvement to achieve full electronic reach and fulfil the scopes. Also, the Ministry of Hajj is still working on improving and developing the e-Umrah system through uncovering and identifying the challenges and obstacles which still exist or even the difficult or complex processes of some practices which do not enable making these practices to achieve full electronic processes. Some Umrah companies explained:

*'We need development; there is a need for further development. The base/foundation is available but requires more. There are some gaps related to work practice. The Ministry of Hajj is still tackling the gaps which exist in the system and working on finding the best solutions to ensure flawlessness of processes of services and operations.'* (Category (1), Company (36))

*'There is frequent development and still the e-Umrah system requires further development.'* (Category (1), Company (40))

*'Some entities, services, operations, and practices are still did not achieve full reach electronically. All these mentioned issues have time to develop to the utmost level. We witnessed some developments in the previous years when the Ministry of Hajj discovered some gaps such as the manual dealing between the Ministry of Hajj and us of some services such as the submission of operational plan, flight, accommodation, and transportation through submitting directly via paperwork the documents and contracts of these services and then the Ministry developed these services to be achieved electronically and we began to upload these documents and contracts through the e-Umrah system.'* (Category (1), Company (33))

### **6.6.3 Requirements of achieving reach or scopes (fulfilling system's reach and achieving scopes/goals)**

This section concerned the issues identified by the Umrah companies thought to be obstacles or areas of development which hinder the e-Umrah system to expand or achieve the one electronic reach or scopes of achieving full electronic practices. These issues were mostly analysed under two categories: the influence of spatial infrastructure/practices which analyse the issues concerning reach and the influence of temporal infrastructure/practices which considered in its analysis the issues concerning the scopes of the e-Umrah system's infrastructure.

### **6.6.3.1 The influence of spatial infrastructure/practices**

#### **- Issues within the Umrah companies (Reach)**

Connection to the e-Umrah system means that all Umrah companies practice from one site and one event which is through the e-Umrah system. All Umrah companies were able to access to the e-Umrah system locally or remotely because the e-Umrah system is reachable through the service providers' websites. Furthermore, all Umrah companies have common use and practice within the e-Umrah system due to the standards which are applied to all Umrah companies. However, connecting to the e-Umrah system in terms of practice and use varies among Umrah companies in Jeddah, Makkah and Madinah. This variation is perceived to influence the current practice and use due to internal organisational differences among Umrah companies' employees when engaging with the e-Umrah system.

It was found that Umrah companies in Makkah and Madinah share similar views. Firstly these companies tend to impose restrictions to a varying degree in accessing the e-Umrah system among their employees. One reason for this was the lack of adequate knowledge of IT among employees. Besides this, since most of employees work on the field: e.g. accompanying Umrah visitors once they arrive the country, Umrah companies in Makkah and Madinah perceive that there is no need for those employees to access and use the e-Umrah system except for checking the information relating to arrival and departure of Umrah visitors.

*'I think each employee has his own duty and authority that is why they have limited access to the system and we are not planning to make everyone use the system and have made it restricted to a few because of work confidentiality. The reason why we make restrictions is because we have a limited number of staff who are experts in IT and are accessing the e-Umrah system and conducting the operations. However, for the rest of the staff the company would have to offer them more training and this requires lots of time, effort, and budget to enable all our company staff to be able to use the e-Umrah system and become familiar with it.'* (Category (4), Company (2))

*'The system has to be restricted to those who are browsing because they have nothing to do with the full engagement of the system and are operating specific screens in the system.'* (Category (4), Company (5))

Another reason for imposing this restriction on the use of e-Umrah is that Umrah companies in Makkah and Madinah do not permit access to all employees due to information confidentiality and secrecy. This is to maintain privacy of company plans and operations, documents, history of financial reports and other issues.

*'The reason it is restricted to the IT department and some individuals is because full authorisation has to be given for some particular individuals and it is a problem if you leave the system fully accessible to anyone in the company. There are many issues which make us restrict operations to certain departments and employees such as confidentiality of company documents, financial history reports, who we are dealing with and so on' (Category (4), Company (7)).*

Although Umrah companies in Jeddah share the same view, restricting accessibility to the e-Umrah system among their employees, the reason for this is mainly due to information confidentiality and not because of lack of adequate knowledge in IT among their employees. The main reason for this is that Jeddah is a large city which attracts a greater number of highly qualified employees who are given better offers with higher salaries. In addition there are many opportunities for increasing the level of IT knowledge due to the presence of many IT training institutions.

*'Whenever we have an increase in the number of visas we raise the numbers of staff who join to accomplish our tasks. Because the employees we have are performing very well with their tasks and are dedicated to their duties, we increase the number of staff when our business expands.' (Category (4), Company (14))*

It was also found that the level of familiarity with the e-Umrah system was higher among employees working in Jeddah Umrah companies. This was found to be due to the proximity to all entities involved in the e-Umrah system which facilitates speed of understanding and implementation.

*'Most of the employees use the system, the percentage being 80%. Because each department has its particular duties and responsibilities and some employees in some departments do not need to access the system as they are assigned to do tasks outside of the system. We are still expanding to make all our employees reach the e-Umrah system since we are dealing with many entities and each department which has employees has to be assigned to work with each entity of the system, such as finance work practice, the e-payment with the bank, follow up work practice, the entry/departure operations with the Ministry of Interior, sales and marketing practice, the operations with the*

*Ministry of Foreign Affairs, and so on. This distribution was found to increase productivity and understanding of operations in addition to speeding up the processes of Umrah activities inside the company.’ (Category (4), Company (20))*

Another common issue in Umrah companies in Jeddah, Makkah and Madinah is the relation between them and the international agencies within the e-Umrah system. The e-Umrah system can also be used by the International agency (global reach). Nevertheless it causes a potential problem such as payment. With regards to payment, some Umrah companies conduct payments electronically on behalf of the international agencies to speed up the process of obtaining visas and setting up the Umrah package. Later on, the international agencies make their payment to the Umrah companies. In some cases the international agencies delay the payment for a considerable amount of time which is not in the favour of the Umrah companies. In this case, international agencies are still able to access the e-Umrah system and print out the Umrah visitor groups’ visas. Umrah companies do not have control over the system and cannot suspend the international agencies’ actions.

*‘Some of the international agencies do not pay in advance or on time and they postpone the payments. This affects our operations since we cannot suspend their operations in the e-Umrah system as we have no authority to control the actions and operations of international agencies printing the visas when issued.’ (Category (5), Company (1))*

*‘Another thing is that we conduct the e-payments for the Umrah visitor groups on their behalves. There is one concern about this which is that we experienced some delays in receiving the payments from international agencies. I think it is better for us to have some control, to make restrictions on international agencies such as putting their operations on hold in the system if they did not make the payments to the company.’ (Category (5), Company (11))*

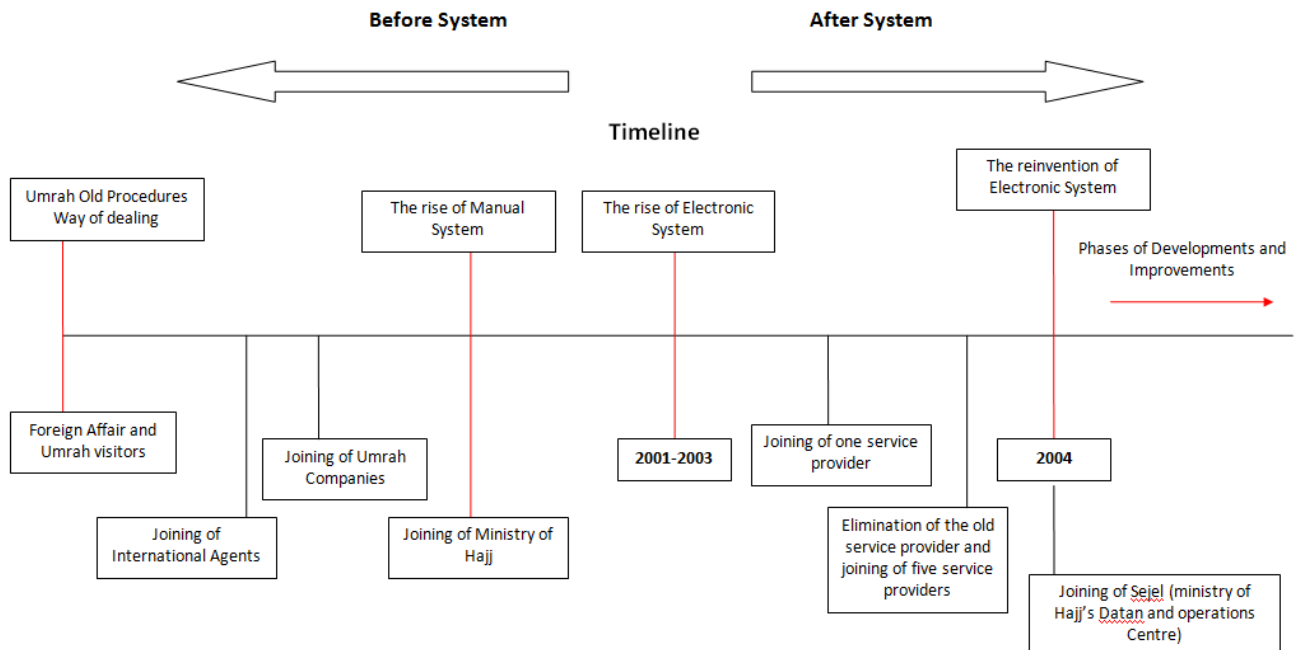
*‘I think one problem faced is the payment issue. The Ministry of Hajj should reconsider these operations since some of the international agencies delay when conducting payments. Yet they still have the advantages of printing payments. We have no control and I think it is preferable to have some control in limiting their activities and accesses when required.’ (Category (5), Company (36))*

### **6.6.3.2 The influence of temporal infrastructure/practices (scope)**

The Umrah field has experienced three major developments and each development changed the scope of use and access. These phases are the



Umrah old procedures or 'Legacy system', the manual system and the electronic system (as illustrated in Fig 6.3).



**Figure 6.3:** Timeline illustrate the development and lifecycle of Umrah field

#### - Legacy system

The old procedures were based on self services where the Umrah visitors performed all Umrah arrangements by themselves. These arrangements included applying for Umrah visas at the Saudi embassy/consulate in their countries, making reservations for flights, transportation and accommodation. In addition, Umrah visitors faced many difficulties such as lack of arrangements in services. Some Umrah visitors would fall for fraud packages/programmes and information after their arrival in the country with no dedicated entity to ensure their rights in the absence of official contracts and plans. The Ministry of Foreign Affairs was only responsible for the requests for visas, with a limited number dedicated for each country.

Nevertheless, the Ministry of Hajj at that time was not responsible for the Umrah field and was dedicated only to Hajj activities and operations. A lack of supervision over Umrah visitors was another issue, since the Ministry of Interior had difficulties in dealing with those Umrah visitors who enact their Umrah but

remained in the country. Therefore, these issues were considered by the Saudi government and were improved by including a paper based/manual system which was designed to organise all entities and services and facilitate all Umrah visitors' demands and ensure their rights.

*'The legacy system was based on self service where the Umrah visitor had to do everything by themselves, such as applying for visas and setting out their own packages according to their budgets. Then the Ministry of Hajj developed the legacy system. The system is still under continuous development.'* (Category (1), Company (5))

#### **- Manual system**

With the rise of the international agencies and Umrah companies, a manual system was developed, where the Ministry of Hajj developed the arrangements of the Umrah field. This included more organisation of the Umrah process through the integration of ministries: the Ministry of Hajj, the Ministry of Foreign Affairs, and the Ministry of Interior and business entities (international agencies, Umrah companies, and Samba bank) which organised and arranged the work practices, ensured the rights of the Umrah visitors and facilitated the Umrah procedures among the entities. This facilitation appeared through accomplishing tasks, developing the arrangements, collaborating between entities and creating a new improved environment to access and the use of better practices and provide efficient services for Umrah visitors.

However this manual-based system's practices and processes were insufficient in providing effortless practices to Umrah companies due to being very slow, complex and having time consuming transactions. In addition, dealing within any documents and receiving many notifications of changes and improvements from the ministries created misleading practices. This led to inefficient practice of Umrah activities by Umrah companies which hindered the effectiveness of the Umrah activities' manual system.

*'The e-Umrah system is in the process of continuous development. It has witnessed various phases of development beginning with the legacy system where Umrah visitors were responsible for managing their own journey and suffered difficulties due to the absence of supervision. Then with the rise of the manual system, the Umrah activities began to take a better organised shape. The Ministry of Hajj developed the way of dealing more. However, the manual system was slow in processing transactions and each entity used to deal with*

*massive loads of paperwork in addition to the absence of some services which were not included such as the Ministry of Interior's passport department departure report.'* (Category (1), Company (14))

Furthermore, the information involving the Umrah services such as operations and progress, status of bank payments, visa requests and entry/departure reports was not available to Umrah companies. The Ministry of Hajj has only assigned the responsibilities and duties to entities without providing the dissemination of information of these entities' progresses and outcomes to Umrah companies. The Umrah companies in these circumstances had to collect the information from each entity individually.

*'In the manual system, the Ministry of Hajj considered only the methods of arranging the duties and responsibilities of each entity in the Umrah field. We were responsible for disseminating the information by communicating with all entities and submitting the information which contains reports and requests progress and status to the Ministry of Hajj. Then, with the rise of the electronic system, the standards have changed in term of information and each entity had to submit the information from their side to enable us to focus on Umrah visitors, Umrah requests and following them up.'* (Category (1), Company (19))

#### **- Electronic system (e-Umrah system)**

The electronic system was the latest Umrah system which was developed to facilitate the use of and access to information in the Umrah field. Umrah companies in the manual system depended on self communication in terms of use and access to the Umrah field. The Umrah companies were authorised to access and deal manually by communicating with the involved Umrah entities such as the Ministry of Hajj, the Ministry of Foreign Affairs, the Ministry of Interior and Samba bank for the purpose of conducting and accomplishing their transactions and to provide to the Ministry of Hajj with the progress of work and reporting all operations.

Afterwards, the Ministry of Hajj assigned one service provider to design the first version of the early electronic system. This early design included electronic visa applications only. The scope of the Ministry of Hajj was to see the extent of success of the e-Umrah system by the Umrah companies. Consequently, the Ministry of Hajj succeeded in creating a single site where Umrah companies could access and use the e-Umrah system.

The aim of the electronic system was to provide visa applications only by electronic means. In addition, Umrah companies were responsible for accessing the e-Umrah system and entering the Umrah visitor groups' data on behalf of the international agencies as required by the Ministry of Hajj. However, Umrah companies were still dealing manually with the other entities such as the Ministry of Hajj, the Ministry of Interior, Samba bank and the international agencies. The success of the early stage of the development of the e-Umrah system through the use of e-visa applications led to the further development of the e-Umrah system through the incorporation of other Umrah services into the e-Umrah system.

*'The e-Umrah system passed through stages in term of connecting entities to one site and for one purpose which is facilitating the work of the Umrah field. The early electronic system was based around the visa, and designed to facilitate requests for visas by accomplishing the visa requests electronically instead of manual dealing. Then this idea was developed until the current stage of development of the system where most of the entities are integrated and deliver the Umrah outputs which they are responsible for providing.'* (Category (1), Company (30))

Therefore, the Ministry of Hajj assigned the company Sejel, which was considered the data and operational centre to re-facilitate the Umrah field, to re-develop the e-Umrah system to connect all entities electronically and arrange and organise the work practices by setting up new mechanisms, processes and procedures in collaboration with the other entities which included the Ministry of Foreign Affairs, the Ministry of Interior, and Samba bank. Also, the Ministry of Hajj had assigned four new service providers (and eliminated the previous service provider) to develop their websites according to the demands of the new version of the e-Umrah system. Each entity had to offer all the information which concerned the Umrah and report it from their sides directly to the Ministry of Hajj. With this new arrangement and the development of connectivity, the Ministry of Hajj improved work practices by requesting from each entity the information which related to Umrah operations to be sent directly through the e-Umrah system.

In addition, the new e-Umrah system's version was aimed to connect international agencies by engaging them to enter the Umrah visitor groups' data from their sides instead of the Umrah companies. The Ministry of Foreign Affairs

was integrated directly with the Ministry of Hajj through the e-Umrah system and was assigned to submit all the data which concerned visa issuance which includes its progresses and the updates of its current status to the Ministry of Hajj through the e-Umrah system. Furthermore, Samba bank was integrated directly with the Ministry of Hajj and all the information which concerns visa fee payments was submitted directly from the bank, once the Umrah companies access Samba and conduct the electronic payments. In addition, the Ministry of Interior became responsible for delivering from their side the information of all the Umrah visitors who entered and departed to the Ministry of Hajj through the e-Umrah system.

*'There is a significant difference between the early electronic system and the current one. The electronic system began with an electronic visa system only. It expanded and witnessed reinvention when the Ministry of Hajj began to include other entities by integrating them and embedding services which relate to Umrah operations in addition to information. Every entity was assigned certain responsibilities and duties until the electronic system has reached an advanced level of practice.'* (Category (1), Company (34))

The scope of the second phase of development of the e-Umrah system was the integration of most services into the e-Umrah system. This was successful and was found to strengthen the e-Umrah system's infrastructure by integrating, embedding and embodying the standards needed to provide efficient access and use from the new version of the e-Umrah system.

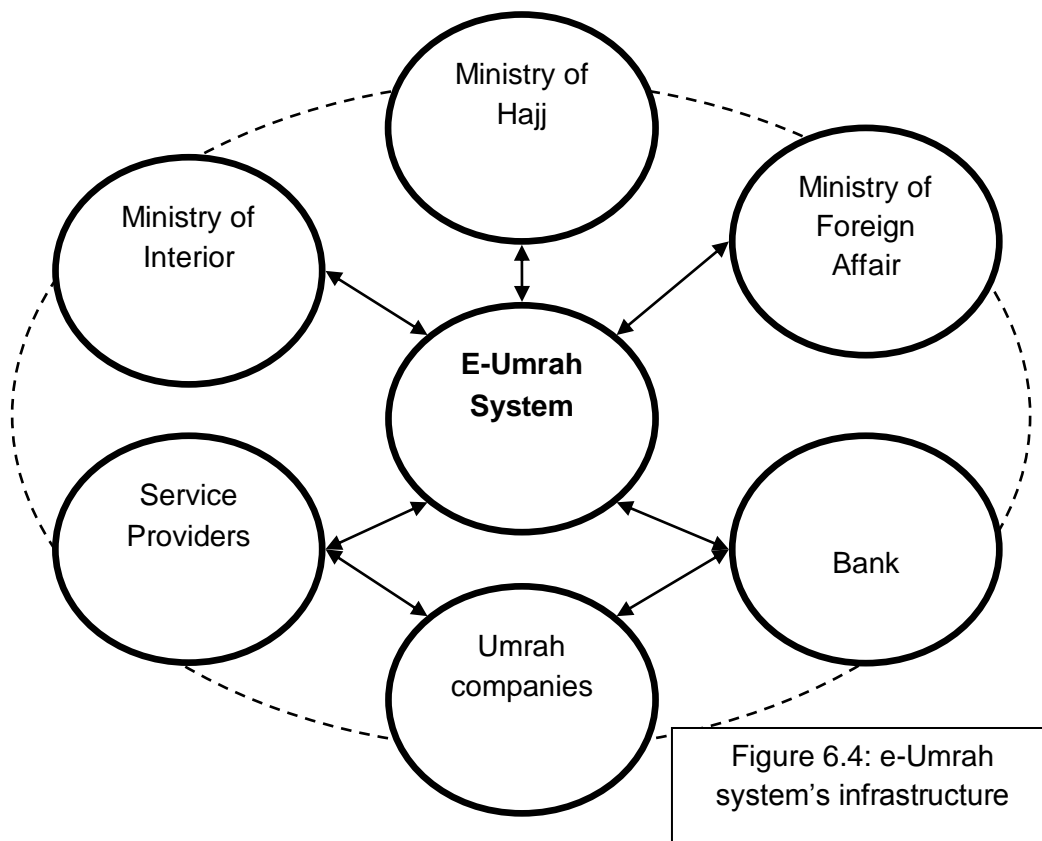
However, the latest version of the e-Umrah system was not without limitations. These included issues related to some services such as the operational plan, flights, accommodation and transportation, in addition to the Umrah visitors' departures and death procedures.

*'Yes of course every year all parties to the system discover new emerged issues and develop last year's negative cases so we have to keep pace with these developments and adjust the system to have better utilisation. There are some limitations that should be considered in term of arrangements, integration, and development of some services such as the operational plan, Umrah package (flights, transportation, and accommodation), and departure and death procedures requires further development and improvement.'* (Category (2), Company (40))

## 6.7 Dimension (7): Becomes Visible upon Breakdown (BVUB)

### 6.7.1 Introduction

This dimension refers to the system infrastructure which is invisible to the e-Umrah system's users when it is functioning properly. Once the system breaks or fails to function properly, the practices within the system disrupt and the system becomes visible indicating of an existing problem. This means that if the e-Umrah system's infrastructure faces full breakdown from the e-Umrah system itself (at the Ministry of Hajj) or partial breakdown from one of the involved entities then all users (the Umrah companies) become aware of the breakdown and it becomes visible to all Umrah companies (As illustrated in Fig 6.4). The remainder of the section discusses the breakdown's visibility in the e-Umrah system and the mechanism of solving this breakdown.



### 6.7.2 Visibility of breakdown

Two types of breakdowns were observed in the case study: technical and informational. The following analysis explores, explains and identifies in details

the impact of these two breakdowns and how it becomes visible to system's users.

### ***6.7.2.1 The impact of technical breakdown in the e-Umrah system's infrastructure***

The technical breakdown can be defined as a breakdown in the system's software (websites, applications, etc.) or hardware (server, database, network, etc.). It affects entity's use and work practice when connecting to the e-Umrah system in addition to other entities which might be involved in fulfilling the practice. Since the e-Umrah system connects and is used by many entities any local breakdown within an entity will disrupt the workflow in other entity, for example breakdown in the Ministry of Hajj and in service providers would have impact on overall system use and workflow in the e-Umrah system. This is because of the role that each entity plays in the e-Umrah system the impact of local breakdown on e-Umrah system would differ from one entity to another. For example, in the e-Umrah system, the Ministry of Hajj is the key player and owns the e-Umrah system the local breakdown within the Ministry is considered to have most impact on the e-Umrah system. This is because the technical breakdown within Ministry of Hajj not only has impact on the Ministry itself but also on other entities that are connect to the Ministry through the e-Umrah system. Before the beginning of the Umrah season the Ministry of Hajj checks the technical requirements and standards with all involved entities to ensure that all channels are operating properly and no technical problems are likely to hinder communication between the Ministry of Hajj and the other integrated entities. Once the technical breakdown occurs in the e-Umrah system from the Ministry of Hajj side, all communications become hindered in all entities, placing practices in the Umrah field on hold. An example of this would be a problem in the servers caused by viruses or network disconnection from the telecommunication company itself. The system will completely breakdown in this case preventing practice in all fields in the e-Umrah system. All entities are significantly affected by this and their practice and daily activities are disrupted. In this case the infrastructure becomes visible upon its breakdown to all entities.

*'Everything is visible through the system. We implement all transactions in the e-Umrah system and when a breakdown occurs it becomes visible that*

*there is a technical problem. We refer to the service provider to inquire about the problem and the service provider checks with the Ministry of Hajj and receives updates of the type of technical problem, whether it is from the server, database, or network connections.’ (Category (4), Company (6))*

At this stage the Ministry of Hajj will not be able to receive data concerning visa progress from the Ministry of Foreign Affairs. The Ministry of Interior will face a failure to transfer the information which concerns the Umrah visitors' entry and departure. In addition, Samba bank operations will be hindered, and they will not be able to transfer the electronic payment transactions which have been conducted by the Umrah companies. The Umrah companies' operations and activities will also be hindered. The channel which links them with the e-Umrah system through the service providers will be affected. The Umrah companies will not be able to receive information which concerns their operational progresses from the service providers. Even if the Umrah companies are able to access and conduct their operations through the service providers such as submitting operational plans, visa applications, Umrah packages (which include accommodation, transportation) or Umrah visitors reports which include departures, deaths, etc. will not be received in the e-Umrah system.

Another technical breakdown is one that caused by the service providers. However, the impact of a technical breakdown which occurs with the service providers has less than the impact of a Ministry of Hajj technical breakdown. This is because not all e-Umrah system entities will be affected. Umrah companies and international agencies will be disconnected from practicing Umrah activities in the e-Umrah system while other entities operations and activities will remain functioning as designated (the Ministry of Hajj, the Ministry of Foreign Affairs, the Ministry of Interior and Samba bank). This is because the service providers are considered the gate keepers to the e-Umrah system infrastructure. Umrah companies practice their Umrah activities and operations through the websites which are delivered by the service providers to reach the e-Umrah system and conduct transactions. Hence, the service providers are assigned to link Umrah companies and international agencies with the Ministry of Hajj and translate all Umrah services imposed by the Ministry of Hajj. In addition, service providers' roles are to ensure that all information which is received from the Ministry of Hajj is delivered to Umrah companies. In return, all



transactions which are conducted by the Umrah companies and international agencies have to be transferred to the Ministry of Hajj in order to fulfil the requirements of Umrah practices.

When technical breakdown occurs in the service providers' websites concerning software, applications, servers, networks or databases, all communications between Umrah companies and international agencies with the other entities will be disrupted. This technical breakdown from the service providers is considered the second most major technical breakdown occurring in the e-Umrah system in terms of the impact on Umrah companies and international agencies' work practices.

This is because the e-Umrah system's infrastructure is invisible to Umrah companies and the only entity for which the infrastructure is perceptible is the service providers. In addition, Umrah companies and international agencies access and use the e-Umrah system and practice services through the service providers. Therefore, Umrah companies and international agencies become aware of breakdown when logging in to the service providers' websites and finding the websites have technically failed to provide access to Umrah companies and international agencies.

*'Logging in and out of the system and individual communication with colleagues and managers enables us to discover breakdowns and critical issues concerning the system and obstacles faced. We discover the problem, whether it is technical or informational, through logging in to the service provider's website. When we fail to gain access we know that there might be a technical problem so we communicate directly by phone with the service provider to find out what is going on with the system.'* (Category (4), Company (10))

*'We discover breakdowns when we log in and out of the system which can be seen from the information which alerts us that there is a problem concerning the information.'* (Category (4), Company (12))

At this stage, the Umrah companies and international agencies will not be able to access the e-Umrah system and submit the requests for Umrah visitor visa applications and Umrah packages/programmes. Even if there were accomplished transactions related to the visa before the occurrence of the breakdown and even if the Umrah companies conduct the visa fee payments

through Samba bank, they still cannot have access to the e-Umrah system and follow up the visa's progress due to the technical breakdown.

Following the Ministry of Hajj and service providers, the next most disruptive technical breakdown is the technical breakdown which occurs in Samba bank. The breakdown which occurs in the bank is considered the third most serious technical breakdown in terms of negative impact over practice in the e-Umrah system's infrastructure. This is because Samba bank is responsible for receiving Umrah companies' electronic payment transactions for Umrah visitor groups. Once these transactions are completed in Samba bank's website, the bank begins to transfer the data directly to the Ministry of Hajj confirming the payment's status in order to be transferred to the Ministry of Foreign Affairs for completing the visa application and issuing the Umrah visas for Umrah applicants. Hence, Samba bank's data is linked with the visa applications, meaning that if the data are not submitted to the Ministry of Foreign Affairs, this will prevent the Ministry of Foreign Affairs from issuing visas to the Umrah visitors.

In addition, the breakdowns are caused because of errors in the website's applications, pages, networks, databases or failures in servers. Therefore, this was found to affect the Umrah companies' access and use and has had an impact on the practice of fulfilling the requirements of offering Umrah packages/programmes to Umrah visitors.

*'Sometime ago, we experienced a breakdown from the bank. We attempted to access the bank and we could not conduct the payment operations because the bank had technical problems with the website, and this took some time until it was fixed. In this case we work manually with the bank to fulfil the payment transactions instead of electronically until they fix the technical problems.'*  
(Category (4), Company (16))

Following Samba bank is the Ministry of Foreign Affairs which is the entity responsible for offering visas. Their role in the e-Umrah system is to receive applications from Umrah visitors and confirmation of electronic payments from the bank. Once they receive the information and check the conditions and standards which are imposed on applicants, they issue the visas to the Umrah visitors

However, a technical breakdown which occurs in the Ministry of Foreign Affairs causes the information which concerns visas to be delayed and affects the use and practice of the e-Umrah system. Hence, this type of breakdown is considered the fourth most critical breakdown which has an impact on work practice in the e-Umrah system. This is because Umrah companies and international agencies' practices will be suspended until visas are issued. In addition, when breakdowns occur it is invisible to Umrah companies. This is because the Ministry of Foreign Affairs is linked directly with the Ministry of Hajj and the linkage is invisible to service providers since they receive instructions about the breakdown from the Ministry of Hajj.

*'If something happens, service providers normally notify us in case there is technical breakdown or new instructions from the Ministry caused a breakdown. We also detect the problems when we apply for visas for our Umrah visitor groups and conduct the payments. We don't receive the results from the Ministry of Foreign Affairs. We communicate with the service provider and service provider explores the cause of the delay with the Ministry of Hajj and finds out if the delays of information are caused by technical deficiencies in the Ministry of Foreign Affairs' system.'* (Category (4), Company (22))

The Ministry of Interior has the least impact. This is because the Ministry of Interior is responsible for registering the Umrah visitors' movements. This registration concerns Umrah visitors' entry and departure from Saudi via any port in Saudi, air, land or sea. Furthermore, the Ministry of Interior's role in the e-Umrah system is to transfer all the information that concerns entry and departure to the Ministry of Hajj. The Ministry of Hajj transfers the information to the service providers to display it on their websites to the Umrah companies and international agencies for the purpose of following up with Umrah visitors. However, when a technical breakdown occurs in the Ministry of Interior the information which concerns Umrah visitors' entry and departure will be delayed, hindering the Umrah companies from following up the Umrah visitor groups' movements.

#### **6.7.2.2 The impact of informational breakdown in the e-Umrah system's infrastructure**

The informational breakdown refers to the delays or lack of information which might occur from one of the following entities: the Ministry of Hajj, the Ministry of Foreign Affairs, the Ministry of Interior, or Samba bank. Once this type of

breakdown occurs, it affects the work practice of the entity and might affect other entities which have relations with the outputs of the affected entity. In addition, informational breakdown refers also to the problems which occur in information itself such as the errors, mistakes, incomplete or inaccurate information in the data.

For example, Informational breakdown in the Ministry of Hajj can include delays, mistakes, errors or absence of updates of information. This type of breakdown greatly affects the progress of the tasks and transactions causing considerable delays. Umrah companies' work practices are affected because they are expecting new informational progress from other entities such as visa issuance progress, e-payments confirmation progress, entry/departure progress, accommodation classification updates and operational plan decision status. Hence, when the information remains the same without progressing, the Umrah companies become visibly aware that there are some problems behind the service providers' website interface. Therefore, Umrah companies begin communicating with the service providers to investigate the status of the e-Umrah system.

*'We discover all the problems through the system except some exceptional ones that we are not aware of from the Ministry of Hajj. These problems occur in the form of delays in information or mistakes or errors which occur in the data from the Ministry of Hajj or other parties. We also face problems with the update of information which sometimes is related to technical or internal issues or arrangements at the Ministry of Hajj or other entities.'* (Category (4), Company (7))

Following the impact of informational breakdown in Ministry of Hajj is the informational breakdown in the Ministry of Interior. However, The Informational breakdown of the Ministry of Interior has a greater impact on information with lesser degree than the Ministry of Hajj. This was found to be very common as errors in entering the data of departing Umrah visitors from the passport department causes significant problems to the Umrah companies.

*'There are technical errors appear in the system. An example of that is when finding out mistakes and errors concerning the Umrah visitors groups entry or departure reports. We investigate the cause of mistakes and find out that a technical problem occurred in the Ministry of Interior's system and they shifted to work manually which caused fault information.'* (Category (4), Company (40))

The least impact concerning informational breakdown was found in Samba bank. The bank sometimes makes mistakes, errors or irrelevant payments to irrelevant Umrah visitor groups. This type of barrier was perceived as informational breakdown due to the information not being accurate and this may cause delays in issuing visas or visas might be issued for different groups or to different Umrah companies.

*'We discover problems when logging in and out of the system. I remember once we had delays in receiving the details of payments from the bank in the e-Umrah system. We communicated with the service providers and the service providers informed us they did not receive an update of information from the Ministry of Hajj. Then we contacted Samba bank and were informed that the data was delayed due to internal arrangements in the bank.'* (Category (4), Company (31))

*'Discovering problems when logging in the system. We communicate with the service provider and detect whether the problem is technical or related to information. We also discover problems which relate to information such as inaccuracy of information when the bank sends the payments data. We find errors sometimes in the number of Umrah visitor groups or irrelevant information such as when the number of Umrah visitor groups does not match our Umrah visitor groups, we report to the bank and they fix this problem.'* (Category (4), Company (33))

### **6.7.2 Mechanism of solving breakdown (Conventional protocol to handle breakdown)**

Umrah companies revealed two types of protocols which taken when technical or informational breakdown occur. The first protocol is the internal breakdown protocol while the second is the external breakdown protocol.

#### **6.7.2.1 Internal breakdown protocol**

Internal breakdown protocol means that the Umrah company deals directly and only with the service providers to enquire about the breakdown and find solutions for the breakdown. What Umrah companies frequently do when encountering technical or informational breakdown, is they directly communicate with service providers through one of service providers' departments either customer service departments or technical support departments to enquire about the breakdown. In critical cases Umrah companies administrations' office, which represented in managerial level (executive managers, general manager or owners), begin to communicate with

service providers' general or executive manager to discuss the breakdown or any obstacles caused by the system in terms of technical or informational barriers. If the breakdown occurs from the service providers' portal or Ministry of Hajj's side, the service providers solve the breakdown if it is from their sides and notify the Umrah companies once the breakdown is solved whether if it is technical or information. One Umrah company explained:

*'When we face technical or informational breakdown, we communicate directly with the service provider through telephone, email, self visits with service providers, and if there is any need we send official letters. If the problem is critical and did not solve our administration communicate with service provider's administration to enquire and come to a solution of this breakdown.'* (Category (5), Company (9))

*'We are in direct communication with service provider when technical or information breakdown occur from their side. We keep in constant communication until they solve the breakdown and inform us about the status of the system and all this takes manual communication through phone or via email.'* (Category (5), Company (18))

Furthermore, if the breakdown occurs from the Ministry of Hajj's side, the service providers communicate with the Ministry of Hajj and the Ministry of Hajj inform the service providers about the encountered problem and notify the service providers about the cause and duration of solving this breakdown. One Umrah company explained:

*'We contact the technical support Unit. If the breakdown occurs from the service providers they directly work on solving it and notify us. But if the breakdown occurs from the Ministry of Hajj the service providers communicate with the Ministry of Hajj and notify us about the condition and duration of resolving this breakdown.'*

### **6.7.2.2 External breakdown protocol**

The external breakdown protocol means that a technical or informational breakdown occurs in other entities such as Ministry of Foreign Affairs, Ministry of Interior, or the bank (Samba), meaning that the e-Umrah system has a breakdown externally and outside the boundary of service providers and Ministry of Hajj's sides. For example, when the Ministry of Foreign Affairs has a technical or informational breakdown, the Umrah companies' practices delay until the Ministry of Foreign Affairs resolve this breakdown. Also, when such a breakdown occurs in one entity, it only affects the inputs and outputs of the

responsible entity of this breakdown. However it does not affect the overall process in the e-Umrah system except the entities which have relations (such as Umrah companies and banks) which delays the process of visas in the case of the Ministry of Foreign Affairs.

In this case the Umrah companies seek support and enquiries about the problem and communicate directly with the service providers. The service providers also communicate directly with the Ministry of Hajj. At this stage, the Ministry of Hajj inform the service providers about the problematic issue since they are directly connected with all other entities and constantly communicate with them and receive their notifications and updates when some problematic issues concerning breakdowns emerge. One Umrah company explained:

*'When breakdown occurs in the e-Umrah system the service provider informs us about any emerged issues in the system which relate to technical, informational, integration, or communicational anything that may rise from the ministries or the bank and to inform our administration about these issue to make decisions and take the appropriate actions.'* (Category (5), Company (31))

It was revealed from the previous analysis of the two protocols which taken to solve breakdown(s) that Umrah companies only dealt with manually and no form of electronic communications takes place in the e-Umrah system between the Umrah companies and service providers. Even if one of the other entities suffers a breakdown, the Umrah companies can still communicate manually with service providers yet there is no form of direct communication between the Umrah companies and the Ministry of Hajj. Yet even if the Umrah companies have severe business affect they cannot communicate except through phone, email, fax or arrangement for self visit. It is also interesting to note that there is an absence of an alternative electronic channel which could work as emergency channel that is used in case if one of the entities encounter breakdown such as technical, informational, integration, communicational, etc. One Umrah company emphasised:

*'We directly react through communicating with service provider and discuss with them about the breakdown. One important point should be noted here which is there is no electronic communication between us and service providers or Ministry of Hajj we have to go over manual protocol to discuss the breakdown, its causes, and duration of resolving the breakdown. There is also no alternative electronic solution to shift from one affected channel to other emergency channel in the e-Umrah system until they solve it. It is also important*

*to mention that some Umrah companies incur losses because of this delay due to breakdown.’ (Category (5), Company (36))*

## **6.8 Dimension (8): Embodiment of Standards (ES)**

### **6.8.1 Introduction**

This dimension concerns the standards which have been set up to conduct processes, practices or procedures performed in the e-Umrah system. Transparency is a key attribute of how standards are measured. If standards are invisibly supporting tasks and providing interconnected infrastructure and/or tools to function in a taken for granted fashion then standards are transparent.

### **6.8.2 Embodying standards and its limitations in the e-Umrah system’s infrastructure.**

#### **6.8.2.1 Primary players in the e-Umrah system**

Umrah companies indicated the primary role of the Ministry of Hajj in setting the rules, standards, notifications and modifications to the e-Umrah system. This is because the Ministry of Hajj is the base of the e-Umrah system, the system’s inventor and have full control and supervision over the e-Umrah system. In addition, the Ministry of Hajj is considered the core responsible to the system and the one who supply instructions, notifications and guidance that relates to system. Moreover, the Ministry of Hajj is the major source for developing and improving the system through adding new features or adjusting current ones. The Umrah companies described their engagement with the Ministry of Hajj through the services providers. The service providers perceived by the Umrah companies as mediators who deliver and supply Umrah companies with information. They refer to Ministry of Hajj for emerging both past and present issues. Their duties are to pass on all data electronically from/to Ministry of Hajj or Umrah companies’ sides. They deliver all Umrah companies requests to Ministry of Hajj and receive all the information from the Ministry of Hajj and display it to the Umrah companies for the purpose of announcements of new declarations such as when the Ministry of Hajj release new rules or regulations they send notifications to service providers through faxes, emails or via the integrated channels between the two parties. In



addition, service providers' duties are to provide these notifications of new or adjusted rules or standards to the Umrah companies by various available means: telephone, fax, website, SMS or through displaying them as a form of data on their website in the e-Umrah system screens. Also, when new standards or rules add or adjust, service providers require also to announce these new released issues to verify and confirm that the Umrah companies and their partners 'International Travel Agents' received them. One Umrah company explained:

*'Ministry of Hajj is the major responsible in what concern Umrah system and service providers' duties are to add, adjust, and change according to the Ministry's instructions.'* (Category (1), Company (19))

It is interesting to also note the mechanisms of standardisations which occur in the Umrah field among primary entities which deliver services. The Ministry of Hajj work in partnership with all involved entities which deliver services (Ministry of Foreign Affairs, Ministry of Interior, Samba bank, service providers, etc). In addition, these entities are involved in decision making processes of standardising Umrah services/operations and have representatives who participate when discussing or concluding rules, regulation or standards when require to add or adjust to the e-Umrah system. Should one of these entities have new standards or fundamental changes in their services, technologies, processes or practices which might cause an influence to the implementations and practices in the e-Umrah system, the Ministry of Hajj works with these entities to standardise these emerged issue and apply it to the design and implementation of the e-Umrah system and notify Umrah companies through service providers or manually through sending letters.

*'There are committees made up of several ministries (Hajj, Foreign Affairs and Interior). These committees work on generating, improving, or adjusting standards in the Umrah field. Once standards emerge the Ministry of Hajj notify us through service providers about these new or modified standards to be aware of the current change which influence practicing in the e-Umrah system in the of design or implementation of services.'* (Category (1), Company (18))

However, the Umrah companies have no role in these committees and even if they are invited to attend the Umrah companies cannot participate in providing their views of e-Umrah system's standardisation.

*'Of course there are meetings and committees which arrange between ministries but we do not participate in the decision making processes and have no representatives from the Umrah companies to attend and sometimes the Ministry requests from our side to attend and send representatives from our side but we do not participate in the decision making process of standardising e-Umrah system.'* (Category (1), Company (31))

### **6.8.2.2 Views on sufficiency and satisfactory standards in the e-Umrah system**

The Ministry of Hajj is the key player and is responsible for setting all the standards. The rationale for embodying standards appears when a new issue or a change occurs in the e-Umrah system and its practice. On the other hand, some standards are modified to resolve conflicting practices. This setting of standards takes shape with collaborations and agreements of all involved entities in the e-Umrah system. The remainder are those operational issues which affect implementation in the existing e-Umrah system's standards.

For example, one operational standard which was found to cause difficulties to the current implementation is the operational plan service's standards. The standard imposed by the Ministry of Hajj is to submit the operational plan service electronically. This is because the Ministry of Hajj wants to facilitate the Umrah companies by the implementation of this service's tasks in efficient and rapid manner. Once the Umrah companies submit the data about this service electronically into the e-Umrah system, the Ministry of Hajj receives this data, assesses the requests, and delivers the decisions in the e-Umrah system with either approval or decline. However, the Ministry of Hajj does not utilise the e-Umrah system to deal completely with the whole process of this service electronically. This is because the operational plan service is designed only to enable Umrah companies to send the data and lacks the application for the rest of processes which concern reviewing the assessment report on which decisions are based. In addition there is a lack of an appeal process for those Umrah companies which received a decline for their requests. Hence, those Umrah companies who are affected by the decisions and received disapproval for their requests have to appeal manually through arranging self-visits to the Ministry of Hajj to discuss the decisions and review the assessment reports.

*'The operational plan requires considerations in term of providing detailed information of the decision which made by the Ministry of Hajj. Also, the Ministry of Hajj should facilitate more the procedures through adding the appeal of rejecting our operational plan to allow us to practice this process through the e-Umrah system instead of arranging self visits and having long process which we perceive it is time consuming and complex through the manual work.'* (Category (3), Company (4))

Therefore, Umrah companies do not perceive the standards of operational plans as complete due to the lack of information of the assessment reports in the e-Umrah system, in addition to the lack of appeal which leaves them no choice except to communicate through manual dealing.

Another example is the travel arrangements which concerns flights, accommodation and transportation. The standards which are imposed by the Ministry of Hajj for this service is that the companies must submit the contracts documents of flights, transportations and accommodations electronically in the e-Umrah system to ensure that the Umrah companies are offering these set of services to the Umrah visitors.

However, some problems related to standards were highlighted. For example, there is no standard for accommodation classification in the electronic system. This is because frequent changes occur in the accommodation classification's list which Umrah companies receive from the Ministry of Hajj via the Saudi Commission for Tourisms and Antiquities. Therefore, this problem has a substantial effect on practice in e-Umrah system. Umrah companies sometimes receive a rejection of their accommodation requests due to the accommodation not being classified as it failed to meet the conditions and imposed standards. The reason behind this is because the accommodation classification is constantly changing in a random and invisible manner and Umrah companies are not updated in time to change the Umrah package plans accordingly. Umrah companies at this stage follow up manually with the latest updates of accommodation classification information to ensure that the Umrah visitors' accommodation is approved and in accordance with the official classification list which is provided by the Ministry of Hajj and the Saudi Commission for Tourism and Antiquities. Hence, the Ministry of Hajj usually updates the accommodation classification's list through the data which is

provided by the Saudi Commission each time the Saudi commission updates the latest classified and unclassified accommodation.

*'The classification of accommodation list requires further development through re-standardising and including it in the e-Umrah system. This is because the classification list face continuous change which make us in constant communication with service provider and Ministry of Hajj to be updated with the recent classification list because it is not in the e-Umrah system and we deal manually with this kind of information outside the e-Umrah system.'* (Category (3), Company (15))

As regards the flight and transportation services, the only function related to these services in the e-Umrah system is providing scanned copies of the contracts which concern transportation companies and providing the airline dates of arrival and departures of Umrah visitors. Lack of availability of some information in the e-Umrah system concerning new or modified standards for these services hinder the work practice of flight and transportation services as Umrah companies would not be aware of these changes unless they follow up manually with the Ministry of Hajj.

*'The Ministry of hajj should consider flight's arrangement through integrating and collaborating with the Saudi Civil Aviation Authority. Also, the Ministry should include some information such as the actual dates for the flights, naval, and ground information.'* (Category (3), Company (3))

The reason behind this lack of information is that the Ministry of Hajj does not integrate with the Saudi Civil Aviation Authority for providing nor the Saudi Syndicate for Cars to provide electronically the necessary information related to these services. For example, the Saudi Syndicate for Cars send updates of new or modified standards or categorisations which occur in improving the transportation companies' practices manually by letters or fax to the Ministry of Hajj. The Ministry of Hajj then sends these in the form of manual notifications to the Umrah companies. These updates and notifications cannot be included in the e-Umrah system unless the Ministry of Hajj connects to the Saudi Syndicate for Cars and receives the information by electronic means.

*'The Ministry of Hajj sometimes send us notification of change regarding the transportation. These letters comes from the Saudi Syndicate for cars to inform us about the current arrangements and organisations of transportation companies. Also the letters are delivered sometimes directly from the Ministry of Hajj or service providers through faxes and not in the e-Umrah system. I think the Ministry of Hajj should consider adding this information in the e-Umrah*

*system so that we can be able to review all the changes which occur in transportation since delays sometimes occur in the manual operations because it is based on paperwork and we experienced missing and loss of documents or delays to receive it.’ (Category (3), Company (32))*

A further service which has issues is the standard related to Samba bank which requires Umrah companies to conduct electronic transaction for their Umrah visitors groups’ visa payments. However, when breakdown or delays in sending the payments data occur electronically, Umrah companies have no other choice except dealing manually to accomplish the payment in order to run the visa applications. There is no standard for this service when such a delay or breakdown occurs. Hence, this was perceived to hinder the work practice and cause a longer process to accomplish the payments. There is no other electronic standard to ensure the data to be transferred except manual interference.

*‘It develops according to the visions and views of the officials. The only concern is to improve the dealing with the bank. When breakdown or delay or any other internal factors from the bank’s side exist, it hinders the transferring of data and has an effect on our practice. The Ministry of Hajj should develop alternative practice when such issues happen rather than deal manually and cause much efforts and time consuming.’ (Category (3), Company (24))*

According to the standard related to departure service, this service has two operations which are conducted in the e-Umrah system from two different entities, the Umrah companies and the Ministry of Interior. The Umrah companies are required to report about the Umrah visitors who failed to depart the country and exceeded the duration of staying. The second operation is conducted by the Ministry of Interior where they are required to deliver the reports of Umrah visitors’ entry and departure.

The second operation where the information that is delivered from the Ministry of interior is what hinders this service in the e-Umrah system. When a delay or breakdown occurs in the Ministry of Interior system it permits the Ministry of Interior to work manually and report the information of Umrah visitors’ departure manually to the Ministry of Hajj. This manual working cause mistakes which occur in the information and affect the Umrah companies. When Umrah companies receive the departure reports and find some Umrah visitors who actually departed the country still exist in the e-Umrah system, Umrah

companies have to collect evidential information with collaboration with the international agencies and airlines to prove the actual departures of their Umrah visitors.

This problem exists due to the standard of the e-Umrah system not allowing the Umrah companies to solve any potential problem which occurs from the Ministry of Interior through the e-Umrah system. In the case of departure failure, Umrah companies need to shift to practicing manually to accomplish this operation. In addition, this has been faced with concern from the Umrah companies as there is no provision for providing the evidence of departure in the e-Umrah system and the manual standards were complicated and time consuming.

*'The development and amendments is in continuous progress and has to be on an hourly base because the thing that we needed yesterday we became to need something else today so there must be constant development. The Ministry of Hajj need to consider the improvement of passport and death procedures standards in term of solving when proofing departure or death issues.'* (Category (3), Company (37))

*'The standards require further development. When we go over the process of proving Umrah visitors' departure failure it takes long and complex process. We have to communicate with many entities such as international agencies to obtain copy of exiting stamp and airline to receive the flight list as an evidence to proof the departure and submit it manually to the Ministry of Hajj and the same happens in death procedures where we have to communicate with many entities such as social security department and embassies/consulates to receive death certificate and burial decision's letter and submit it to the Ministry of Hajj manually to sort these things out since there is no electronic solutions for these standards.'* (Category (3), company (23))

The standards which concern death procedures is another problematic issue. Umrah companies are linked to different entities not involved in the e-Umrah system such as the Social Security Department, Ministry of Interior, Passport Department and embassies/consulates. The problem begins after Umrah companies communicate with all mentioned departments and collect the documents which prove the Umrah visitors' death and report it through the e-Umrah system to the Ministry of Hajj. After submitting the documents, the Umrah companies find that there is no update in the deceased Umrah visitor's data in the e-Umrah system. Consequently, this leads to the Ministry of Hajj believing that the deceased Umrah visitor is still in the country exceeding

his/her duration of stay and hence giving a penalty to the Umrah company responsible for this.

*'Death procedures have to be more organised and Ministry of Hajj should make the progress visible through enabling us to be acknowledged about the internal practice of this service's information from the Ministry of Hajj's sides. The Ministry of Hajj should regularly update the information since when we accomplish the tasks of death procedures we find the information still exists in the e-Umrah system and no modification applied.'* (Category (3), Company (25))

One more issue concerning the standards relates to service providers. The Ministry of Hajj has put standards in place for service providers in order to deliver all the required Umrah services as designated by the Ministry of Hajj in the e-Umrah system. One of the service providers' aims imposed by the Ministry of Hajj is to strengthen the communication and the relationship between service providers and Umrah companies. This is through receiving all the Umrah companies' feedback such as comments, suggestions, complaints and problems. However, some Umrah companies indicated that the communication between them and service providers require more development since Umrah companies communicate with service providers by telephone, fax, email or self visit when submitting their feedback. The lack of electronic communication with the service providers through their interface 'websites' is a noticeable issue identified by the Umrah companies since it hinders efficient communication of information and transparency in addition to delays in providing rapid solutions to problems facing the Umrah companies.

*'The standards which imposed by the Ministry of Hajj between us and the service providers need to be concerned. It requires more developments and improvements in term of dual communicating. Service providers are different. Each service provider has their own features and interface to present e-Umrah system. A few service providers 'maybe one out of four' have more advanced communication systems attached to their interfaces. This communication system allow Umrah companies to communicate in term of inquiries or problems solving and its idea is effortless and beneficial to Umrah companies rather than communicating through telephone, faxes, emails, or self visit to talk and provide our inquiries or when discussing problem solving. I think the Ministry should consider the standards of communications among service providers.'* (Category (3), Company (31))

## 6.9 Summary

This chapter analysed and interpreted the findings from the empirical research which was conducted to investigate the e-Umrah system. The analysis and interpretation were based on the eight proposed dimensions by Star and Ruhleder (1996) which consisted of: (1) *built on an installed base*, (2) *embeddedness*, (3) *transparency*, (4) *learned as part of membership*, (5) *links with conventions of practice*, (6) *reach or scope*, (7) *become visible upon breakdown*, and (8) *embodiment of standards*. The major findings revealed the following:

The lack of service integration and development was found to have an impact on infrastructure and influence the implementation of electronic services (built on installed base). Some entities were found to be fully interconnected electronically; some were partially interconnected, while the rest were not interconnected but are dealt with manually outside the electronic system. This lack of electronic collaboration and interconnection of some entities in the e-Umrah system was found to be somewhat distressful. These findings also confirmed that some technologies, social arrangements and structure of some entities are still not found to be completely embedded in e-Umrah system.

Moreover, some services' operations and procedures were found to have rigid standards and required change in order to deliver efficient and transparent standards, which were found to have a substantial influence in the electronic system (Embodiment of standards dimension). Another major finding was related to breakdowns and the technical and informational breakdowns which occasionally occur in the system. The technical breakdown was perceived to affect the technological tools of the system (such as computers, network, website, server, etc.) where the informational breakdown was found to affect the issues related to data such as delay, failure or insufficient data. Also, absence of alternative solutions when breakdown occurs was one of the issues which were found to suspend practices and hence affect business implementing tasks which become visible upon breakdown. A further considerable finding was the lack of transparent information and procedures which were also found to be considerable and one of e-government system's infrastructure barriers



(Transparency dimension). Furthermore, lack of accessibility and electronic participation of some entities was still found to be one of the barriers to infrastructure. This barrier was found to hinder the e-Umrah system delivering efficient service integration and embedding entities to fully include services and practices in the e-government system infrastructure. This was found to delay infrastructure expanding to enable users to reach one single site that offers all the services and demands of business (Reach or scope dimensions).

Also, the impact of the conventions of practice was another considerable issue in the e-Umrah system. Entities which deliver services were found to affect the e-Umrah system infrastructure. The lack in the design was found to be caused by some entities which shaped the current design of the electronic system's infrastructure. In turn the existing infrastructure will only offer what has been shaped and designed by these entities and when the service is designed without full process or incomplete process for services. This can be seen in the existing design of the e-Umrah system (Links with conventions of practice). Lastly, all these concerns were found to be the cause by a lack of an efficient collaborative learning network and information exchange in the e-government system's community of practice, which affected the learning process among businesses, taking an instructive leaning process and permitting Umrah companies to shift to a situated learning process (Learned as part of membership dimension).

Nevertheless, it is worth mentioning that the analysis of the results was based on a combination of the original framework of Star and Ruhleder (1996) in addition to the emerged codes which existed in shaping the analysis and perceived to enhance and develop the framework proposed by Star and Ruhleder (1996) which will be highlighted and discussed in the following chapter.

Following this chapter is the discussion chapter which discusses this research's findings.

# CHAPTER

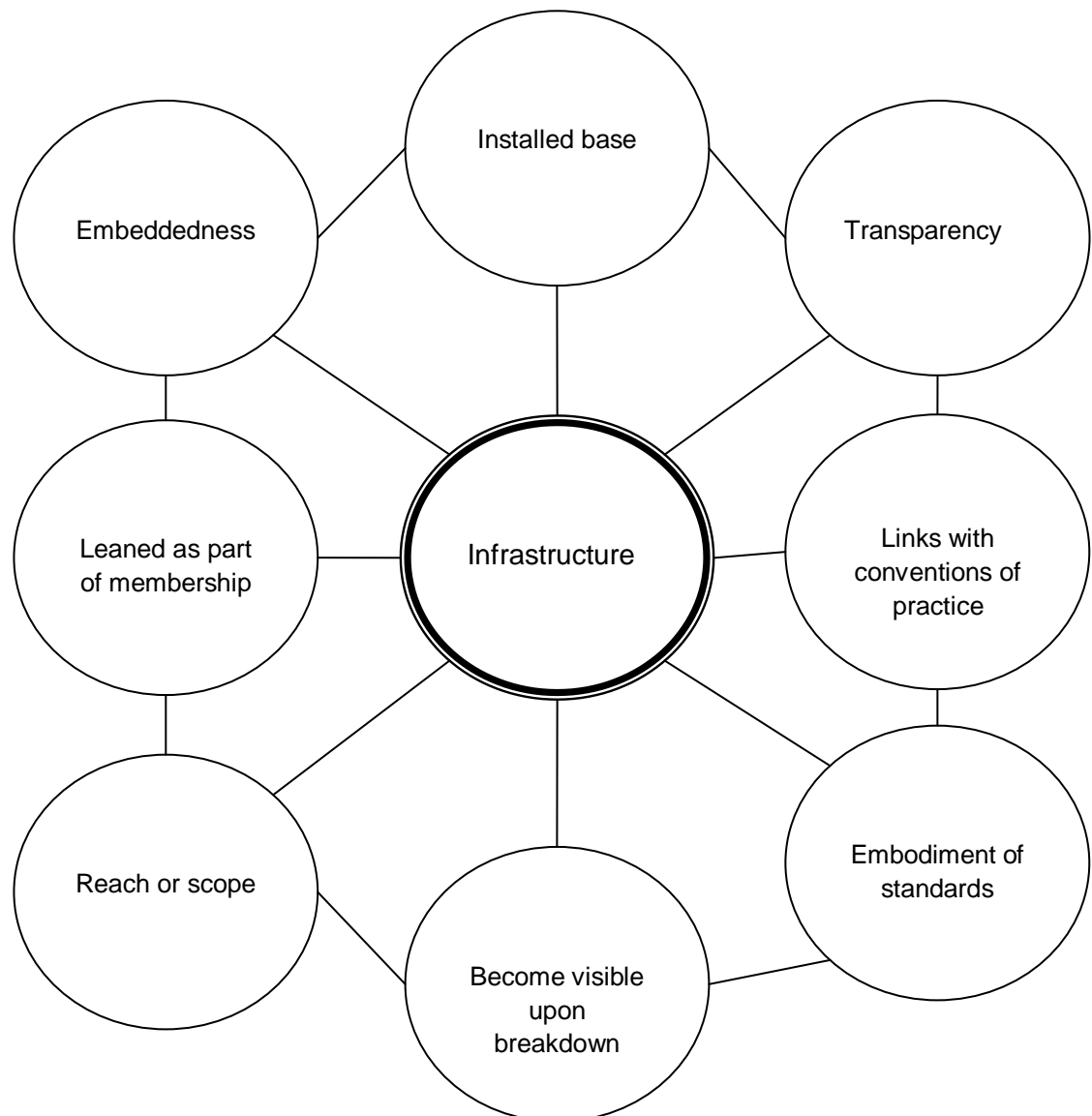
# 7

## Discussion

- 7.1 Introduction
- 7.2 Dimension (1) installed base
- 7.3 Dimension (2) Embeddedness
- 7.4 Dimension (3) Embodiment of standards
- 7.5 Dimension (4) Become visible upon breakdown
- 7.6 Dimension (5) Transparency
- 7.7 Dimension (6) Links with conventions of practice
- 7.8 Dimension (7) Reach or scope
- 7.9 Dimension (8) Learned as part of membership
- 7.10 Summary

## 7.1 Introduction

This chapter brings together the findings from this case study. The sequence of the discussion will be based on the importance of each dimension in relation to the infrastructure. Furthermore, the relation of each dimension with other dimensions will be discussed (Fig 7.1). Additionally, the emerged conceptual framework that was found to enrich, augment and provide much greater depth to Star and Ruhleders's (1996) generic framework will be discussed (Fig 7.2).



**Figure 7.1:** Infrastructure and dimensions cycling: Star and Ruhleder's (1996) framework

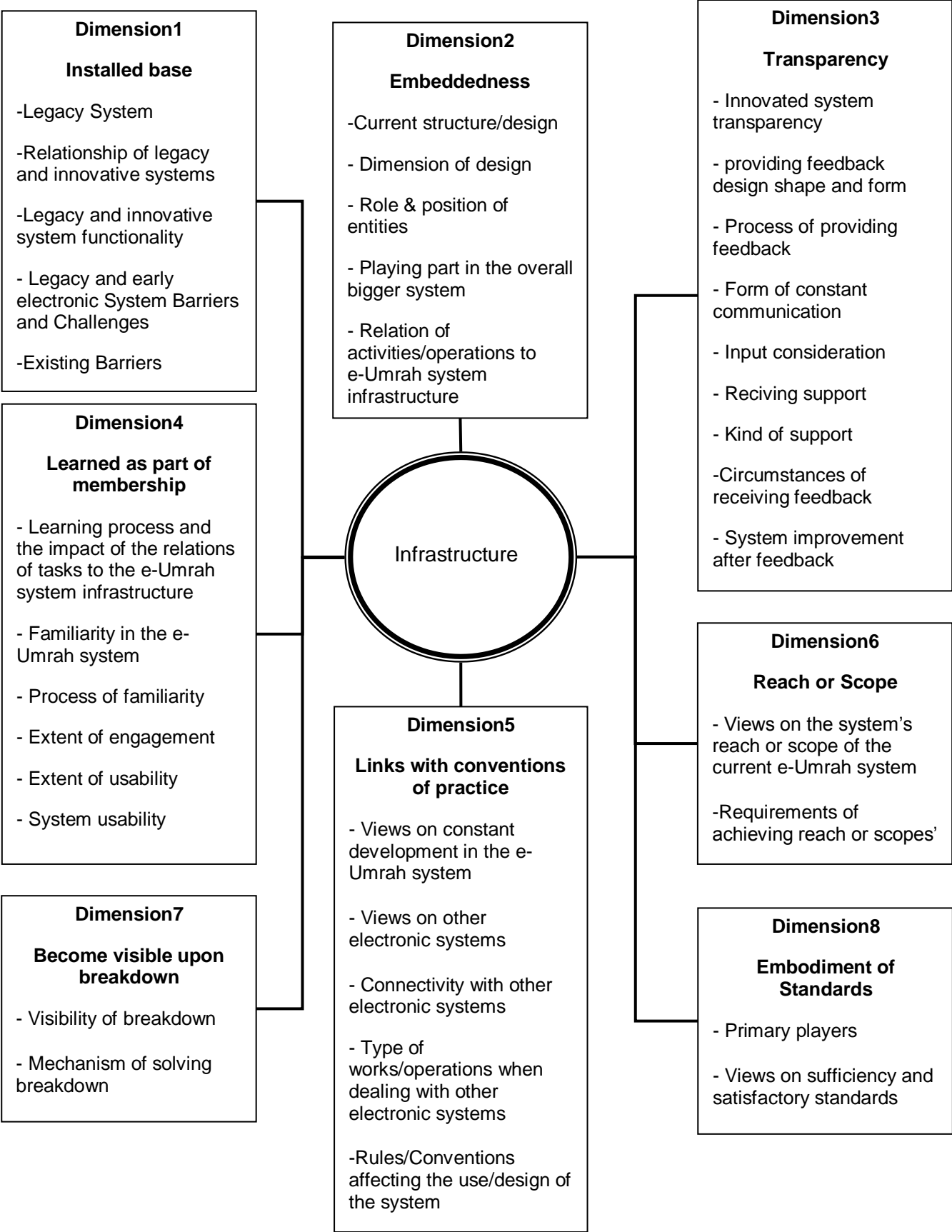
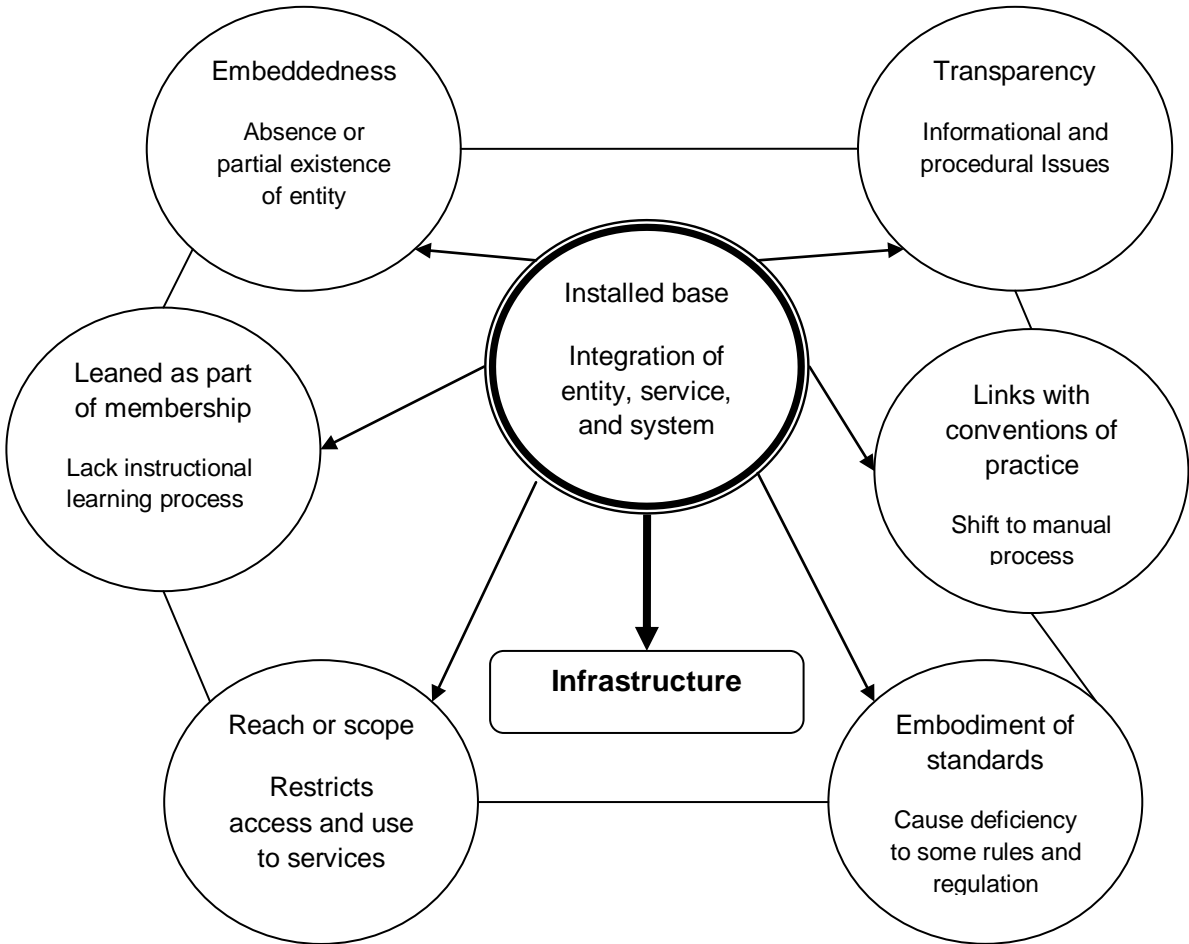


Figure 7.2: Adapted conceptual framework

## 7.2 Installed base in e-government infrastructure

Installed base is found to be the most influential dimension in this study. It is the core dimension and is a continuous expansion of the previous system(s) (E.g. legacy and manual systems). It inherits the evolvement of services and practices throughout the time periods. It is considered the foundation where all entities are integrated and services are installed and electronically translated, here in this specific case, into e-Umrah system. The installed base is built on the existing integration of different government and business entities to provide a collaborative network that stabilise practice, network, arrangement and/or standard to beneficiaries (Rolland, 2000). Hornnes et al. (2010: 306) defined installed base influence in government as: “the history of technical, organisational and legal components, including work routines, practices and even social and cultural structures that influence how the ICT systems in government are being used”.

Installed base is stable however when new elements such as entities or services are added, changed, improved or extended with the evolvement over time then the installed base will be found to be inflexible due to complexities and embedded legacy system which hinders efficient development of the installed base (Ronnback et al., 2006). Indeed , recognising the history of the legacy systems and its components as part of the installed base such as the influence of old technical solutions, old data formats and non standard database which still exist as part of the installed base components is important when investigating the installed base (Hornnes et al., 2010).



**Figure 7.3:** The impact of Installed base on other dimensions

Hence the major challenge found in this dimension is the integration of entities, services and systems within the existing infrastructure. It is found that not being able to fully integrate the services provided by and procedures within one entity will have direct impact on the issues in relation to the embeddness dimension. For example, the Ministry of Interior was included nevertheless but was not completed ‘sunk’ into the e-Umrah system as its services and procedures are not fully integrated into the e-Umrah system and as result Umrah companies cannot use the system to perform the tasks that involves the Ministry of Interior. Instead they need to perform these tasks such as reporting cases which failed to depart and reporting death procedures outside the system and manually. The challenge of integrating all entities, services, procedures and systems involved not only comes from the installed base itself (e.g. difficult to add new components or alter the existing characteristics) but also from the

legacy systems, both manual and computerised, within each entity. This is because the government consists of many departments and agencies which have different systems and databases which may not be integrated or connected with each other. These differences may be due to for example to the use of different technology platforms or having inflexible legacy systems which prevent services from being fully integrated and delays the conduction of these services electronically (Lam, 2005; Ebrahim and Irani, 2006; Nurdin et al., 2011).

Furthermore, the problem with integration may have an effect on the transparency of the system. The lack of integration of some services within the entities resulted in the need for modification and adjustment in the system due to informational and procedural barriers affecting transparency. It was found that the unavailability of information, insufficient information and delays in updating information are all factors caused by the lack of integration of some services which has led to decreased information transparency in the infrastructure. Moreover, the rigidity of some of the procedures in the system has led to reduced procedural transparency of the infrastructure. Reduced information and procedural transparency of the infrastructure has led to manual practice to take the place of electronic practice. This can be well demonstrated in the accommodation, transportation and flight services which are not integrated in the system and affect the information transparency of the e-Umrah system's infrastructure. Additionally, the passport, death and operational plan services' procedures are examples causing reduced procedural transparency in the e-Umrah system's infrastructure. In a study by Eynon and Margetts (2007), the transparency of their system's infrastructure was reduced due to complexities in the services and rigidity in its procedures and mechanisms. This type of problem was described as the government being too rigid to make appropriate effective use of electronic networking capabilities by making changes in public administration practices, processes and organisational structures. This can be reflected in this study where the Ministry of Interior was inflexible to make internal changes to its organisational base by improving its technological infrastructure and incorporating technological innovations along with electronic solutions to enhance work practice. Additionally, another example of procedural transparency can be reflected in Star and Ruhleder's

(1996) study where they investigated the infrastructure of a large scale system aimed at geographically dispersed community of geneticists called the worm community system (WCS). They found that the file transfer protocol used to download the system was easy to use by the computer scientists who developed it but complex and difficult to use by the biologists, hence rendering the system less transparent (Star, 1999). In addition, Mark and Su (2010) investigated infrastructure visibility for nomadic workers in a large distributed organisation. Their study explored how the routine workers who work inside the organisation and non routine workers who work remotely perceive infrastructure visibility. Their findings in relation to the transparency revealed that routine practice users perceive infrastructure to be visible and transparent while non-routine users find the infrastructure to be not visible. This is due to difficulties in finding information related to some infrastructure aspects and not being frequently updated with the changes that occur in the infrastructure.

It is found in this study that the learning process is affected when the full integration is absent. The learning processes identified in this study includes instruction and situational learning. Umrah companies adopted different learning process to carry out the tasks at hand. For example when services are fully integrated in the system instructive learning takes place because instructions for carrying out the tasks are clear and easily followed. However the absence of some services from the e-Umrah system coupled with the absence of guidance and a clear strategy on how to deliver the necessary service to achieve the task resulted in situated learning by experience.

Star and Ruhleder (1996) described in their study that situated learning takes place by computer scientists who are not familiar with the biological aspects of the worm community system used by the biologists who are familiar with these aspects. Additionally, Palkovits et al. (2001) emphasised on the importance of learning strategies and training of government employees and/or citizens for the diverse and complex processes in e-government. The emergence of new integrated technological tools or processes in the public administration caused changes in the way of learning because the processes of practicing are changed.



Furthermore, the integration issue in installed base was found to have an impact on the conventions of practice. For example, Umrah companies had no choice but to conduct some of the tasks manually due to lack of integration of some services in the system leading to lack of electronic solutions related to these services. This was in line with the study conducted by Chen (2003) who investigated the technologies and practices in e-government and found that different departments with different practices conduct practices manually rather than electronically to interconnect and share information or update their information and tasks. This might be due to the lack of integrating some organisations which cause poor relations and communications between different departments (Angelopoulos et al, 2010).

The integration issue in installed base was also found to affect reach or scope dimension specifically the temporal scope of the e-Umrah system infrastructure. The scope of any electronic system is to connect all involved entities or 'users' and enable them to reach one site practice to perform their services within this site (Tripathi et al., 2007). However, it was highlighted in our study that this scope is still facing challenges because some of the services are not integrated in this "site" which is the e-Umrah system therefore the services are performed outside the site manually. This finding was supported by Kraetzschmar and Lahlali (2011) who reviewed the state of e-government in Kuwait. The findings of their study revealed that some e-services across government agencies are not integrated and this absence leads to manual operations taking place. This problem has an impact on the e-government implementations.

Additionally, the challenge of integration in installed base was found to affect embodiment of standards dimension. When a service or entity is not integrated in the electronic system, the scope or related rules and regulations are absent. When the service or entity is partially integrated in the system, the existing standards would be insufficient and limited in dealing with the problems that may exist within the service because it does not cover the overall requirements of the partially integrated service. For example, accommodation, flights and transportation are services not integrated in the e-Umrah system's infrastructure and therefore no rules and regulations governing these services are found in

the system. Passport procedures related to departure issues is an example of a service partially integrated in the system. The existing standards related to this service do not completely resolve the conflicts which occur because the design of this service in the e-Umrah system does not cover all the processes and procedures related to this service. Star and Ruhleder (1996) highlighted in their study the importance of the presence of standards in their system; however the challenge was found in incorporating common standards which work for both groups using/developing the system; computer designers and biology scientists. They find that technical difficulties and conflicts in reality hide problems in the existing standards since two very different approaches were involved in the system.

Moreover, the limitations in standards such as rigidity of rules and regulations, old rules and regulations, and delays in updating new standards have an effect on the efficiency of services in the electronic system. According to the literature, standard is an important factor systemises smooth operations in addition to enhancing the use of infrastructure. However its developments in improving tasks take time as new infrastructure of new integrated systems, services or tasks requires new standards or adjustment to enable an improvement in the required integrations (Hanseth and Montiero, 1998). This was found by the Ministry of Interior in the standard related to departure and death services. This is when a problem exists; it affects the practice in the e-Umrah system due to limitations of standards imposed by the Ministry of Hajj. These limitations of standards do not allow the Umrah companies to solve any potential problems which may occur from the Ministry of Interior through the e-Umrah system. Hence, technical standards and the requirements of data structuring were found to improve government official and enhance transparency of practices among different agencies which have different infrastructures, services and practices in order for having smooth data exchange (Archmann and Kudlacek, 2008).

Nevertheless, it is important to emphasise that five factors have emerged in exploring this study to gain knowledge and draw understanding about the installed base of infrastructure (Section 6.1).

These factors are as follows: (1) the legacy system, (2) the relationships between legacy and innovated systems, (3) legacy and innovated system functionality, (4) the legacy and early electronic system barriers and challenges and (5) the existing challenges. These five factors have emerged through analysing the results and were found to shape a systematic structure for installed base of infrastructure in e-government specifically government to business domain.

***The legacy system (foundation of the system)*** described the nature of Umrah activities through exploring the lifecycle of systems' developments (legacy, manual, and electronic systems) and to understand the phases of transformation from traditional to modern means in the Umrah field. ***The relationships between legacy and innovated systems*** assisted in understanding whether the phases of developments which the Umrah system(s)/field faced had any relations to each other or they were individual systems and were not related. ***Legacy and innovative system functionality*** has identified and explained the limitations and expansion of e-Umrah system's functions, operations and activities which were designed and implemented in the e- Umrah system throughout the period of developments. ***The legacy and early electronic system barriers and challenges*** has addressed the existed barriers before and after introducing the electronic system during the period of legacy system/old style procedures, manual system and the early electronic system barriers after establishment. ***The existing challenges*** factor has addressed the barriers still in existence in the current e-Umrah system and has not been solved neither resolved as discussed previously.

Star and Ruhleder (1996) focused mainly on installed base as the foundation which inherits strengths and limitations from that foundation. This study adapted this idea and extended it further to explore and explain (after identifying the phases of Umrah system's developments) the relationships of the systems (legacy, manual, electronic), the sequences of change which occurred in the services throughout the life cycle of Umrah system's developments, the former challenges which resolved throughout the phases of developments and the current challenges which are being addressed and still require solving. Therefore, combining all these emerged factors under the umbrella of installed

base was found to lead to innovative components that enhance the understanding and knowledge of investigating installed base in e-government specifically government to business.

According to the e-government literature, installed base was found to be based on the integration of different government entities to provide a collaborative network that organise practice, network, arrangement and standard to beneficiaries (Rolland, 2000). However problems were found in the technological and organisational aspects, and in the design and flexibility of the current installed base which creates deficiencies in the integration and interoperability of the existing installed base (Goldkuhl, 2008; Roy and Langford, 2008; European commission, 2007; Hanseth and Lyytinen (2008). These issues were identified and explored by the emerged factors which existed in the analysis of installed base in this case study. Furthermore, in addition to the technological and organisational aspects mentioned in the literature, the emerged factors added the business and political aspects which were found to assist in extending the understanding and the explorations of installed base dimension.

### **7.3 Embeddedness in e-government context**

Similar to installed based embeddedness was also found to be an influential dimension that has impacts on other dimensions (Fig 7.4). This is because the e-Umrah system's infrastructure is embedded within a network of relationships with other entities which enables the infrastructure to provide useful services related to the Umrah field. The findings of this dimension highlight the importance of some services which are considered to be embedded in the e-Umrah system but are provided by entities not incorporated in the e-Umrah system. This includes the Umrah package service which consists of flight, transportation and accommodation. Therefore, involving the different entities in the e-Umrah system was found essential for improving the efficiency, competence and speed of delivery of the services.

One impact of this dimension was found in the installed base dimension. It was noted in this study that some services and its entities were not included in the e-Umrah system's infrastructure. The lack of these services and its entities

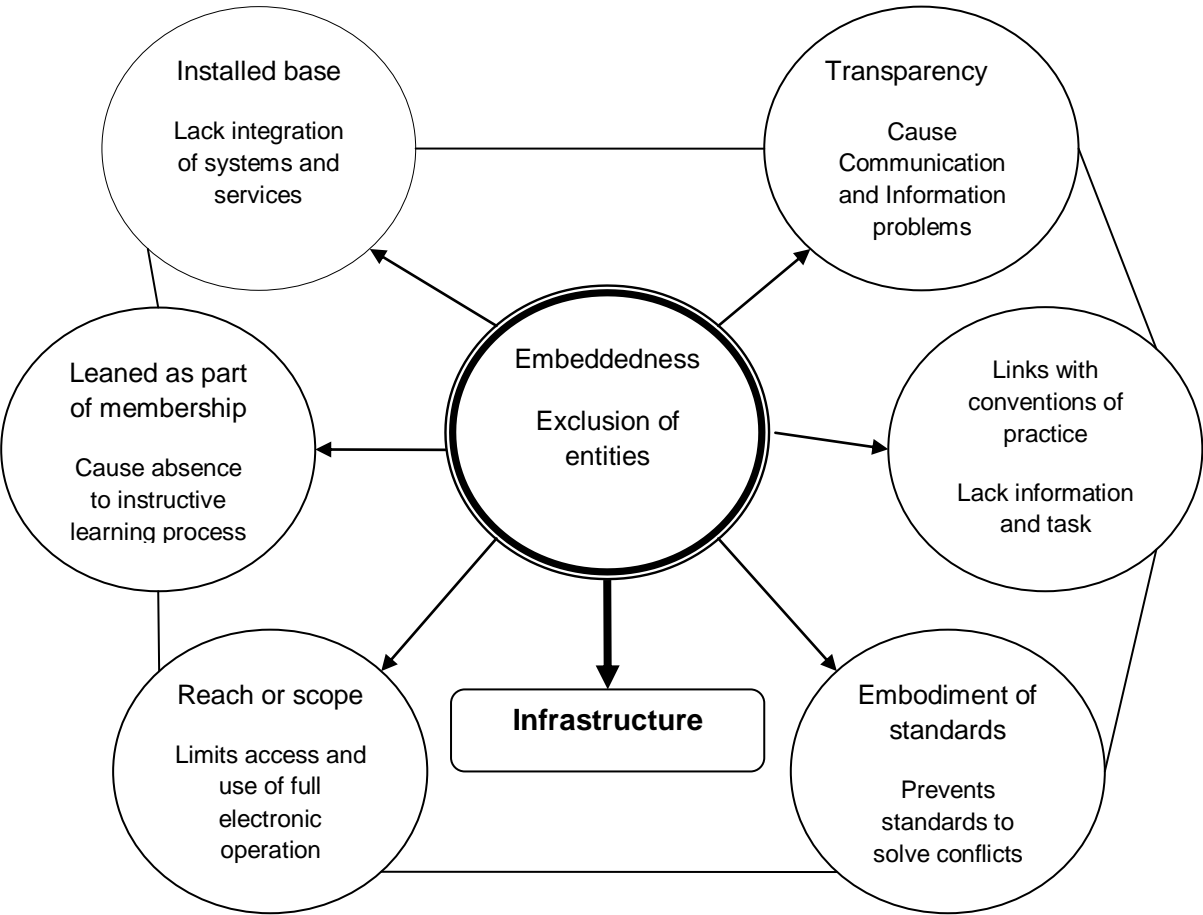
may be caused by legislative, administrative and technological barriers. Legislative barriers involve rules and regulations related to the services and entities not involved in the e-Umrah system's infrastructure and which are not compatible with the rules and regulations of the e-Umrah system's infrastructure. These differences make it difficult to embed these entities within the e-Umrah system. For example, there is a lack of coordination between the Saudi Civil Authority for Aviation and the Ministry of Hajj due to differences in regulations governing each system making it difficult for the Saudi Civil Authority for Aviation to be responsible for the flights to be embedded in the e-Umrah system's infrastructure.

Administrative barriers involve problems in management and organisation within the services or entities causing restrictions in including these services in the e-Umrah system's infrastructure. An example of this is the e-payment service where lack of management and organisation in the bank has led this service to be conducted outside the e-Umrah system.

Technological barriers involve problems in the availability of data, information and tools which facilitate the operation of services electronically within the e-Umrah system's infrastructure. An example of this can be seen in the accommodation and transportation services where there is a lack of data base related to these services rendering them to be conducted outside the e-Umrah system.

Vassilakis et al. (2005) has acknowledged the fact that governments may be slow in embedding electronic services as part of the e-government initiative. They identified the barriers which hinder the transition to electronic services which may act as a reference for electronic services stakeholders to endorse electronic government. The barriers identified were categorized into legislative, administrative, technological, user-culture and social barriers. For example, the legislative barriers discussed the constitution of rules and regulations that help reduce the problem of lack of proper legal framework that address the methods of dealing electronically against paper documents. Administrative barrier discussed the organisational, business and structural development and its impact on organisational change to cope with the emergence of new or adjusted services. Technological barrier discussed the importance of the availability of

proper tools, standards and technological infrastructure that facilitate the development, implementation, and the use of electronic services. User culture discussed the impact of electronic services on diverse groups of users such as those who practice internally and those who practice globally. While the last type of barrier discussed the impact of electronic services on stakeholders and their status such as the fear of losing job, the first three barriers namely legislative, administrative, and technological barriers were found to reflect the barriers of embeddedness on the e-Umrah system’s installed base in this study as explained previously.



**Figure 7.4:** The impact of embeddedness on other dimensions

It was noted that communication and information problems occur when essential services or procedures are excluded and not embedded in the infrastructure. This is because these services or procedures will be performed outside the system and not visible or transparent to all entities. For example, e-

coordination is a service provided by an entity not embedded in the e-Umrah system and Umrah companies struggle to communicate with this entity (Tasheel company) within the e-Umrah system. Ebrahim and Irani (2005) emphasised the importance of communications and information technologies between different parts of government. Their study highlighted the importance of upgrading the paper based application to electronic to extend functionalities over one single site and achieve full services and communications between the diversity of systems and processes.

Furthermore, problems in information are another aspect when services are excluded from the e-Umrah system such as flight services. Flight services are not included in the e-Umrah system and therefore the related information such as flight details and the updates of flights' information are not included in the system causing difficulties in follow up and supervision by the Umrah companies. This affects the transparency of the system's infrastructure rendering it invisible to the Umrah companies and other entities. The importance of the availability of information to stakeholders as part of an effective e-government website quality was investigated by Alshehri et al (2012). They found that having all the required information and services within the e-government website increased the chances for e-government adoption.

Indeed, communication is an important factor since the absence or deficiencies of communications was found to cause a barrier to internal and external communication across government agencies. This obstructs citizens or businesses from getting closer to their government and reduces government's transparency and openness. In addition, not bridging stakeholders (private and public sectors) with local government was found to cause informational barriers and have a considerable impact in e-government projects (Kim and Lee, 2012).

The importance of understanding the communication between the government and public sector and its effect on the transparency between them was emphasised in a study (Lollar, 2006). Transparency and government openness was revealed to be an important issue in reducing corruption through providing all the information and services needed to fulfill public needs within the government's infrastructure. Although this study looked at the level of transparency in the relation between government and citizens, it is no different

than the relation between government to business. This is reflected in this study where many Umrah companies encourage communication with the Ministry of Hajj and other entities and emphasised on the importance of filling the gaps found in the form of informational and communicational deficiencies.

The lack of embeddedness of some services and entities within the e-Umrah system has affected the learning process. When the service or entity is not embedded in the e-Umrah system's infrastructure, the information related to it is not available electronically within the e-Umrah system. This hinders the understanding of the complete process of these services. Additionally, delays in providing the information electronically will mean that Umrah companies will need to find other ways to seek the necessary information. This is done through self/situated learning by communicating with the main source of information in order to obtain the recent update of information. This delay in the update of information might occur due to organisational barriers which include gaps in the foundational structures, processes and procedures. In addition, social barriers may cause increasing problems due to lack of full practices for sharing information, knowledge, collaboration and problem solving (Markus and Fedorowicz, 2008). Furthermore, technological impediments may play a role due to lack of communications standards, interoperability performance and reliability (Markus and Fedorowicz; 2009).

Lack of information and constant changes in information was found to have a noticeable impact on the conventions of practice. Services in the e-Umrah system are linked together and some services depend on other services. If a sudden change occurred to one service it will have an effect on other services causing incompatibility. Umrah companies in this case need to quickly amend the other services to accommodate the change that occurred. This may be conducted manually, hence affecting practice. For example, changes in the information regarding flight services will consequently make it necessary to change the information in the transportation service. Furthermore, this will cause changes in the accommodation service information as they are all linked together as a package. As all these services are not embedded in the e-Umrah system, the change in information in flights may not be initially apparent to the



Umrah companies causing delays in changing the transportation and accommodation information which may be conducted manually.

The importance of collaboration between entities was emphasised by Chourabi and Mellouli (2011). They proposed an integrated e-government framework for service integration. The framework considered all government stakeholders which are involved in delivering services from their sides. In addition, the framework was built to strengthen the relationship of different agencies to bridge the gap which was found to occur among agencies in the e-government project. Collaboration among different entities was one significant issue which has a substantial influence on service delivery.

Chen (2003) emphasised on the importance of understanding inter-organisational information systems integration among different practices and across different departments as the latter with alternative practices can create a legacy system 'manual' that prevents systems to interconnect and share information or update their information and tasks. The accuracy and reliability of information output in addition to ease of information exchange and information integration among the different organisations were found to be necessary improving the relationships of practices and the conduction of tasks among different business partners.

The findings of this study suggest that embeddedness will affect the reach or scope of an infrastructure. It was obvious that the Ministry of Hajj has succeeded in integrating some services and its entities in an attempt to fulfil its scope. However, the Ministry of Hajj still needs to consider expanding the e-Umrah system's network to include other entities and its services which are still dealt with manually. This is also found in others studies. For example Centeno et al. (2005) found the view of e-government as the essential tool of public management modernisation and transformation. They argue that technology is the essential component for this improvement since it is considered a dynamic tool that enhance practices to reach and modernise structure, process, regulations, human resource and the culture of public administration to a better e-government that connects government with their stakeholders. In addition, the role of intermediaries such as private, public and social partners is an important aspect for achieving effective collaborative networked e-government with

effective co-ordination and partnership. This view was found to be relevant to the e-Umrah system infrastructure where technology along with the role of intermediaries who deliver and facilitate services electronically are found to enhance and develop the delivery of electronic service in e-government.

Embodiment of standards is also found to be influenced by the deficiencies in the embeddedness dimension. The idea of embodying standards is to prevent conflicts and create compatibilities among different entities of different services and practices by imposing rules, regulations and standards. The setting of these regulations and standards takes shape with collaborations and agreements of all involved entities and any change or update that occurs to these regulations is reported electronically. However, the lack of embeddedness of some entities in the system means that the rules and regulations related to these entities are not reported electronically. Any change or update to these regulations takes a manual approach and may take time to become visible to the users. It was emphasised that challenging issues concerning standards for data may have a considerable impact on e-government systems. These challenging issues include socio-technical and organisational difficulties such as technical, non-technical/social, and organisational aspects. Understanding standardisations of technology (such as data integration and exchange), social aspects (such as the workforce, knowledge, skills, attitude, values and requirements of work environment) and organisational (such as systems, environments, boundaries, services and processes) in e-government are necessary to understand the complexities of these aspects and their impact on the development of government institutions (Kawtrakul et al., 2011, Khan et al., 2011).

According to infrastructure's embeddedness (Section 6.2), this study has built upon the knowledge of investigating embeddedness based on five factors which emerged from this study during the analysis to and of this dimension when exploring e-Umrah system infrastructure embeddedness. These factors are as follows: (1) innovated system current design, (2) innovated system-dimension of design (individual or part of bigger system), (3) role and position of entities in the system, (4) playing part in the overall bigger system and (5) relation of activities/operations to e-Umrah system infrastructure (embeddedness of e-

Umrah system infrastructure). Each of these factors enabled to understand the infrastructure of e-Umrah system.

**The innovated system current design** has described the current electronic Umrah system. It also discussed the shape of the system and its existing components and functions. **The innovated system dimension of design** has identified the structure of the e-Umrah system whether it is an individual/exclusive system or a part of an overall bigger system where other systems and entities integrated in it. **Role and position of entities in the system** has explained the elemental role and position of every involved entity involved in the e-Umrah system through identifying these entities responsibilities in the e-Umrah system. **Innovated system playing part in the overall bigger system** has identified the playing part of entities and its services among other systems and each other. **The relation of activities/operations to e-Umrah system infrastructure (embeddedness of the e-Umrah infrastructure)** has examined the component services within the e-Umrah system. It reflected the issues arising from the services' procedures and practices that belong to other entities and which are completely, partially or not sunk into the e-Umrah system infrastructure.

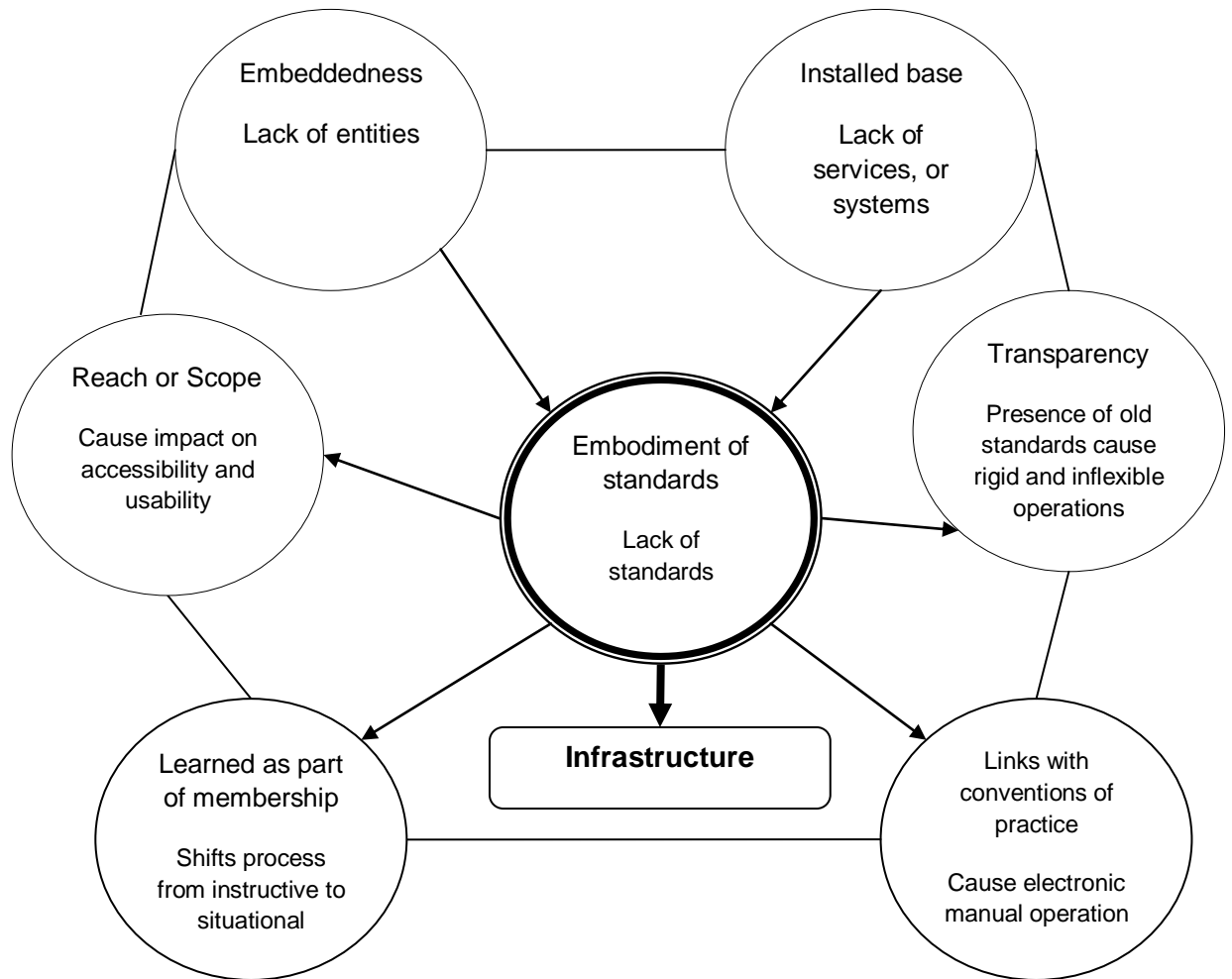
The e-government literature added numerous issues which influenced infrastructure's embeddedness such as legislative, administrative, technological, user-culture, and social barriers (Vassilakis et al., 2005; Obeidat and Abu-Shanab, 2010). Azad and Faraj (2008) explained the considerations required of different systems and perspectives during the implementation of workable e-government systems. Bringing together different entities and bridging their perspectives during implementation is one of the useful elements for forming workable e-government systems. This is because these different systems have different technological and organisational environments. These above mentioned issues were found to improve the understanding of the infrastructure's embeddedness. However, they lacked the political and business aspects which were found to have an influence on infrastructure. Therefore, the emerged factors in this study helped understand the current technological design of infrastructure, the roles and positions of entities which reflects their organisational, governmental, business, cultural, and social environments in

addition to the activities and operations implemented in the system which reflect the administrative and legislative aspects.

#### **7.4 The impact of embodiment of standards in e-government.**

The embodiment of standards has a significant influence on the infrastructure of the e-Umrah system and on other dimensions such as links with conventions of practice, learned as part of membership, transparency and reach or scope (Fig 7.5). Additionally, installed base and embeddedness were found to influence embodiment of standards rather than the other way round. In this study, it was found that some standards were lacking in the e-Umrah system. Additionally some standards were found to be incomplete meaning the standard is available to complete half the task electronically while the rest of the task must be completed manually. Most importantly, some standards were found to be rigid and cannot accommodate any solutions to common problems which may occur due to, for example technical breakdown or delays in processing or updating information. These findings are important as they are found to affect the efficiency and effectiveness of the infrastructure of the e-Umrah system as will be explained in the following paragraphs.

The limitations of standards in the e-Umrah system in terms of solving potential problems that exist from other entities or services electronically was found to cause a shift from electronic to manual practice therefore affecting the convention of practice. This may be due to technological and organisational challenges which influence transformation to full electronic practice and the negative effect of the existing legacy system over data and preventing standards to promote modern practices. (Weerakkody et al., 2006). This means that the standards from different entities are not combined or merged to provide a set of new and modified standards that contain solutions to common problems in the e-Umrah system.



**Figure 7.5:** The relations between embodiment of standards and other dimensions

Additionally, this deficiency in standards for solving some problems which exist in the e-Umrah system leads Umrah companies to shift to situated learning rather than instructive learning due to the lack of rules and regulations that provide guidance and solutions for these problematic situations. For example, the standard related to flight and transportation services is old and deficient as the standard requires the Umrah companies to providing scanned copies of the flight reservation and contracts with the transportation companies only. The lack of new or modified standards for these services hinder the work practice as Umrah companies would not be aware of any information changes or updates. Therefore they learn how to deal with this problem through experience and eventually follow up would take place manually with the Ministry of Hajj. Indeed

this is supported by Phang et al (2008) who found that insufficient design in government services or website due to lack of standards obstructs organisational learning associated with the government system. This leads to manual practice rather than accomplishing the required tasks electronically.

The presence of old standards which need updating and modification reduce the transparency of the electronic system as they are viewed to be rigid and inflexible to meet the needs of the users and to solve any potential problems which may occur in the system. Hence, this was found to have an effect on the availability and usability of having transparent services due to the current standard that are imposed in the e-Umrah system. This was in line with Balsevich et al. (2011) who revealed that increasing the presentation of electronic information transparency and procedural regulations are significant issues in increasing the utilisation and availability of control mechanisms on the public sector's websites.

It can be found that the problems of embeddedness have significant impact on embodiment of standard. The absence of some entities which contain other infrastructures found in the embeddedness dimension caused difficulties in imposing standards in the e-Umrah system due to the low level of collaboration and arrangement between entities. The lack of these entities and hence lack of standards related to these entities has an effect on the current accessibility of information and leads to conflicts in practice. This was reflected by the WC council report (2008) which highlighted the importance of effective collaborative arrangements, coordination and partnerships among government sections and sub-sections. It was emphasised that the government should understand the requirements of achieving high level principles and protocols such as categorising the scope of different entities' relationships which includes their visions and strategies of delivering services which bring different departments closer to each other and deliver effective and clear standards and policies that enable all departments to work together and maximise the level of collaboration and coordination between them.

Additionally, the challenge of integration in installed base has an effect on embodiment of standards. When a service is not integrated in the electronic system, the scope, rules and regulations related to these services are absent

electronically. Additionally, when the service is partially integrated into the system, the existing standards would be insufficient and limited in dealing with the problems that may exist as it does not cover the overall requirements of the partially integrated service. Gibba and Zakaria (2012) emphasised the growing importance of integrating government at different levels for the purpose of providing efficient services that deliver effective and improved communications and exchange of information across government departments. In addition, it was highlighted that the lack of standards and specifications of automated processes across government offices is a challenging issue that governments face when interconnecting government departments together due to numerous factors related to different work environments of these different government departments. Therefore, this leads to difficulties in standardisations of connecting and integrating different government departments and offices.

It is worth mentioning that two factors emerged during the investigation in this dimension (Section 6.8). These two factors are as follows: (1) primary player, and (2) views on sufficiency and satisfactory standards.

**Primary players (Major Stakeholders)** investigated the primary players of the e-Umrah system and shed light on the existing participants and participations in decision making. The factor also pointed out the significant role(s) of those stakeholder(s) in setting the decision making of what concern rules, standards, regulations, notifications and modifications to the e-Umrah system. **Views on sufficiency and satisfactory standards** provided an interpretation of the impact of system's standardisations on the operational issues which affect implementation and practice in the existing e-Umrah system's standards.

According to Star and Ruhleder (1996), embodiment of standards take shape when enhancing practices or resolving conflicting practices in the system occurs. Therefore, the study adopted this concept and explored and assessed the impact of standards on practices and the influence of collaborations and agreement of all involved entities. However, this study expanded more the concept in the primary player factor to understand the influential role of entities on standardisations and the interactions and mechanisms of setting standards to design, practices, services or implementations in the e-Umrah system.

The e-government literature expanded the understanding through adding numerous considerations which affect e-government service standardisation. Archmann and Kudlacek (2008) found that technical standards and the requirements of data structuring should be considered by government officials to enhance transparency of practices among different agencies which have different infrastructures, services, and practices for smooth data exchange. Kawtrakul et al. (2011) added some issues which affect standardisation such as lack of clear understanding about common processes across all involved stakeholders, lack of best practices and knowledge sharing in implementation, lack of data quality and data collection resources, lack of laws and regulations in data. This case study was in line with the e-government literature where technological, data structuring, and operational issues affect implementation and practice in the existing system's standards. The case study added to the literature the need for considering the primary players/decision makers such as major government entities who set the rules and regulations to the system and their influence on delivering transparent standards to the system.

### **7.5 The impact of become visible upon breakdown in e-government.**

In this dimension two types of breakdowns were identified: technical and informational. The e-Umrah system becomes visible upon breakdown once the technology or information fail to serve as designated. The technical or information failure which occurs in the e-Umrah system or other entities' internal system becomes visible to Umrah companies in the form of absence of update of information, delays in information delivery and inaccuracies or existence of mistakes in information. These failures were found to hinder the operations and processes to take a transparent way of dealing due to the impact of technical and informational breakdown (Transparency dimension). Also, the lack of collaboration between the different entities in setting standards for alternative or emergency practices when such technical or information problems occur affects the practice in the e-Umrah system which enables it to practice manually rather than having another electronic solution when technical or informational breakdown occur (Links with conventions of practice and Embodiment of standards).



The technical breakdown was identified as a breakdown in systems' software (websites, applications, etc.) or hardware (server, database, network, etc.). This type of breakdown was found to have a substantial effect on the infrastructure specifically to entity's access, use and work practice. Numerous studies highlighted and then discussed the negative impact of technical difficulties in the e-government context (Shannak, 2013; Rotchanakitumnuai, 2008; Alanezi et al., 2011; Das and Mahapatra, 2012). Furthermore, the technical breakdown was also found to cause communication disruptions which hinder all entities and practices to be achieved electronically. In addition, this technical breakdown varies among entities which provide service delivery where some technical breakdowns were found to have major affect on all system's infrastructure and all practices while on the other hand other technical breakdowns were found to cause a partial effect on the system's infrastructure depending on the role of the entity which is connected and involved in the practices. For example, when technical difficulties occur in an entity with a major role in the system, all the entire system faces complete breakdown because all entities are connected to the e-Umrah system through this important entity. On the other hand, when a technical problem occurs in an entity with a minor role in the system, the technical breakdown will only involve, for example, failure to transfer the data concerning its role until the entity solves this technical difficulty. The system in this case is still active and enables other entities to operate.

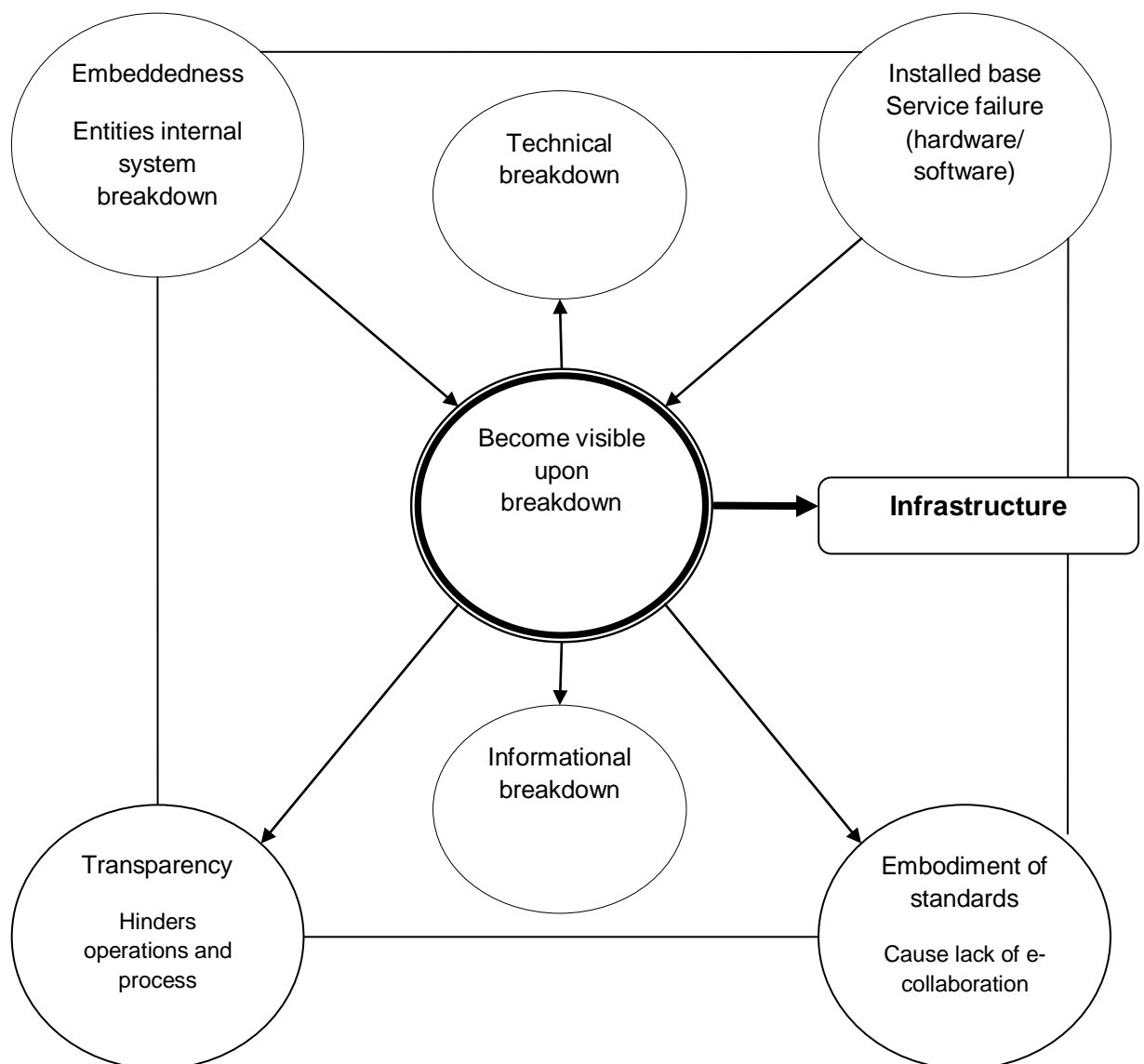
In this study, the e-Umrah system has diversity of service delivery entities which are networked together to provide electronic services to the involved stakeholders. The Ministry of Hajj is the primary player. Its role requires connecting all different entities of different systems and managing operations of all entities together under one shared infrastructure. The findings of this study shed the light on the relationships between this dimension and installed base and embeddedness. It revealed that there are problems which exist in terms of technical failures of the e-Umrah system or other entities' systems throughout the season. This was found to be due to the affect of the breakdown which occurs in the e-Umrah system or in other entities which are involved in service delivery. The Ministry of Hajj works to reduce these breakdowns in their system and service providers systems to ensure quality of service and support enhancing technical capabilities of e-Umrah system. In addition, other entities

may be faced by technical breakdown and this causes delays which is time consuming in solving the issues from their sides because these different entities have their own hardware, network, systems, software and servers. These different entities of different environments were found to have barriers during the seasons which found to hinder the implementation of conducting services in the e-Umrah system.

According to Star and Ruhleder (1996), the infrastructure should be visible to stakeholders, meaning that infrastructure becomes visible when breakdown occurs. This is because infrastructure was taken for granted when it worked and only becomes noticeable when it stops working. Shannak (2013) reflected on some technological factors among others which affect e-government development. His study emphasised the different government agencies in Jordan which participate in one government infrastructure that integrates them together, puts them in one network, and enables them to interoperate and share information and knowledge. Shannak (2013) found that different agencies use different hardware and software programmes which hinder the implementation of e-government services. He emphasises the importance of technological solutions which are needed to avoid hardware and software barriers for effective implementation of e-government services. Alanezi et al. (2011) emphasised the importance of ensuring technical functionality. This was found to provide proper service delivery to any e-government website and avoids breakdown and system failure (Alanezi et al., 2011). Furthermore service quality and technical support are considered some of the issues and if found lacking in the e-government services, will hinder the development of e-government services and infrastructure (Rotchanakitumnuai, 2008).

Nevertheless, informational breakdown reflected the relationship between this dimension and transparency and embodiment of standards. This is because the e-Umrah system was designated to provide accurate information and enhance data exchange transactions among different entities quickly and efficiently. However, informational breakdowns were found to occur in the e-Umrah system which may be in the form of errors or mistakes in the data or delays in updating the information or lack of information. These problems cause difficulties and is time consuming causing a shift from electronic to manual

process of dealing. This was in line with a study where information breakdown such as inaccuracies, inconsistencies and incompleteness of information in addition to lack of appropriate information were some issues found to be challenging to information implementation in e-government systems (Garca and Pardo, 2005). Additionally, Chen (2003) found that different technology and different practices shape the existence of manual operations which hinders updating information.



**Figure 7.6:** The relations between become visible upon breakdown and other dimensions

The analysis of this study highlighted two emerged factors which are as follows: (1) visibility of breakdown, and (2) conventional protocol to handle breakdown (Section 6.7). **Visibility of breakdown** explored the system infrastructure's visibility which is invisible to the e-Umrah system's users when it is functioning properly and become visible once it discontinues functioning. **Mechanism of solving breakdown** investigated the conventional protocols that are used when handling breakdowns.

According to the e-government literature, numerous studies highlighted the significance of system's breakdown as a considerable issue which affects e-government projects (Shannak, 2013; Rotchanakitumnuai, 2008; Alanezi et al., 2011; Das and Mahapatra, 2012). This is because the existence of system breakdown disrupts the system from functioning properly therefore interrupting the communication and implementation of services. This study expanded the concept of Star and Ruhleder (1996) and the e-government literature by seeking more understanding on the types of breakdown and shed light on the importance of identifying the nature of system's breakdown. In addition, the study reflected another fundamental issue which is the mechanism of solving breakdown and how entities respond when breakdowns occur and what mechanisms these entities need to apply to solve these breakdowns. The findings show that two types of mechanisms to handle breakdown occurred in the business sector. This could be internally through solving the problem individually and externally with other entities and this is when breakdown occurs in other entities. Shannak (2013) reflected in his study that when technical breakdown occurs, this will hinder the implementation of e-government services. Therefore, understanding the difference of technologies among entities who are working under one network or a unified system is important. Furthermore, Chen and Wu (2011) emphasised on one mechanism of solving breakdown by considering inter-organisational information integration in terms of quality, performance, and practice which assist in improving the internal and external practices among different entities of different environments.

## 7.6 The impact of transparency in e-government context.

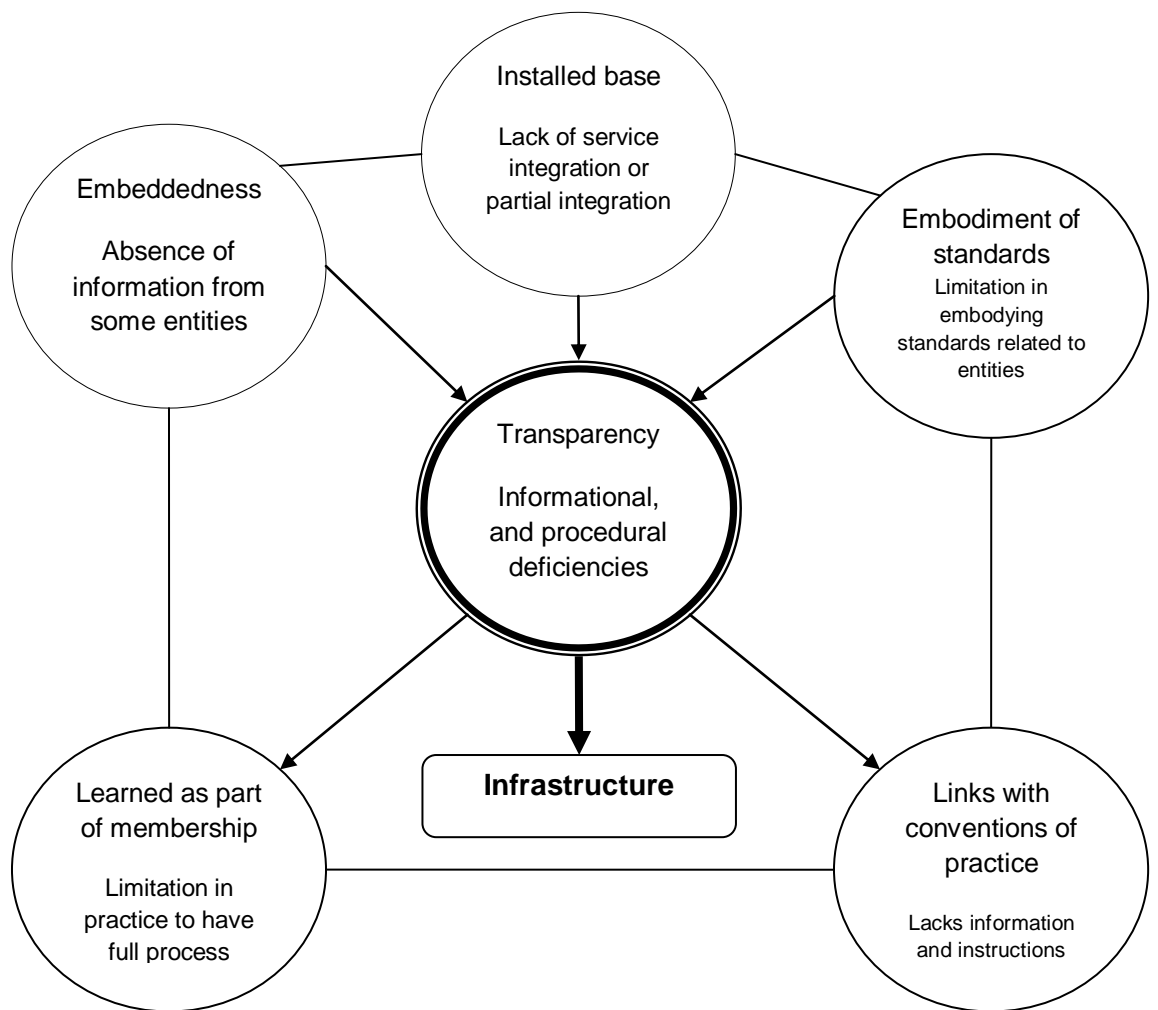
The success of a transparent infrastructure is enhanced by providing a means for shared information between all entities and services simply and efficiently. In this study, it was found that deficiency in information and reduced communication caused a gap in this idea of transparency in the e-Umrah system as infrastructure was not found to be transparent with some services provided by the e-Umrah system

Numerous studies in the e-government context emphasised the significance of transparency in the information and communication technology (Bannister and Connolly, 2011; Bahtanger, 2003; Kudo, 2004; Pasquier and Villeneuve, 2007). This significance was found in the effect of transparency by providing easy access to government information through increasing the clarity, openness, accuracy, accountability and accessibility to information and services (Klischewski, 2012); Drew and Nyerges, 2004), and reducing the information gaps by bridging stakeholders (private and public sectors) with local government (Kim and Lee, 2012).

In this study transparency was found to be affected by the impact of other dimensions which may either increase or decrease the transparency of the e-Umrah system's infrastructure (Fig 7.7). This is when challenges exist in some dimensions such as installed base, embeddedness, and embodiment of standards which has a direct affect on transparency. This effect on transparency in turn has an effect on other dimensions such as conventions of practice and the learning process. For example, information relating to an entity not present in the e-Umrah system is a challenge existing in the dimension of embeddedness. This challenge causes reduction in the transparency because the e-Umrah system does not contain the information necessary for the Umrah companies to complete their processes and procedures. This decrease in transparency will lead Umrah companies to seek the information through situated learning due to lack of information and instruction in the e-Umrah system. Lollar (2006) investigated the level of transparency of China's e-government infrastructure in addition to information flow and work efficiency by analyzing 29 government sites. The findings regarding transparency and

government openness revealed that providing information and services is an important issue needed to fulfil public needs. Furthermore, Chiang and Hsieh (2007) emphasised the importance of information and service integration on the transparency of online public service delivery. One of their findings revealed the significance of organisation design linkages in e-government. Multi services and systems that relate to e-government services delivery have to be electronically connected to enhance creating e-government infrastructure that facilitate public services for users and improves the access and use of implementing e-government services and increasing the transparency of the system.

Additionally, the complete lack of integration or partial integration of some services in the installed base dimension was found to cause procedural barriers in the infrastructure affecting its transparency. The lack of electronic solutions in the e-Umrah system is another problem which hinders the operations of these services electronically, hence affecting its transparency. This will affect the convention of practice leading to manual operations taking place. Bhatnagar and Singh (2010) found that transparency of procedures, information, rules and decisions are an influential attribute and key dimension of impact over stakeholders in the context of the infrastructure (whether client or agency). Their findings highlighted the need to pay greater attention to improving the design of e-government projects by integrating services in order to have transparent practice electronically.



**Figure 7.7:** the impact of transparency on other dimensions

According to the relationship between transparency and embodiment of standards, it was found that the partial or non existence of some entities and services has an impact on transparency. This is because when an entity is partially existing or non existing in the electronic system, there are limitations in embodying the standards related to these entities therefore this affects the transparency of the services related to these standards. For example, the Ministry of Hajj creates or modifies standards in collaboration with other entities on the electronic standards of service delivery. However, entities that either partially exists or nonexistent, entities such as flights, accommodation and transportation may cause limitations to embodying standards hence reducing the transparency of the services related to these standards. In the literature there are many factors which affect the transparency of a system's infrastructure (Asogawa, 2011; Lolar, 2006). These could be due to lack of dual

communications, collaboration, presence of informational deficiencies such as lack of update of information and unavailability of some information and procedures in the systems (Asogawa, 2011; Lolar, 2006). In addition, paying greater attention to process reform in the design of e-government project is one of the issues found to affect transparency of procedures, information rules, and decisions for internal and external clients or agencies. Therefore, transparency of procedures, information, rules and decisions are an influential attribute and key dimension of impact over stakeholders whether client or agency (Bhatnagar and Singh, 2010).

It is important to emphasise that seven factors have emerged in this study and were essential drawing understanding on the meaning of transparency in e-government infrastructure (Section 6.3). These factors are as follows: (1) innovated system transparency (overall transparency), (2) providing feedback design, (3) process of providing feedback, (4) form of constant communication, (5) input consideration, (6) receiving support, (7) kind of support, (8) circumstances of receiving feedback and (9) system improvement after feedback.

**Innovated system transparency (overall transparency)** focused on examining services and tasks which related to these services In light of Star and Ruhleder's (1996) definition of transparency. This investigation of infrastructure transparency enabled this study to unveil the gaps in the transparency of the e-Umrah system as infrastructure was not found to be transparent in some services provided by the e-Umrah system. **Providing feedback design** explored the current methods which reflected the current design of providing feedback which was placed by the Ministry of Hajj to enable Umrah companies to pass on their feedback. **Process of providing feedback** explored the way which Umrah companies interact to provide feedback. **Form of constant communication** explored the existence of any form of communication between Umrah companies and other entities such as service providers and the Ministry of Hajj and the type of communication that employ by Umrah companies. **Input consideration** explored the responses of service providers and the Ministry of Hajj on the Umrah companies' input and if whether these input are being considered and implemented in the e-Umrah system. **Receiving supports**



explored Umrah companies' level of a given support and whether they receive support from service providers and the Ministry of Hajj or not. **Kind of support** investigated the kind of support received by service providers or other entities of the e-Umrah system. **Circumstances of receiving feedback** revealed on the Umrah companies' circumstances which motivated Umrah companies to seek support from the responsible entities (service providers and the Ministry of Hajj). **System improvement after feedback** explored the actions and reactions perceived after giving opinions and feedback to the responsible entities (service providers and the Ministry of Hajj). In addition, it revealed on service providers and the Ministry of Hajj's reactions when Umrah companies submit their opinions, comments, suggestions and complaints after feedback.

According to infrastructure transparency, Star and Ruhleder (1996) have focused on the understanding of transparency in the sense that tasks should be invisibly supported in infrastructure without reinventing or reassembling each time it is implemented. This study has adopted this concept however, the findings of this study revealed that transparency should not only be used for investigating and assessing tasks, operations or services but should be investigated and assessed also from government and business interactional perspective. This was highlighted and explained in the rest of the factors such as feedback design, process of providing feedback, communication forms, input consideration, supports, types of supports, circumstances of supports and system improvement after feedback. This interactional perspective of transparency was in line with Finel and lord (1999) and Annamalai et al. (2012) who defined transparency in e-government as an interactional relationship where government openness in terms of providing and receiving support, feedback, and communication are necessarily needed meaning there is a mean for dual interaction among entities simply and efficiently.

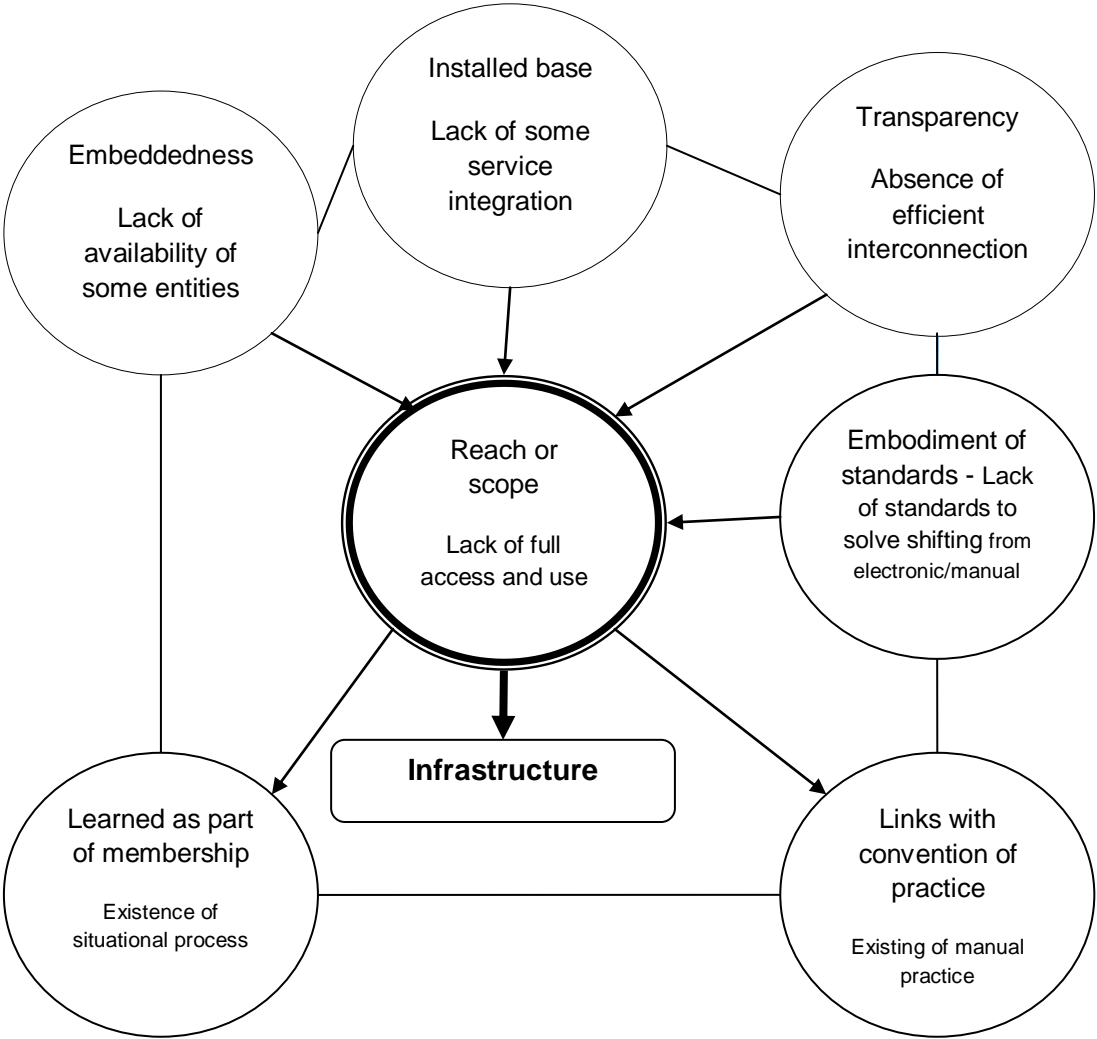
## **7.7 The impact of reach or scope in e-government.**

This dimension adopted the idea of making services, its operations and information accessible, usable, implementable and achievable from one single electronic site which is the e-Umrah system. Tripathi et al. (2003) emphasised on the significance of considering the integration of process, data and

technology as selective aspects that have an impact on reaching one single site that conveys advantages to citizens, business and among government employees. Regarding the e-Umrah system site, it was designated to work as a base to connect all entities 'Users' to practice Umrah activities in order to enable end users 'Umrah companies and International agencies (local and global connect)' to achieve their business demands. The Ministry of Hajj defined scopes for developing the Umrah services. However, in some situations these scopes have not yet been achieved because of the challenges in the existing installed base and embeddedness dimensions. These challenges include some services which are not yet integrated in the e-Umrah system and entities which are not embedded in the e-Umrah system's infrastructure making it difficult to reach one single site to achieve the necessary services and tasks. Bukhsh and Weigand (2012) explored service oriented architecture for e-government when they investigated e-customs. Their study highlighted that integration of services and embeddedness of departments and agencies that have parts in the services are important in order to deliver services and manage the mutual information flow between departments and agencies. This was found to promote practices in term of coordination and interoperation of some departments and agencies to evolve from working from intra to inter-organisational scope in the e-government services.

Furthermore, the standards imposed by the Ministry of Hajj were not found to solve the challenges which occur between conflicting practices such as electronic and manual operations hindering the scope from being achieved. In these cases, the electronic practice is demoted to manual practice preventing efficient interconnection and direct sharing of information hence reducing the transparency of the system's infrastructure. Chen (2003) emphasised the importance of this as different departments with different practices creating legacy system 'manual' that prevent systems to interconnect and share information or update their information and tasks. In addition, Kunstelj and Vintar (2004) evaluated the progress of e-government development and found that the development of e-government requires a holistic strategic approach to transform the entire government organisation/public administration from working manually or partial electronic into fully electronic services.

Reach or scope was found to affect the learning process rather than it being affected by the learning process in the electronic system. This is because reach or scope in this study was found to be fulfilled in most cases where the majority of services and entities are interlinked within the e-Umrah system's infrastructure leading to instructive learning to take place by the Umrah companies. However, in the case where some services and entities are not connected within the e-Umrah system's infrastructure, the scope is therefore not reached and situated learning takes place by the Umrah companies to accomplish their tasks. Panda et al. (2009) emphasised that e-government and electronic learning are two significant concepts that were introduced and implemented at government department levels to enhance and develop the communication between government and stakeholders for delivering efficient and effective information and service delivery for e-government services. Their study also emphasised that availability of government bodies which consist of government departments and agencies online is fundamental for having successful learning process development. The study highlighted some aspects which were found to lead to successful learning processes when accessing and using government services such as government strategies for managing transformation process of services and setting and applying the flexible standards to match the constant change that occurs throughout time. Botts et al. (2008) have also explored learning process design for e-government development. Their findings revealed that understanding the design and contents of government services, information, structure and operational process is essential because linking learning methods with the existing content through instructional and guidance influences the way in which the e-government services are designed, taught and learned. The relational impact of this dimension is summarised below (Fig 7.8).



**Figure 7.8:** The relations between reach or scope and other dimensions

Nevertheless, two emerged factors have found to shape reach or scope (Section 6.6). These emerged factors are as follows: (1) views on the system’s reach or scope of the current e-Umrah system, and (2) requirements of achieving reach or scopes (issues still need to achieve reaches and/or scopes).

**Views on the system’s reach or scope of the current e-Umrah system** represented and discussed Umrah companies’ views on the reach or scopes of the e-Umrah system and whether it has achieved the reach to connect all entities, services, and to what relates to Umrah activities in one single site or has accomplished the scopes of achieving full electronic integration of services and collaborations with all entities throughout time. **Requirements of achieving reach or scopes** identified and critically analysed the obstacles or

areas of developments which hinder the e-Umrah system to expand or achieve the one electronic site of achieving full electronic practices

Therefore, it can be seen that these emerged factors have added new insight by identifying some of the challenges and barriers of achieving one single site and highlighted the impact of manual/legacy dealing when shifting from electronic to manual due to the absence of some entities to be connected in the e-Umrah system. This was supported by Chen (2003) who highlighted the need to understand the issues which cause the system to shift from electronic to manual. This hinders the expansion of the system from reaching full electronic dealing hence postpones the scopes until all government departments are technologically and organisationally available and connected.

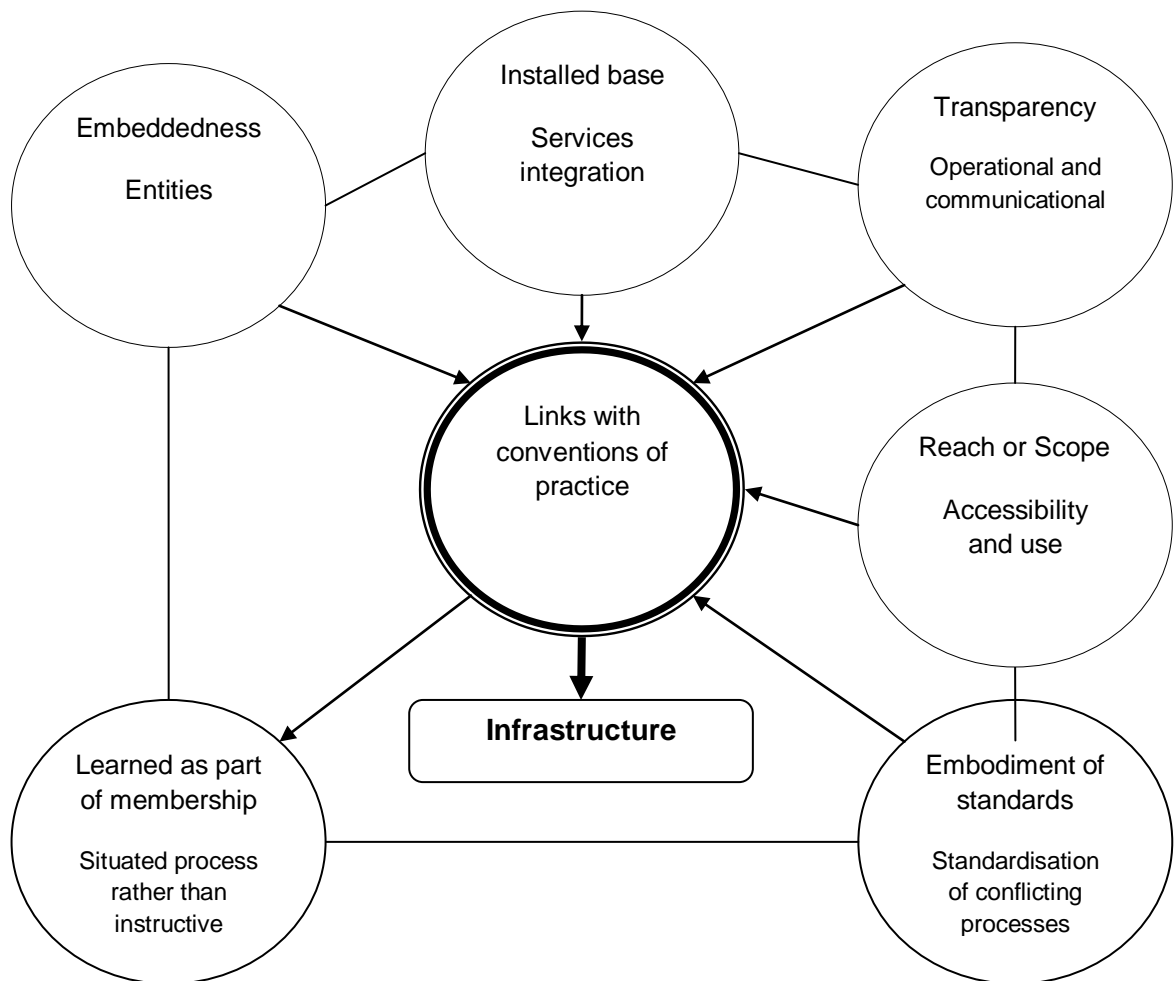
### **7.8 The impact of links with conventions of practice in e-government.**

In this dimension, infrastructure both shapes and is shaped by the conventions of a community of practice. This study revealed the influence of conventions of the community of practice on the existing system/infrastructure and in turn how the system/infrastructure affects the conventions of practice. The findings of this study revealed numerous issues affecting the practices in the e-Umrah system infrastructure such as deficiencies in some operations and procedures, lack of services and information which resulted in the conversion of the practice from electronic to manual. Additionally, the conventions of practice were found to affect the learning process since it relies on entities, its services and standardisations (Fig 7.9).

The relation between the conventions of practice and the installed base dimension has been previously explained in the installed base dimension. To avoid repetition, it will suffice to say that the lack or partial integration of some services from the electronic system causes a shift from electronic to manual operations. This is due to an absence of electronic solutions and the frequent changes, mistakes and unavailability of some information that existed in some services. Similarly, the relation between conventions of practice and embeddedness has been emphasised in the embeddedness dimension where some entities which are not included in the infrastructure of the system forced

the practice of these entities to be implemented manually outside the system. This is due to lack of collaboration in the e-Umrah system's infrastructure.

Moreover, the details of decisions and reports made by different entities not available in the system or lacking information was another issue which influenced the e-Umrah system's practice and infrastructure. This was found to reflect the importance of the relationship between links with conventions of practice and transparency due to these details of reports being requested manually by companies which were found to be time consuming and requirement of considerable effort. This was similar to the findings of Garcia and Pardo (2005) who explored the challenges and success factors used as a guidance to improve e-government efforts to transform and develop practices. One focus was on building an understanding of information and data challenges and success strategies to tackle these challenges. The identified informational challenges included inaccuracies, inconsistencies and incompleteness of data in addition to lack of appropriate data. These challenges were recommended to be considered in the data structure and data definitions in the system. The study recommended some strategies which are required to lead to successful e-government practice such as creating an assurance program to structure and define information, engaging necessary partners and adopt a common environment which consists of common structure and standards for information, receiving continuance feedback from all users and partners to manage and maintain information. This is comparable to a study conducted by Weerakody et al. (2005) who explored the process and information systems integration aspects of e-government. The study highlighted that technical, organisational and political issues are significant elements which need to be considered. However, they found that technical deficiencies were the most significant issue which has a noticeable effect on the information and integration process in their study. One of the technical deficiencies found in their study is the struggling of IT staff to cope with their increasing workload and the demands on the existing legacy system. In this study technical deficiencies were also found to be the most significant issue affecting practice where caused manual instead of electronic processes to take place.



**Figure 7.9:** The relations between Links with conventions of practice and other dimensions

Additionally when an entity is absent from the system there is a limitation in embodying its standards, therefore affecting the convention of practice. For example, the entities responsible for flights, accommodation and transportation services are absent from the e-Umrah system's infrastructure, therefore the standards related to these entities are inadequate causing a shift to manual practice. Two e-government case studies that have worked on transforming from legacy to electronic practices were investigated (Veenstra et al., 2009). The unavailability of detailed process description and the influence of legacy system hindered the integration of electronic practice which reflected that the role of leadership in embodying standards is vital to provide an effective design

and structure that present all the details of services' processes, procedures and information (Veenstra et al., 2009).

The scope of the e-Umrah system is a complete shift from manual to electronic operations. In this study, the majority of the operations take place electronically in the system. However, due to deficiencies in the system as explained previously such as challenges in integration, communication and informational deficiencies, the conventions of practice switch to manual operations.

These challenges which affect the convention of practice so that it switches from electronic to manual affects the learning process where it becomes situated rather than instructive. For example, in the passport services informational errors may occur when reporting visitors who failed to depart but in reality they have really departed. There is no electronic solution to prove that they have departed therefore situational learning takes place in this case in order to deal with this problem. This finding was supported by Lungo and Nhampossa (1999) who explored the impact of the legacy information system in health delivery services. Their findings suggested eliminating the legacy information system transactions and transforming to fully electronic dealing. This is due to the disadvantages which the legacy information system contains such as slow transactions, processes, performance and lack of innovative technologies to align with the old legacy system and prevent collaboration and exchanging information.

The investigation of conventions of practice has also revealed on five emerging factors which found to facilitate the understanding of the impact of community of practice in shaping the current design of practices and in turn the influence of current design in shaping the current practices and implementations of services in the e-Umrah system (Section 6.5). These factors are as follows: (1) Views on constant development in the e-Umrah system, (2) Views on other electronic systems of other involved entities, (3) connectivity with other systems, (4) Type of works/operations when dealing with other systems, and (5) rules/conventions affecting the use/design of the current system.



**Perspective of system development** explored the methods, visions and views of developing and improving the e-Umrah system's practices. **Integration of other systems** reflected the views on the linkage with other electronic systems of other involved entities and its relations to practices. **Description of connectivity with other systems** investigated the modality of connection between Umrah companies (users) with the other electronic systems (services delivery). **Type of works/operations when dealing with other systems** summarised the type of tasks that Umrah companies involving the Ministry of Hajj and other entities of the e-Umrah system. **Rules/conventions affecting the use/design of the current system** identified and investigated critically the continuous and new barriers which still occur in the current design of the e-Umrah system and influence current practice and implementation of the system's services and operations.

Therefore, it can be seen that the investigation of this dimension helped shed the light on the community of practice through understanding how they develop the e-Umrah system, integrate and connect their systems to the e-Umrah system. The factors have also aided in increasing the understanding of the rules/conventions which affect the use and design of the current e-Umrah system. They also highlighted some gaps such as the existence of legacy/manual transactions which formed as a result of different entities having different practices. This was supported by the literature where Chen (2003) emphasised the importance of understanding different departments with different practices that create a legacy system 'manual' which prevent systems to interconnect and share information or update their information and tasks electronically.

## **7.9 The impact of learned as part of membership in e-government.**

This dimension refers to the way that users familiarise themselves and develop a level of knowledge with the electronic system. It also explores the interactions of new and old comers' over the activities and artefacts which shaped the existing processes of learning and familiarity beside gaining the adequate knowledge, information, and skills that enable them to practice and

operate the services. Different learning processes were discovered in this study including intra-learning process and inter-learning process (cross-learning).

It was found that the inter-learning process was the prominent type of learning used by the e-Umrah system's community of practice mainly between the Umrah companies and the service providers. Leary and Fontainha (2007) emphasised on the importance of this type of learning within a community of practice demonstrating the results regarding the additional knowledge regarding each member within the community and the development of the information within that field.

However, there are some limitations found in this study which include a lack of communication between Umrah companies and each other and between the Umrah companies and entities other than the service providers leading to a gap in the inter-learning process. This is of utmost importance as the lack of communication will hinder the share of knowledge and information in addition to hindering the learning process and delaying progress and development (Leary and Fontainha, 2007). This indicates the importance of interconnectivity and communication within a community of practice.

Furthermore, the learning process in this study can also be categorised situated and instructive learning. Situated learning is self learning that is self directed and independent (Derrick, 2003). Instructive learning is a learning process which takes place by being instructed or taught by another member of the community. In the e-Umrah system, if the information is not available in the system and was not provided by the service providers, Umrah companies gain the information through situated learning to deal with the situation and progress. This was found to be related to the chronological phase of the e-Umrah system's infrastructure. During the manual phase, the learning process was found to be situated learning due to lack of guidance or the presence of specific instructions during this phase. In the initial development of the e-Umrah system, the learning process was instructive learning guided by the e-Umrah service providers. Following this, the learning process is currently a combination of instructive and situated learning due to the fact that Umrah companies discovered gaps or limitations in the e-Umrah system which they handle

themselves due to the lack of guidance by service providers in these specific situations.

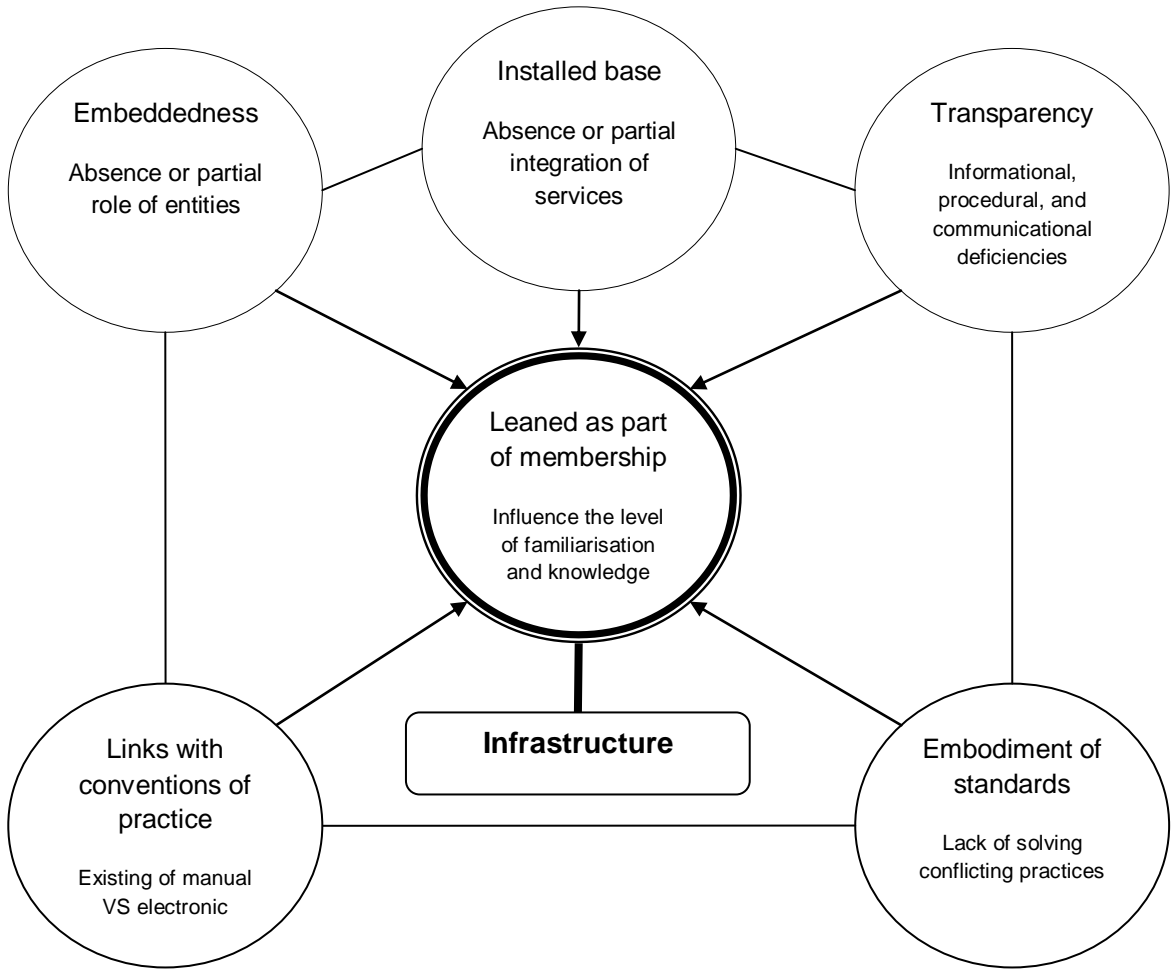
Ni and Ho (2005) found that technology, policy and social challenges affected the management of intergovernmental relationships and private–public partnerships. The finding highlighted the considerable attention by policymakers and IT managers of the effect over the power balance of multiple external partners within the network on learning processes. For example, technology challenges explains the access and use of internet and developing government services by utilising technologies' tools that enable end users to reach one single site and enhance interaction between government department and the multiple stakeholders. Policy challenges involve identifying the information and processes that need to be available in the system to enhance the operations and process when practiced by stakeholders. The social challenges concern the different level of information literacy among users in considering the design of electronic services so as to provide a user friendly technological platform to facilitate conducting tasks for all users.

Furthermore, it is important to identify the issues that appear to be gaps and complexities that complicate the understanding of the system and affect the learning processes and hence hinder its improvement. These may be in the form of conflicts which occur as the system evolves over time. This type of problem was found to be related to links with conventions of practice as the practice evolves over time, hence creating of challenges in the existing learning process to Umrah companies. A study aimed to identify factors affecting information sharing and collaborative processes and describe how these factors interact to enable and constrain interorganisational systems (Fedorowicz et al., 2007). The conflict identified was through the issues that occur from other entities affecting stakeholders' interest and resources. In addition, the findings that influence the different entities of different environment and constituencies which create conflicts were realised and revealed.

The relation between learned as part of membership and other dimensions can be seen when shifting from instructive learning to self/situated learning process (Fig 7.10). This shifting is caused by the limitations of existence of

some entities (Embeddedness) and insufficiency of its fully integrated service in the e-Umrah system (Installed base).

In addition, the lack of current standards in solving the existing potential problems was found to hinder learning process (Embodiment of standards). This was also found to affect the level of transparency where some services are more transparent while others were less transparent (Transparency). These issues have caused barriers to spread to other dimensions which affected the existing practices in addition to e-Umrah system infrastructure (Links with conventions of practice). Consequentially, the learning process is developed and shaped by the influence of these dimensions on the e-Umrah system infrastructure, hence the existing shape of infrastructure enabling the existing challenges of inter-learning process to exist.



**Figure 7.10:** The relations between learned as part of membership and other dimensions

Nonetheless, it is also important to underline the six factors which emerged and were found to increase the understanding of the learning as part of membership in e-government to business infrastructure (Section 6.4). These factors are as follows: (1) learning process and the impact of the relations of tasks to the e-Umrah system infrastructure, (2) familiarity in the e-Umrah system, (3) process of familiarity, (4) extent of engagement, and (5) extent of system's usability, and (6) system usability. These six factors were found to build fundamental understanding through covering the users of the system as being part of the memberships and revealed more knowledge about learning familiarity in a collaborative community.

***The learning process and the Impact of the relations of Umrah tasks to the e-Umrah system infrastructure*** explored chronologically the lifecycle of learning process in parallel with the phases of developments (manual, early and current electronic system versions) which Umrah field passed through. Furthermore, the impact of the inter-learning process of tasks and among entities was a crucial subject which found to influence the learning process. ***Familiarity in the e-Umrah System*** explored the way Umrah companies assemble skills based on the learning elements of experience, practice and knowledge which gain throughout time and use. ***Process of Familiarity*** investigated the methods of becoming familiar and the manner of learning among ancient and new Umrah companies which were never aware of the whole phases of system and practiced the manual system except the recent most. ***Degree of Engagement*** explored the durations required from participants (old and new Umrah companies) to become familiar when practicing Umrah activities and operations in the e-Umrah system. ***Extent of system's Usability*** has explored the extent of using the system among Umrah companies and revealed the capabilities of Umrah companies in using the system which depended on their level of experiences, knowledge and practicing of the e-Umrah system. ***System usability*** investigated the pattern of using the system everyday or restricted to some particular tasks.

These factors have enhanced Star and Ruhleder's (1996) concept of learning as part of membership. They highlighted the importance of becoming familiar with the technological, political, and organisational culture within the private

sector since the lack of understanding of these aspect causes barriers and challenges affecting the learning processes. It also reduces the level of familiarity such as the influences which appeared due to the system's design, association and support inside and outside the system and the existence of legacy system such as manual operations. These issues were supported by the literature where the importance of these factors were emphasised and found to affect government, private and public relationships (Markus and Fedorowicz, 2009; Ni and Ho, 2005)

## **7.10 Summary**

This chapter brought together the findings from the case study. The sequence of the discussion was based on the importance of each dimension in relation to the infrastructure. Furthermore, the relation of each dimension with other dimensions was discussed. In addition, the key ideas of this chapter emphasised the relational impact of dimensions on each other. The original infrastructure framework proposed by Star and Ruhleder (1996) was based on the view that the eight dimensions have a direct and fixed influence on infrastructure. However, the discussion of this study based on the empirical findings suggest that these eight dimensions of infrastructure in e-government react specifically to the business sector and not only have a direct and fixed impact on government to business infrastructure, but also have relational impact on dimensions to each other. The influence of the dimensions can vary where some dimensions have greater impact than others and can affect other dimensions (some issues in one dimension may develop challenges to other dimensions).

Nevertheless, the chapter revealed on important findings about the resulting emergence of the conceptual framework that was found to enrich, augment and provide much greater depth to Star and Ruhleders's (1996) generic framework and highlighted its importance compared to Star and Ruhleder's (1996) framework.

Following this chapter is the conclusion chapter.

**CONCLUSION**

- 8.1 Overview of this research**
- 8.2 Research contribution**
- 8.3 Research limitations**
- 8.4 Future research opportunities**

## **8.1 Overview of the research trends**

### **- Purpose, problem to be addressed.**

The purpose of this thesis was to investigate the e-government's implementation through the understanding of G2B e-government infrastructure. It is believed that infrastructure is the foundation of e-government service and in order to understand the success of e-government implementation one must understand the underlying infrastructure. Nevertheless the existing literature on e-government pays little attention to the importance and role of infrastructure; and the few studies that examined e-government infrastructure tend to focus on a particular aspect such as the technological aspect of infrastructure. Besides this, the reason for studying the G2B e-government is because there is lack of both theoretical and empirical research in the e-government literature (GBDEC, 2001; GBDEC, 2002; Bertolletti et al., 2003; Zhao et al., 2007; Geetika and Pandey, 2007; Minh, 2009; Lee et al., 2011). Hence the significance of this study is its contribution to the current understanding of e-government and the role of infrastructure in delivering e-government service to the business sector.

### **- Research approach to address the problem**

Therefore, the findings of the e-government literature have led this research study to investigate G2B infrastructure and three major objectives were developed: (1) to investigate and understand the infrastructure of the government to business sector by identifying the factors that play a role in shaping the existing infrastructure, (2) identify the barriers that impede the development of the government to business infrastructure, and lastly to (3) explore the challenges within the infrastructure that hinder businesses' use of e-government services.

To meet these objectives, a qualitative case study was adopted and an infrastructure framework developed by Star and Ruhleder (1996) was used for developing interview questions, assisting data analysis and reporting the results.



---

**- The key findings of the research****1. What are the factors that shape the existing infrastructure of the government to business sector?**

An effective e-government service to business sectors will depend on the underlying infrastructure which consists of eight dimensions: (1) built on installed base, (2) embeddedness, (3) embodiment of standards, (4) becomes visible upon breakdown, (5) transparency, (6) reach or scope, (7) links with conventions of practice, and (8) learned as part of membership.

**The installed base dimension** was found to be the most important dimension of all, as the new system is likely to be influenced by the existence of different systems and practices because of its continuous expansion from the previous system(s) (e.g. legacy, manual systems). The installed base dimension was found to be a major factor that shapes the existing infrastructure of the government to business implementation in an e-government context. Effective integration of services and development and improvement of electronic services were the major issues concerning the installed base dimension of the e-Umrah system case study.

**The embeddness dimension** was also found to play a significant role in developing infrastructure. The electronic system should include all involved entities which deliver services and its services in the system. This embedding of entities is essential to make infrastructure sink within technologies, social structures and arrangements in the electronic system. In the e-Umrah system case study, the e-Umrah system infrastructure was perceived as creating an efficient network of relationships that motivate Umrah companies to access and use the e-Umrah system where entities which deliver services such as the Ministry of Foreign Affairs, the Ministry of Interior, and the bank were found to deliver the services. However, the partial or full absence of some entities was found to limit the e-Umrah system from providing all services and processes electronically to users, i.e. 'Umrah companies'.

**The embodiment of standards dimension** reflected the standards imposed on the system and their influence on the services of the electronic system. The

role of government is to provide effective and efficient standards that facilitate implementation and use of services and operations in the electronic system. These standards should be transparent in the sense that they enable efficient workflow and allow compatibility between the manual and electronic practices if manual practice exists along with electronic ones. Also, creating or modifying standards in collaboration with other entities on the electronic standards of service delivery was also one of the issues that provided effective and transparent embodiment of standards that motivate users to use the electronic government system.

**Become visible upon breakdown** concerns technical and informational breakdowns. The technical breakdown was perceived to affect the technological tools of the system (such as computers, network, website, server, etc.). Informational breakdown was found to affect the issues related to data such as delay, failure, or insufficient data. Also, absence of alternative solutions when a breakdown occurs was one of the issues which were found to suspend practices and hence affect business implementing tasks (become visible upon breakdown).

The success of a transparent infrastructure is enhanced by providing a means for sharing information between all entities and services simply and efficiently. Also, transparent operations, information and procedures were found to motivate entities to use e-government services (**transparency dimension**).

**The reach or scope dimension** concerned the spatial and temporal reach and scope of infrastructure. Making services, its operations and information accessible, usable, implementable and achievable from one single electronic site was found to be a motivating factor that increases the adoption of improving e-government use. The role of government in G2B projects is to consider the impact of change over time in the use of, and access to, the e-government system before, within and after the development of the electronic system.

**Links with conventions of practice** was another essential dimension which concerns the role of the community of practice in shaping the electronic system and in turn how the electronic system is shaped. For example, in the e-Umrah system, achieving full electronic practice in operations, information and

procedures was one of the motivating issues which was found to enhance accessing e-government services by users. However, the design of the current e-Umrah system was insufficient to include all practices electronically due to the different and diverse entities involved, which had an impact on shaping the current design, hence some limitations were unable, in the current design, to deliver full electronic services. Therefore, Umrah companies are the main users to gain benefits and who are affected by the current design, due to a partial or complete absence of some entities, updates of information or issues related to procedures and processes.

**Learning as part of membership** was also an essential dimension in improving the development of level of knowledge and familiarity with the e-government system. For example, the nature of being a part of the membership requires the e-government system to provide taken for granted processes which enable users to implement tasks and achieve these tasks. In addition, in the e-Umrah system case study, the inter-learning process among entities was an essential issue. Increasing the learning process between each Umrah company and other entities such as service providers, ministries, bank, etc. (cross learning) was an essential element that motivated Umrah companies to use e-government services.

Consequentially, adopting e-government services and projects require the government to work on delivering effective and efficient e-government infrastructure that strengthens the relationship between government and business.

## ***2. How has this infrastructure evolved throughout time?***

There are numerous issues which have invoked changes in the e-government projects specifically government to business. Technological, commercial and political trends were the major aspects that invoked changes in the G2B infrastructure. Technologically speaking, building solid technological infrastructure enables government not only to integrate all government departments and agencies but also to connect with business to deliver services to business efficiently and effectively. From the business perspective government is required to develop and place strategies which enable

businesses to implement electronic practice to facilitate business activities and empower them to achieve their objectives. From a political perspective, government offices collaborate and develop all government entities and departments by transforming government entities from dealing locally (internally) to centralisation (globally) through integrating all of the government electronically to create a unified electronic government that delivers all services to be practiced and achieved on one single site.

**3. What are the barriers to the government to business infrastructure? And why do they occur?**

There are numerous concerns which affect government to business infrastructure. One of the concerns includes lack of service integration and development which has an impact on infrastructure and influences the use of electronic services (**Installed base**).

Another concern includes lack of electronic collaboration and interconnection of some entities. Some entities were found to be fully interconnected electronically; some were partially interconnected, while the rest were unconnected but are dealt with manually outside the electronic system (**embeddedness dimension**).

Furthermore, some services' operations and procedures were found to have rigid standards and required change in order to deliver efficient and transparent standards, which were found to have a substantial influence in the electronic system (**embodiment of standards dimension**).

In addition, technical and informational breakdowns were found to occur sometimes in the systems. The technical breakdown was perceived to affect the technological tools of the system (such as computers, network, website, server, etc.) where the informational breakdown was found to affect the issues related to data such as delay, failure or insufficient data. Also, absence of alternative solutions when a breakdown occurs was one of the issues which were found to suspend practices and hence affect business implementing tasks (**become visible upon breakdown dimension**).

Lack of transparent information and procedures was also found to be considerable and one of e-government system's infrastructure barriers (**transparency dimension**).

Lack of accessibility and electronic participation of some entities was still found to be one of the barriers to infrastructure delivering efficient service integration and embedding entities to fully include services and practices in the e-government system infrastructure. This was found to delay infrastructure expanding to enable users to reach one single site that offers all the services and demands of business (**reach or scope dimensions**).

The lack in design was caused by some entities which shaped the current design of the electronic system's infrastructure. In turn the existing infrastructure will only offer what has been shaped and designed by these entities and when the service is designed without full process or incomplete process for services, this can be seen in the existing design of the e-Umrah system (**links with conventions of practice dimension**).

Lastly, all these concerns were found to be the cause of a lack of an efficient collaborative learning network and information exchange in the e-government system's community of practice, which affected the learning process among businesses, taking an instructive leaning process and permitting Umrah companies to shift to a situated learning process (**learned as part of membership dimension**).

All these concerns which existed in dimensions were found to influence each other and cause dimensions to have impacts on each other. The reason behind the occurrence of these barriers is the role of leadership in developing and improving the e-government system. The e-government system's infrastructure is still not fully developed and has not completely fulfilled its intended visions. This is because some entities are still working locally and are either not integrated or only integrated partially. Another reason might be due to some of these entities facing technological challenges where they are still working on developing their internal technological infrastructure before they connect with other infrastructure. One other reason is that some of these entities might be facing organisational challenges in terms of dealing with the issues of planning,

strategies, collaborations, IT staffing (qualifications and training), or they might face issues of resistance to the change from manual to electronic practice in these entities' internal departments.

## **8.2 Research contributions**

This section is aimed at discussing the contributions that this research has made to the body of e-government knowledge.

### **8.2.1 Theoretical contributions (existing knowledge)**

According to e-government literature, many studies defined e-government from a technological perspective as the presence of technology, the internet and electronic services (United Nation Report, 2008; Gartner Group, Duffy, 2000; Brown and Brudney, 2001; Norris et al., 2001; West, 2001; Jaeger and Thompson, 2003; Altameem et al., 2006). In addition, other studies have defined e-government from a managerial perspective and examined the role of the government in using the technologies to serve a variety of different stakeholders (citizens, businesses and other entities) through increased management efficiency (World Bank; Gunter, 2006; Palvia& Sharma, 2007; Yildiz, 2007). Furthermore, the concept of e-government has also been established from the political perspective. It was defined as the rules, decisions, policies, regulation, administrations and legislations (GDBe, 2001) that govern citizens, businesses and different areas of government electronically to make a new way of public access facilitation (Huang and Bwoma, 2003) with a new style of superstructure leadership (Fang, 2002; Commission of the European Communities, 2003; Sheridan and Riley, 2006). This study has adopted a more holistic approach to examine e-government instead of focusing on one particular aspect. This holistic approach argues that e-government should be examined from different perspectives including technological, social, political, managerial/organisational and business aspects.

The technological aspect refers to the utilising of technical capabilities which consist of systems, hardware, software, web presence, internet, digital networks and telecommunication to deliver e-government services to the business sector in an effective manner. The social aspect refers to the individuals who consist of

designers and users. It also refers to the government which builds a supportive society that delivers efficient collaboration and interaction through the offered services and facilitates the exchange of information and knowledge in a simple, effortless and electronic manner. The political aspect refers to the role of partnership which consists of government and its entities collaborating to link all government entities electronically, enhancing infrastructure to enable empowering rules and regulations and enhancing the administrative level of e-government projects. The managerial/organisational aspect refers to the role of government in administrative strategies and planning to create a managerial and organisational atmosphere that facilitates operations and activities within government and business sectors. The business aspect refers to the role of the government in providing supportive and effective supervising, planning, organising and coordinating in order to empower business to implement services and provide all business demands.

For example, numerous studies have emphasised the important aspects of technology in an e-government context (United Nations, 2008; Palvia and Sharma, 2007; Jaeger & Thompson, 2003; Norris et al., 2001; West, 2001; Duffy, 2000). However, other studies perceived that managerial aspects along with technological are what defines an e-government project (Gunter, 2006; Palvia & Sharma, 2007; Yildiz, 2007). Therefore, combining all these aspects in a holistic approach to defining e-government has helped us understand e-government from a broader view rather than focusing on just one aspect of e-government and therefore narrowing it down, because e-government is not only about utilising technology but a combination of technology with all other mentioned aspects.

When investigating G2B and e-government infrastructure gaps were found in the e-government literature, and it was found to have been investigated by a few number of studies. According to government to business studies, only a small amount of literature explored government to business (G2B) relations. Most of the studies which discussed e-government development shed light on the importance of the role of G2B in empowering and improving the G2B sector (Ali et al., 2009; Minh, 2009; GBDEC, 2001; GBDEC, 2002; Warnick, 2001; GBDEC, 2002; Zhao et al, 2007). In addition, a few studies focused on

particular subjects within G2B without showing a holistic understanding. As for e-government infrastructure, that was newly introduced to the e-government literature (Julta et al, 2002). A few studies investigated infrastructure in e-government projects as a factor without providing empirical in-depth knowledge about the importance of infrastructure, its characteristics and the interrelational influences of its components on e-government but in searching the literature holistically. Therefore, this study investigated G2B infrastructure in order to understand the relationship between government and business to fill in the gap in e-government G2B literature. The investigation was completed using Star and Ruhleder's (1996) eight dimensions of understanding infrastructure to study e-Umrah system which is the Saudi government's e-government initiative. The findings of this research study contributed to the understanding of the impact each dimension causes when delivering G2B infrastructure such as understanding the impact of each dimension on infrastructure. For example, the integration issues (built on installed base) were found to be partial and/or absent in some services. Therefore, this caused and influenced other dimensions and where absence of services lack some entities to embedding their technologies, social structures and arrangements and this would cause barriers to achieve transparent operations and procedures. This absence of some services integration also caused a difficulties accomplishing practice, hence leading to complex learning processes which shift from instructive through guiding to situated learning processes. Furthermore, this study has utilised Star and Ruhleder's (1996) framework to investigate infrastructure. Star and Ruhleder's (1996) framework was found to cover wide areas of investigating infrastructure however, their proposed framework was universal and provided a general concept, definition for each dimension without providing an in depth knowledge or detailed explanation for each dimension. Therefore, this study has enriched, enhanced and added new factors under each dimension to provide an intensive understanding for infrastructure. Hence, the final intensive exploration of each dimension was able to generate an overall adaptive framework that enhances Star and Ruhleder's (1996) framework and increase the knowledge of investigating infrastructure. It is worth noting that this case study is the first empirical study focusing on investigating and exploring one of the Saudi Arabian G2B projects involving specifically the e-Umrah



system. This would help give some new insights to the e-Umrah system in Saudi Arabia in particular and to the government to business sector in general.

### **8.2.2 Contribution to research framework**

This study did not attempt to change Star and Ruhleder's (1996) framework, but enrich the framework with new insights by discovering that not only do the eight dimensions have impact on infrastructure, as found in a number of studies on infrastructure (Star and Ruhleder, 1996; Borgamn, 2003; Henningsson and Henriksen, 2009; Mark and Su, 2010), but also unveil the interrelational relationship between the dimensions which has considerable impact on infrastructure. The original infrastructure framework proposed by Star and Ruhleder (1996) is based on the view that the eight dimensions have a direct and fixed influence on infrastructure. However, the findings of this study suggest that these eight dimensions of infrastructure in e-government specifically government to business not only have a direct and fixed impact on government to business infrastructure but also have relational impact on each other and the influence of the dimensions varies where some dimensions have greater impact than others and can affect other dimensions (some issues in one dimension may cause challenges in other dimensions). For example, in this study all dimensions have influences on each other, however three dimensions, built in installed base, embeddedness and embodiment of standards, were found to be the most influential dimensions which have crucial impacts on each other, on other dimensions, and on infrastructure. Therefore, this study reveals that there are relationships between the dimensions. Hence, these results brought new insight to revise the e-government infrastructure in general and specifically government to business infrastructure framework that reflects the e-government infrastructure's dynamic nature.

This study has also enriched Star and Ruhleder's (1996) framework with new insights by discovering some factors which emerged from each dimension. These emerged factors were found to profoundly explore and explain each dimension and provided more detailed, structured and systematic knowledge and approach for understanding infrastructure in e-government or could be important to investigate and explore any other system. In addition, the factors in each dimension finally assisted in developing an overlying framework that

promotes the understanding of infrastructure in e-government government to business with much greater and detailed knowledge.

For example, the emerged factors in embeddedness dimension enabled this study to understand not only infrastructure as sunk into or within these technologies but the current system's structure, its overall organisation, its participants and their roles and positions in the system. This provided greater detail on how the designated arrangements, technologies and structures along with its participants influence the system's infrastructure.

In addition, exploring the interactions between government and private sector was found to be essential in addition to transparency of tasks and operations as this was found to be missing in Star and Ruhleder's (1996) concept. Indeed it is an important aspect where these communications and interactions play a role in empowering the private sector and improves the work practice. When there is an efficient interaction between government and business this reflects a high level of transparency.

Furthermore, gaining familiarity in factors such as experience, practice, skills, and instruction was lacking in Star and Ruhleder (1996) concept of learning as part of membership. The addition of these factors is important because it increases the knowledge of the influence of these factors on the system's infrastructure.

Nevertheless, understanding system's developments, identifying the connectivity and integration with other systems, which involved both tasks and operations of these different systems were significant factors. This is because they facilitate how the system shapes and is shaped by these other systems, thus enhancing the understanding of the impact of these other systems on the conventions of practice.

Moreover, understanding the mechanism of solving system's breakdown along with the issues of visibility of breakdown are both essential since they shed the light on gaps in the protocols which affect private sector experience. For example, the absence of electronic alternative plans and the manual protocols are some issues which hinder the electronic implementations, hence

they require attention and considerations which become visible upon breakdown dimension.

Furthermore, understanding the major stakeholders or decision makers of the system and the process of decision making and standardisation of system's operations and services along with the effect of embodying standards on the system are all essential factors. They enhance exploring embodiment of standards dimension and clarified the mechanism of decision making, rules, regulations and standards.

### **8.2.3 Contributions to practice**

This section identifies the beneficiaries of this research as the designers and users. The designers when they develop the current design and users when they use and implement G2B services. These contributions to practice will help them to use the research findings as well how they will benefit from these research findings.

Practical contributions to designers:

The contributions to practice is directed to the designers, decision makers and/or those at managerial level that can use the findings of this study as a road-map to develop and improve the current design and implementation of e-government services and its infrastructure in the government to business sector. Also, using the findings as a road-map will help the leaders of this e-government project G2B to be aware of the dimensions and issues which have emerged within dimensions that affect the progress of e-government projects in G2B. The practical applications for this research are as follows:

One practical application for the leaders and those at managerial level is to consider integration when developing and improving G2B implementation and also to consider the challenges which are caused by the integration of services that affects businesses. This is through the understanding of the capabilities of government entities, systems and the services which can be delivered and transformed into complete full electronic service delivery. For example, the role of government when integrating services is not only to integrate service for fulfilling the requirements of government but also to consider fulfilling the

requirements of business. This is to make practice achieved electronically and fully in the e-government system and this is done by considering the business perspectives and the nature of service requirements to fulfil their practices in the electronic system. It is also important at an administrative level to consider the impact of a lack of integration on services and/or systems. If integrating service was achieved to offer practice or tasks partially or temporarily, this would cause significant impact on the electronic system and would cause government to face difficulties when embodying standards. The lack of integration might also cause government to deliver rigid processes and procedures due to integration of services not being planned to provide full electronic services.

Another practical application for the leaders and those at managerial level is to understand the importance of including technologies, social arrangements, structures and services of other entities' infrastructures. This was found to strengthen the connection of the electronic system network with other networks of other systems and infrastructure in the e-government project. Hence, linking all involved entities that have parts in providing services for G2B and making them available and accessible by users in the electronic system and portal, enables the achievement of full electronic services and fulfils the demands of users electronically rather than offering electronic service partially or through manual dealing when these entities are absent from the electronic system.

A further application is considering the role of setting standards by leaders and those at managerial level. This is because the role of leaders and those at managerial level is to set standards that prevent conflicts and create compatibilities among different entities with different services and practices by imposing rules, regulations and standards. They also need to consider the problems of incomplete, old, rigid and incompatible standards in the electronic system and with the other entities, its services, systems and infrastructures. Also, standards concerning process, procedures or solving potential problems that occur in the electronic system need to be considered for having an effective design of e-government G2B services implementation.

One more application for practitioners to consider are breakdowns and their impact on infrastructure and other factors. The leaders and those at managerial level should consider that the electronic system becomes visible upon

breakdown once the technology or information fails to serve as designated. The technical or information failure which occurs in the electronic system or internal systems in any entity that are connected to the infrastructure becomes visible to users in the form of absence of updates of information, delays in information delivery and inaccuracies or mistakes in information. Furthermore, the lack of collaboration between the different entities in setting standards for alternative or emergency practices when such technical or information problems occur affects the practice in the electronic system and hence leads to practice being conducted manually rather than having another electronic solution when technical or informational breakdown occurs. In addition, the role of leaders or those at managerial level is to provide notifications of breakdown with detailed information about the cause, existence of the breakdown and duration until it can be fixed. In addition, when breakdowns occur, the role of leaders and those at managerial level is to find an alternative solution whether it is technical or informational, such as shifting from an effective channel to another active one, in order not to hinder the work processes and cause difficulties to the business sector achieving their business strategies and objectives.

Success of a transparent infrastructure is enhanced by ensuring that the electronic system remains the same for each service or task without being changed or reinvented each time to accommodate the needs of different entities and services. Doing so would facilitate the implementation of services in all entities and services simply and efficiently. It is suggested that leaders or those at managerial level should consider the deficiencies, be they operational, informational, procedural or communicational. For example, deficiency in information causes a gap because this deficiency in information reduces the level of communication among involved entities to a complete lack of information exchange. Also, the procedural deficiency refers to the procedures which have to be complete and fully electronic and if this procedure is incomplete or has to be reinvented this would not make the system transparent due to the changes which occur in the procedure each time users implement tasks.

Additional application for practice to leaders and those at managerial level is to understand the importance of the role of the e-government portal.

Understanding of this role is through adopting the idea of making services, operations, information and all functionalities accessible, usable, implementable and achievable from one single electronic site. This electronic site has to be reached locally and globally, meaning that the e-government website offers services to national and international users involving access and implementation tasks. Also, leaders and those at managerial level are suggested to review the scope of that which has been achieved, and the scope of challenges that are still being faced preventing services and processes being achieved in their single site. In addition, leaders and those at managerial level have to consider the influence of other factors such as a lack of integration of services or of including government entities practices. This consideration is important because one of these factors might hinder the scope of government to achieve the target of delivering a single electronic site for offering all services to be implemented and achieved by businesses.

A further application to be suggested to leaders and those at managerial level is the role of community of practice on the practice's design and considering the issues which were found to be affecting the practices of the electronic system infrastructure, such as deficiencies in some operations and procedures, lack of services and information which resulted in the conversion of the practice from electronic to manual. In addition, leaders and those at managerial level should be aware of the influence of practice on the learning process, as shifting from an electronic to a manual practice can cause learning to be disrupted, and changed from an instructional process to a situational process, where users search for solutions when problems occur since the practice is invisible and the electronic system cannot permit the practice to be fully electronically achieved, and therefore it is conducted outside the electronic system.

### **8.3 Research limitations**

This section addresses three key limitations.

Firstly, this research was conducted in only one of the Saudi e-government's projects. Hence, the results of this study need to be validated against the projects in different contexts or countries to see how well they can explain and

fit into G2B and its infrastructure. It would also be interesting to compare and contrast the results of this research study with other projects that investigate G2B and its infrastructure in developed and developing countries. This will enable us to better understand the influence of dimensions and the validity of the results of this study compared with others.

Secondly, this study adopted Star and Ruhleder's (1996) framework where Star and Ruhleder (1996) defined the dimensions from their perspective. However the meaning of each dimension can be interpreted differently. In this study, the interpretations of the dimensions were consistent with Star and Ruhleder's (1996) definition of the dimensions to allow comparability between this study and the Star and Ruhleder (1996) study. The impact of this on this research findings is that the Umrah companies described few issues which were different than Star and Ruhleders (1996) definitions of the eight dimensions. For example, the issues of feedback and communication between Umrah companies and service providers were observed to concern transparency from general understanding of transparency. However, it could not be interpreted in transparency dimension since the dimension which defined as infrastructure remains the same for each service or task without being changed or reinvented each time to accommodate the needs of different entities and services.

Thirdly, this study has only considered e-government systems from a business perspective. Looking at the G2B sector to investigate the government perspective in addition to the business perspective would give a bigger and more complete insight into the relationships of G2B and its infrastructure. The reason why this study was limited to only include the business perspective and not the government's perspective is because it is difficult to gain access to the Ministry of Hajj and other government departments linking to e-Umrah system. Besides this, it is time consuming and complex to establish the contacts in the government and negotiate with the government about the scope of the research due to the diverse entities which use different systems and services which would require the researcher to undertake another study investigating business perspectives along with government perspectives.

## 8.4 Future research opportunities

The current research study assisted in understanding the phenomenon of e-government infrastructure and government to business relations in Saudi Arabia. Future research could be done locally and globally. The local future research suggested is to investigate other projects in Saudi Arabia that concern the government to business relations and their infrastructures, validating different systems related to G2B within the kingdom of Saudi Arabia, such as e-passport, e-custom, e-national ID and e-payment systems. On the other hand, the global future research could be to investigate projects related to government to business relations and infrastructure from other developing and developed countries' perspectives. This global perspective will allow this study to be compared and validated with other studies in developed and developing countries' systems.

It is recommended to adopt the Star and Ruhleder (1996) framework for future studies in terms of empirical research, so that other studies might develop the current framework through introducing more dimensions or other meanings to the existent ones which will expand the understanding of infrastructure in the G2B sector.

It is also worth mentioning that in future studies regarding the G2B sector, should investigate the government perspective further in addition to the business perspective and this would give a bigger and more complete understanding of the relationships. This is because the government systems vary in term of infrastructure, capabilities and challenges. Therefore, each system requires investigation to understand its characteristics and potential challenges and capabilities in delivering services to users.

The above opportunities for future research will enable us to compare and contrast the significance of variations of dimensions among studies and might lead to increased understanding of the phenomenon of G2B and lead to more development of the e-government infrastructure field specifically as to what serves developing and improving government to business relations.



## References

- Abdullah, H. (2008). From Customer Satisfaction to Citizen Satisfaction: Rethinking Local Government Service Delivery in Malaysia, 4 (11), pp. 87-92.
- Abuali, A., Alawneh A., and Mohammad H. (2010). Factors and Rules Effecting in E-Government. European Journal of Scientific Research, 39 (2), pp.169-175.
- Accenture Report. (2002). E-government leadership: Realizing the vision [Online].  
<http://www.accenture.com/xdoc/en/newsroom/epresskit/egovernment/egovepress.pdf> [Accessed 02 March 2009]
- Aichholzer G. and Sperlich R. (2001). Electronic Government Services for the Business Sector in Austria [Online]. Proceedings of the 12th International Workshop on Database and Expert Systems Applications, pp. 412-416.  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=953096>  
[Accessed 10 October 2010]
- Al-adawi, Z., Yousafzai Z. and Pallister, J. (2005). *Conceptual Model of citizen adoption of eGovernment*. Paper presented at The Second International Conference on Innovation In information Technology (IIT'05).  
<http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.92.2165>  
[Accessed 10 October 2010]
- Alanezi, M. A., Mahmood, A. K., and Basri, S. (2011, September). Conceptual model for measuring e-government service quality. In Open Systems (ICOS), 2011 IEEE Conference on, pp. 411-416. IEEE.
- AlAwadhi, S. and Morris, A. (2008). The use of the UTAUT model in the adoption of e-government services in Kuwait [Online]. Proceedings of the 41st Hawaii International Conference on System Sciences. Hawaii: Kona, pp. 1-11.  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=04438923>  
[Accessed 23 January 2011]
- Alateyah, S., Crowder, R. M., and Wills, G. B. (2012, June). Citizen adoption of E-government services. In Information Society (i-Society), 2012 International Conference on, pp. 182-187. IEEE.
- Al-Gahtani, S. (2006). Information technology adoption, the roadmap to sustainable development: examining three models. 18<sup>th</sup> national computer conference at Saudi computer society [Online].  
[http://ipac.kacst.edu.sa/eDoc/2006/156428\\_1.pdf](http://ipac.kacst.edu.sa/eDoc/2006/156428_1.pdf) [Accessed 12 January 2010]
- Ali, M., Weerakkody, V. and El-Haddadeh, R. (2009). The Impact of National Culture on E-Government Implementation: A Comparison Case Study [Online]. Proceeding of the 15th Americas Conference on Information Systems (AMCIS 2009), San Francisco, USA.

[http://dspace.brunel.ac.uk/bitstream/2438/3660/1/Culture%20and%20eGov\\_Final.pdf](http://dspace.brunel.ac.uk/bitstream/2438/3660/1/Culture%20and%20eGov_Final.pdf) [Accessed 09 November 2010]

Al-Omari, A. and Al-Omari, H. (2006). E-Government Readiness Assessment Model. *Journal of Computer Science*, 2 (11), pp. 841-845.

Al-Omari, H. (2006). E-Government Architecture In Jordan: A Comparative Analysis. *Journal of Computer Science*. Vol. 2 No. 11, pp. 846-852.

Alshehri, M. and Drew, S. (2010). Challenges of e-Government Services Adoption in Saudi Arabia from an e-Ready Citizen Perspective. *World Academy of Science, Engineering and Technology*, 66, pp. 1053-1059.

Alshehri, M. and Drew, S. (2010). Implementation of e-Government: Advantages and Challenges. In *IASK 2010: E-Activity and Leading Technologies*. Oviedo, Spain.

Altameem, T., Zairi, M. and Alshawi, S. (2006). Critical Success Factors of E-Government: A Proposed Model for EGovernment Implementation, *IEEE*, pp.1-5.  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=04085489>  
[Accessed 15 February 2011]

Annamalai, T. R., Rajan, S. C., Deep, A., and Gómez-Ibáñez, J. A. (2012). Impact of changes in the transparency of infrastructure procurement and delivery on infrastructure access, costs, efficiency, price and quality.  
<http://r4d.dfid.gov.uk/pdf/outputs/systematicreviews/infrastructure-2012annamalai-report.pdf>

Archmann, S., Kudlacek, I. (2008). Interoperability and the exchange of good practice cases, in: *European Journal of ePractice*, 2, pp. 3-12.

Asogwa, B. E. (2011). The state of e-government readiness of Africa: a comparative web assessment of selected African countries. *Journal of Internet and Information System*, 2(3), pp. 43-57.

Backus, M. (2001). E-governance in developing countries Introduction and examples [Online]. E-government in developing countries. U.N. Report.  
<http://www.iicd.org/files/report3.pdf> [Accessed 05 September 2009]

Bahrain e-government official portal (n.d.). Available at:  
[http://www.ega.gov.bh/en/about\\_us.php](http://www.ega.gov.bh/en/about_us.php) [Accessed 21 October 2010]

Balsevich, A., Pivovarova, S., and Podkolzina, E. (2011). Information Transparency in Public Procurement: How it Works in Russian Regions. Series: Economics, WP BRP, 1.  
[http://nnov.hse.ru/data/2011/10/15/1269288146/Balsevich\\_Information\\_transparency.pdf](http://nnov.hse.ru/data/2011/10/15/1269288146/Balsevich_Information_transparency.pdf)

Bannister, F. and Connolly, R. (2011). The Trouble with Transparency: A Critical Review of Openness in e- Government. *Policy & Internet*, 3(1).

- Baskerville, R. and Myers, M. D. (2004). Special issue on action research in information systems: making is research relevant to practice - foreword. *MIS Quarterly*, 28(3), pp. 329-335.
- Baxter, P. and Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report*, 13(4), pp. 544-559.
- Bertoletti, M., Missier, P., Scannapieco, M., Aimetti, P. and Batini, C. (2003). The Services to Businesses Project: Improving Government-to-Business Relationships in Italy [Online]. Proceedings of the 2nd EGOV Conference (EGOV 2003).  
<http://www.dis.uniroma1.it/~monscan/ResearchActivity/Articoli/EGOV2003.pdf> [Accessed March and October 2009]
- Bekkers, V. (2009). Flexible information infrastructures in Dutch E Government collaboration arrangements: Experiences and policy implications. *Government Information Quarterly*, 26(1), pp. 60-68.
- Benbasat, I., Goldstein, D. K. and Mead, M. (1987). The case research strategy in studies of information systems. *MIS quarterly*, Vol. 11, No. 3, pp. 369-386.
- Bennett, J. and Estrin, S. (2005). Corruptibility, Transparency, and Bureaucratic Institutional Structure. ASSA meeting, San Diego.  
<http://www.rrojasdatabank.info/widerconf/BennettEst.pdf>
- Bhatnagar, S. (2003). Transparency and Corruption: Does E-Government Help? DRAFT Paper prepared for the compilation of CHRI 2003 Report OPEN SESAME: looking for the Right to Information in the Commonwealth.  
<http://www.iimahd.ernet.in/~subhash/pdfs/CHRIDraftPaper2003.pdf>
- Bhatnagar, S. C. and Singh, N. (2010). Assessing the Impact of E-government: A Study of Projects in India. *Information Technologies & International Development*, 6(2), p. 109.
- Bhattacharjee, A. (2012). *Social Science Research: Principles, Methods, and Practices*, Open Access Textbooks.  
[http://scholarcommons.usf.edu/oa\\_textbooks/3/](http://scholarcommons.usf.edu/oa_textbooks/3/)
- Bigdeli, Z., Kamal, M. and deCesare, S. (2011). "Inter-Organisational Electronic Information Sharing in Local G2G Settings: A Socio-Technical Issue". *ECIS 2011 Proceedings*. Paper 79.
- Bitsch, V. (2005). Qualitative research: A grounded theory example and evaluation criteria. *Journal of Agribusiness*, 23(1), pp. 75-91.

- Bjorn, F. and Fathul, W. (2008). E-government Challenges and the Role of Political Leadership in Indonesia: the Case of Sragen. Proceedings of the 41st Hawaii International Conference on System Science, 2008. <http://portal.acm.org/citation.cfm?id=1334661> [Accessed 08 July 2010]
- Blaikie, N. (2010). Designing Social Research: The Logic of Anticipation, 2<sup>nd</sup> edn. Cambridge: Polity.
- Blakemore, M. and Lloyd, P. (2008). Think Paper 10. Trust and Transparency: pre-requisites for effective eGovernment [Online]. <http://www.key4biz.it/files/000075/00007580.pdf>
- Bouaziz, F. (2008). Public administration presence on the web. The Electron. J. of e-Government, 6 (1), pp.11-22.
- Bowker, G. C., Baker, K., Millerand, F. and Ribes, D. (2010). Toward information infrastructure studies: Ways of knowing in a networked environment. International handbook of internet research, pp. 97-117. Springer Netherlands.
- Brown, M. and Brudney, J. (2001). Achieving advanced electronic government services: An examination of obstacles and implications from an international perspective. Public Administration Review, 63 (1), pp. 30-43.
- Brülde, B. (2005). Realism, relativism, constructivism, and natural kinds, in Lectures on Relativism, ed. D. Westerståhl and T. Tännsjö, pp. 169-95. <http://www.phil.gu.se/relativism/saturday/Bryldepaper.pdf>
- Bryman, A. (1984). The debate about quantitative and qualitative research: a question of method or epistemology?. British Journal of Sociology, pp. 75-92.
- Bryman, A. and Burgess, B. (eds.) (1994). Analyzing qualitative data. London: Routledge.
- Burns, N. and Grove, S. (2003). Understanding nursing research, London: Elsevier Health Sciences.
- Burrell, G. and Morgan, G. (1994). Sociological paradigms and organisational analysis. London: Heinemann.
- Byrd, T. and Turner, D. (2000). Measuring the Flexibility of Information Technology Infrastructure: Exploratory Analysis of a Construct. Journal of Management Information Systems, Vol. 17, No.1, pp. 167-208.
- Capgemini (2006). Online Availability of Public Services: How Is Europe Progressing? [Online] Web Based Survey on Electronic Public Service. Report of the 6<sup>th</sup> Measurement. [http://ec.europa.eu/information\\_society/eeurope/i2010/docs/benchmarking/online\\_availability\\_2006.pdf](http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/online_availability_2006.pdf) [Accessed 19 August 2009]

- Capgemini (2007). The User Challenge Benchmarking The Supply Of Online Public Services [Online]. Report of the 7th Measurement. [http://ec.europa.eu/information\\_society/eeurope/i2010/docs/benchmarking/egov\\_benchmark\\_2007.pdf](http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/egov_benchmark_2007.pdf). 20. 3. 2009 [Accessed 19 August 2009]
- Carr, L. T. (1994). The strengths and weaknesses of quantitative and qualitative research: what method for nursing? *Journal of advanced nursing*, 20(4), pp. 716-721.
- Carter, L. and Belanger, F. (2003). Diffusion of Innovation and Citizen Adoption of E-government Services [Online]. The Proceedings of the 1st International E-Services Workshop, pp. 57-63. [http://www.google.co.uk/#q=Diffusion+of+Innovation+and+Citizen+Adoption+of+E-government+Services&hl=en&prmd=ivns&ei=oJPhTeS8GMqZ8QOzmrGJBw&start=20&sa=N&bav=on.2,or.r\\_gc.r\\_pw.&fp=5058ac85bf93e8c2&biw=1259&bih=603](http://www.google.co.uk/#q=Diffusion+of+Innovation+and+Citizen+Adoption+of+E-government+Services&hl=en&prmd=ivns&ei=oJPhTeS8GMqZ8QOzmrGJBw&start=20&sa=N&bav=on.2,or.r_gc.r_pw.&fp=5058ac85bf93e8c2&biw=1259&bih=603) [Accessed 02 October 2010]
- Carter, L. and Belanger, F. (2005a). The utilization of e-government services: citizen trust, innovation and acceptance factors. *Information Systems Journal*, 15, pp. 5-25.
- Carter, L. and Belanger F. (2005b). The influence of Perceived Characteristics of Innovating on e-government Adoption *Electronic Journal of e-Government*, 2 (3), pp. 11-20.
- Centeno, C., van Bavel, R. and Burgelman, J. C. (2005). A prospective view of e-government in the European Union. *The Electronic Journal of e-Government*, 3(2), pp. 59-66.
- Chabrow, E. (2004). Canada Is Still No. 1 in E-Government Rankings [Online]. *Information Week*. <http://www.informationweek.com/shared/printableArticle.ihtml?articleID=20000010> [Accessed 04 September 2010]
- Chandler, S. and Emanuels, S. (2002). Transformation Not Automation [Online]. Proceedings of 2nd European Conference on EGovernment, St Catherine's College Oxford, UK. <http://books.google.co.uk/books?hl=en&lr=&id=3YZP9nBw7AUC&oi=fnd&pg=PA92&dq=Transformation+Not+Automation&ots=aFeYqEnU4A&sig=ZkNfO6le7kpDdFcbSy7hNhrMOnk#v=onepage&q=Transformation%20Not%20Automation&f=false> [Accessed 25 November 2010]
- Chang, I., Li, Y., Hung, W. and Hung, H. (2005). An empirical study on the impact of quality antecedents on taxpayers' acceptance of Internet tax filing systems. *Gov. Inf. Q.* 22 (3), pp. 389-410.
- Charalabidis, Y., Lampathaki, F. and Askounis, D. (2008). Unified data modelling and document standardization using core components technical specification for electronic government applications. *Journal of theoretical and applied electronic commerce research*, 3(3), pp. 38-51.

- Chen, H. (2003) Digital government: Technologies and practices. *Decision Support Systems* 34 (3), pp. 223-227.
- Chen, Y. H. and Wu, J. J. (2011). Factors influencing inter-organizational information integration in networked environment. In *Ubi-Media Computing (U-Media)*, 2011 4th International Conference on, pp. 77-82. IEEE.
- Chiang, L. and Hsieh, T. C. (2007). Information integration to create an infrastructure: facilitating public service provisioning in Taiwan. *Electronic Journal of e-Government*, 5(1), pp. 29-42.
- Chourabi, H. and Mellouli, S. (2011, June). e-government: integrated services framework. In *Proceedings of the 12th Annual International Digital Government Research Conference: Digital Government Innovation in Challenging Times*, pp. 36-44. ACM.
- Christie, M., Rowe, P., Perry, C. and Chamard, J. (2000, June). Implementation of realism in case study research methodology. In *International Council for Small Business, Annual Conference, Brisbane*, pp. 1-21. Sage.
- Chu, P., Hsiao, F., Lee, W. and Chen, W. (2004). Exploring success factors for Taiwan's government electronic tendering system: behavioral perspectives from end-users. *Government Information Quarterly*, 21 (2), pp. 219-234.
- Chung, S. H., Rainer, R. K. and Lewis, B. R. (2003). The impact of information technology infrastructure flexibility on strategic alignment and applications implementation. *Communications of the Association for Information Systems*, 11(11), pp. 191-206.
- Cohen, W. W. (2003). Infrastructure Components for Large-Scale Information Extraction Systems. In *IAAI*, pp. 71-78.  
[http://pdf.aminer.org/000/258/588/infrastructure\\_components\\_for\\_large\\_scale\\_information\\_extraction\\_systems.pdf](http://pdf.aminer.org/000/258/588/infrastructure_components_for_large_scale_information_extraction_systems.pdf)
- Commission of the European Communities (2003). *The Role of eGovernment for Europe's Future* [Online], Communication No. 567. The Commission, Brussels.  
[http://ec.europa.eu/information\\_society/eeurope/2005/doc/all\\_about/egov\\_communication\\_en.pdf](http://ec.europa.eu/information_society/eeurope/2005/doc/all_about/egov_communication_en.pdf) [Accessed 12 September 2010]
- Conklin, W. A. (2007). Barriers to Adoption of e-Government. *System Sciences* [Online]. *Proceedings of the 40th Annual Hawaii International Conference on system sciences HICSS 2007*.  
<http://portal.acm.org/citation.cfm?id=1255812> [Accessed 24 September 2010]
- Contini, F. and Cordella, A. (2007). Information system and information infrastructure deployment: the challenge of the Italian e-justice approach. *The Electronic Journal of e-Government*, 5(1), pp. 43-52.

- Council, W. C. (2008). Effective Relationships and Collaborative Arrangements between Central and Local Government. <http://www.waitakere.govt.nz/havsay/pdf/royalcommission/effective-relationships.pdf>
- Creswell (2006). Understanding Mixed Methods of Research [Online]. Chapter 1. [http://www.sagepub.com/upm-data/10981\\_Chapter\\_1.pdf](http://www.sagepub.com/upm-data/10981_Chapter_1.pdf) [Accessed 16 August 2010]
- Curtin, G. (2007). E-Government. Encyclopaedia of political communication, Governance [Online]. [http://www.usc.edu/schools/sppd/bedrosian/private/docs/encyclopedia\\_of\\_political\\_communications.pdf](http://www.usc.edu/schools/sppd/bedrosian/private/docs/encyclopedia_of_political_communications.pdf) [Accessed 03 May 2009]
- Dada, D. (2006a). The Failure of E-government in Developing Countries: A Literature Review. The Electronic Journal on Information Systems in Developing Countries, 26 (1), pp. 1 -10.
- Dada, D. (2006b). e-readiness for developing Countries: moving the focus from the Environment to the users. The Electronic Journal of Information System in Developing Countries EJISDC, 27 (6), pp. 158-165.
- Das, T. K. and Mahapatra, D. K. (2012). Addressing the Influencing Factors for Interoperability in a Global Domain. Journal of Computer Engineering (IOSRJCE), Volume 7, Issue 2 (Nov-Dec. 2012), pp. 41-48.
- Deloitte and Touche (2001). The citizen as customer. CMA management, 74 (10), p. 58.
- Derrick, M. G. (2003). Creating environments conducive for lifelong learning. New directions for adult and continuing education, 2003(100), pp. 5-18.
- Douwe, V., Estevez, E., Ojo, A. and Janowski, T. (2009). Software Infrastructure for e-Government–e-Appointment Service. In U-and E-Service, Science and Technology, pp. 141-152. Springer Berlin Heidelberg. <http://iist.unu.edu/sites/iist.unu.edu/files/tj-pub-56.pdf>
- Drapeau, M. (2009). Top 5 ways to think about Gov 2.0 [Online]. Federal Computer Week. [http://fcw.com/articles/2009/09/07/comment-drapeau-5-ways-to-gov-2.aspx?s=gov2\\_080909](http://fcw.com/articles/2009/09/07/comment-drapeau-5-ways-to-gov-2.aspx?s=gov2_080909) [Accessed 26 July 2010]
- Drew, C. H. and Nyerges, T. L. (2004). Transparency of environmental decision making: a case study of soil cleanup inside the Hanford 100 area. Journal of Risk Research, 7(1), pp. 33-71.
- Duffy, D. (2000). Q&A: Balancing the role of e-Government [Online]. Interview with Mike Hernon, vice president of egovernment for New York City-based GovWorks. Available at: <http://www.cnn.com/2000/TECH/computing/11/13/qna.egov.idg/> [Accessed 02 June 2009]

- Dugdale, A., Papandrea, D. and Maley, M. (2005). Accessing E-government: Challenges for Citizens and Organizations. *International Review of Administrative Sciences*, 71(1), pp. 109–118.
- Ebrahim, Z. and Irani, Z. (2005). E-government adoption: architecture and barriers. *Business Process Management Journal*, Vol. 11 (5), pp. 589-611.
- Egan, T. M. (2002). Grounded theory research and theory building. *Advances in developing human resources*, 4(3), 277-295.
- Elsheikh Y., Cullen, A. and Hobbs, D. (2008). E-Government in Jordan: Challenges and Opportunities. *Transforming Government: People, Process and Policy*, 2 (2), pp. 83-103.
- Eriksson, O. (2002). Information systems infrastructure-enabling the development and use of ITS. In 9th World Congress on Intelligent Transport Systems.
- Esteves, J., Ramos, I. and Carvalho, J. (2002). 'Use of Grounded Theory in Information Systems Area : An Exploratory Analysis'. *Proceedings of the European Conference on Research Methodology for Business and Management*, pp. 129-136.
- Eynon, R. (Ed.) (2007). *Breaking Barriers to eGovernment: Overcoming Obstacles to Improving European Public Services*, Deliverable 1b, European Commission, Brussels. Available at: [http://www.egovbarriers.org/?view=project\\_outputs](http://www.egovbarriers.org/?view=project_outputs)
- Eynon, R. and Margetts, H. (2007). Organizational solutions for overcoming barriers to e-government. *European Journal of ePractice*, Vol. 1 (November), pp. 73-85.
- Fan, J. and Zhang, P. (2007). A Conceptual Model for G2G Information Sharing in E-Government Environment [Online]. The Sixth Wuhan International Conference on E-Business-e-Business Track, pp. 199-204. Conference proceedings. <http://it.swufe.edu.cn/UploadFile/other/xsjl/sixwuhan/Paper/EB372.pdf> [Accessed 25 September 2010]
- Fang, Z. (2002). E-Government in Digital Era: Concept, Practice and Development. *International Journal of the Computer. International Journal of The Computer, The Internet and Management*, 10 (2), pp. 1-22.
- Fedorowicz, J. Gogan, J. L. and Williams, C. B. (2007). A collaborative network for first responders: Lessons from the CapWIN case. *Government Information Quarterly*, 24(4), pp. 785-807.
- Finel, B. I. and Lord, K. M (1999). —The Surprising Logic of Transparency. II *International Studies City Government Transparency* 11 Quarterly 43, no. 2, pp. 315–339.



- Forman, M. (2002). e-government Strategy. Implementing the President's Management Agenda for E-Government. Available at: [http://www.usa.gov/Topics/Includes/Reference/egov\\_strategy.pdf](http://www.usa.gov/Topics/Includes/Reference/egov_strategy.pdf)
- Gal, U., Yoo, Y. and Boland, R.J. (2004). "The Dynamics of Boundary Objects, Social Infrastructures and Social Identities," Case Western Reserve University, USA . Sprouts: Working Papers on Information Systems, 4(11). <http://sprouts.aisnet.org/4-11>
- Gannon-Leary, P. and Fontainha, E. (2007). Communities of Practice and virtual learning communities: benefits, barriers and success factors. Elearning Papers, 5. pp. 20-29. ISSN 1887-1542.
- Gartner Group (2000). E-government strategy: cubing the circle. Research Notes, Strategic Planning Assumption, 20 April 2000. <http://www.gi.iit.edu/gartner2/research/87900/87955/87955.html>
- GBDE.org (2000), Global Business Dialogue on Electronic Commerce, Available at: [http://www.gbd-e.org/ig/egov/eGov\\_Recommendation\\_Sep01.pdf](http://www.gbd-e.org/ig/egov/eGov_Recommendation_Sep01.pdf) [Accessed 19 January 2009]
- GBDE.org (2001). e-Government [Online]. Global Business Dialogue on Electronic Commerce. [http://www.gbd-e.org/ig/egov/eGov\\_Recommendation\\_Sep01.pdf](http://www.gbd-e.org/ig/egov/eGov_Recommendation_Sep01.pdf) [Accessed 19 January 2009]
- GBDE.org (2002). e-Government Recommendations [Online]. Global Business Dialogue on Electronic Commerce. [http://www.gbd-e.org/ig/egov/eGov\\_Recommendation\\_Oct02.pdf](http://www.gbd-e.org/ig/egov/eGov_Recommendation_Oct02.pdf) [Accessed 19 January 2009]
- GBDE.org (2006). Global Business Dialogue on Electronic Commerce, e-Government Issue Group "Summaries of Previous Recommendations", Available at: [http://www.gbd-e.org/ig/egov/EGovernmentRecommendation\\_Nov06.pdf](http://www.gbd-e.org/ig/egov/EGovernmentRecommendation_Nov06.pdf) [Accessed 19 January 2009]
- Gebba, T. R. and Zakaria, M. R. (2012). E-government in Egypt: an analysis of practices and challenges. International Journal of Technology and Management (IJTM), 1(1).
- Geetika, M. and Pandey, N. (2007). E-government for Improving Performance of Power Sector in India [Online]. Presented and published in the proceedings of Pacific Asia Conference on Information System PACIS, Auckland, New Zeland. <http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1102&context=pacis2007> [Accessed 26 August 2010]

- Gefen, D., Warkentin, M., Pavlou, P. and Rose, G. (2002). EGOVERNMENT ADOPTION. AMCIS 2002, Proceedings. Paper 83 [Online]. <http://aisel.aisnet.org/amcis2002/83> [Accessed 26 August 2010]
- Ghatak, S. and Singh, S. (2010). Measuring citizen's perception and acceptance of e-Suvidha in relation to TAM: an empirical study [Online]. Proceedings of the International Conference and Workshop on Emerging Trends in Technology, Mumbai, Maharashtra, India. [http://delivery.acm.org/10.1145/1750000/1741958/p230-ghatak.pdf?ip=143.167.208.34&CFID=26147260&CFTOKEN=21937590&acm\\_=1306710556\\_fecedcf5b664fefe0e2a25de9a0c890](http://delivery.acm.org/10.1145/1750000/1741958/p230-ghatak.pdf?ip=143.167.208.34&CFID=26147260&CFTOKEN=21937590&acm_=1306710556_fecedcf5b664fefe0e2a25de9a0c890) [Accessed 05 October 2010]
- Gheysari, H., Rasli, A., Roghanian, P. and Jebur, H. (2012). The Role of Information Technology Infrastructure Capability (ITIC) in Management. *International Journal of Fundamental Psychology and Social Sciences*, IJFPSS, Vol 2, No.2, pp. 36-40.
- Giedymin, J. (1975). Antipositivism in contemporary philosophy of social science and humanities. *The British Journal for the Philosophy of Science*, 26(4), pp. 275-301.
- Gil-García, J. R. and Pardo, T. A. (2005). E-government success factors: Mapping practical tools to theoretical foundations. *Government Information Quarterly*, 22(2), pp. 187-216.
- Gouscos, D., Laskaridis, G., Lioulias, D., Mentzas, G. and Georgiadis, P. (2002). An Approach to Offering One-Stop e-Government Services— Available Technologies and Architectural Issues. In *Electronic Government*, pp. 264-271. Springer Berlin Heidelberg. [http://link.springer.com/chapter/10.1007/978-3-540-46138-8\\_42#page-1](http://link.springer.com/chapter/10.1007/978-3-540-46138-8_42#page-1)
- Grimmelikhuijsen, S. G. and Meijer, A. J. (2012). The Effects of Transparency on the Perceived Trustworthiness of a Government Organization: Evidence from an Online Experiment. *Journal of Public Administration Research and Theory*. <http://jpart.oxfordjournals.org/content/early/2012/11/02/jpart.mus048.short>
- Gunter, B. (2006). Advances in e-democracy: Overview. *Aslib Proceedings: New Information Perspectives*, 58 (5), pp. 361-370.
- Gupta, B., Dasgupta, S. and Gupta, A. (2008). Adoption of ICT in a government organization in a developing country: An empirical study, *Journal of Strategic Information Systems*, 17 (2), pp. 1- 20.
- Hancock, B. (1998). An introduction to qualitative research. Trent focus group. [http://www.rds-sc.nihr.ac.uk/wp-content/uploads/2011/07/5\\_Introduction-to-qualitative-research-20091.pdf](http://www.rds-sc.nihr.ac.uk/wp-content/uploads/2011/07/5_Introduction-to-qualitative-research-20091.pdf)

- Hanseth, O. and Monteiro, E. (1998). Understanding information infrastructure. Unpublished book. <http://heim.ifi.uio.no/oleha/Publications/bok.pdf>
- Haque, S., Memon, R. and Shaikh, A. (2013). E-Government Using Grid Technology: Developing a Grid Framework for G2g E-Communication and Collaboration System. *International Journal of Independent Research and Studies*, 2(1), pp. 8-15.
- Harwell, M.R. (2011). Research design in qualitative and quantitative mixed methods. In C.F. Conrad & R.C. Serlin (Eds.). *The Sage Handbook for Research in Education*. Thousand Oaks; CA: Sage Publications ISBN: 9781412980005. [http://www.sagepub.com/upm-data/41165\\_10.pdf](http://www.sagepub.com/upm-data/41165_10.pdf)
- Havasi, C., Borovoy, R., Kizelshteyn, B., Ypodimatopoulos, P., Ferguson, J., Holtzman, H. and Ng, C. (2011). The Glass Infrastructure: Using Common Sense to Create a Dynamic, Place-Based Social Information System. *Proceedings of the Twenty-Third Innovative Applications of Artificial Intelligence Conference*. <http://www.aaai.org/ocs/index.php/IAAI/IAAI-11/paper/viewFile/3531/4016>
- Heeks, R. (2002). E-Government for Development, Success and Failure Rates of e-government in developing/transitional countries [Online]. IDPM, University of Manchester. <http://www.egov4dev.org/success/sfrates.shtml> [Accessed 17 March 2009]
- Heeks, R. (2003). Most e-government for Development Projects Fail: How Can Risks Be Reduced?" I Government Working Paper Series, Paper no. 14.
- Heeks, R. (2006). Understanding and measuring eGovernment: international benchmarking studies. Paper prepared for UNDESA workshop [Online]. "E-Participation and E-Government: Understanding the Present and Creating the Future", Budapest, Hungary. <http://www.scribd.com/doc/56146532/Heeks-Understanding-and-Measuring-eGovernment-2006> [Accessed 17 March 2009]
- Henningsson, S. and Henriksen, H. Z. (2009). "A sad story: the case of constrained infrastructures caused by IT." 17th European Conference on Information Systems.
- Hiller, J. and Belanger, F. (2001). The Privacy Strategies for Electronic Government. E-Government Series [Online]. Arlington, VA: PricewaterhouseCoopers Endowment for the Business of Government. [http://www.businessofgovernment.org/sites/default/files/PrivacyStrategie\\_s.pdf](http://www.businessofgovernment.org/sites/default/files/PrivacyStrategie_s.pdf) [Accessed 26 February 2011]
- Ho, A. T. (2002). Reinventing local governments and the e-government initiative. *Public Administration Review*, 62, pp. 434-444.

- Holden, M. T. and Lynch, P. (2004). Choosing the appropriate methodology: understanding research philosophy. *The marketing review*, 4(4), 397-409.
- Hornnes, E., Jansen, A. and Langeland, Ø. (2010). 'How to Develop an Open and Flexible Information Infrastructure for the Public Sector?' in M. Wimmer et al. (eds.), *Electronic Government 2010, Lecture Notes in Computer Science*, Vol 6228, pp. 301-314. Springer Berlin / Heidelberg.
- Horst, M., Kuttschreuter, M. and Gutteling, J. M. (2007). Perceived usefulness, personal experiences, risk perception and trust as determinants of adoption of e-government services in The Netherlands. *Computer Human Behaviour* 23 (4), pp. 1838-1852.
- Howard, M. (2001). "E-government across the globe: how will 'e' change government?", *Government Finance Review*, 17 (4), pp. 6-9.
- Huang, Z. and Bwoma, P. (2003). An overview of critical issues of E-government. *Issues of Informational Systems*, 4 (1), pp. 27–30.
- Humes, L. L. and Reinhard, N. (2008).. "The Influence of Power in the Development of an Information Infrastructure." *Electronic Government*. Springer Berlin Heidelberg, pp. 37-48.
- Hwang, M., Li, C., Shen, J. and Chu, Y. (2004). Challenges In E-Government and Security of Information. *Information and Security*, 15 (1), pp. 9-20.
- Irani, Z., Love, P., Elliman, T., Jones, S. and Themistocleous, M. (2005). Evaluating e-government: learning from the experience of two UK local authorities. *Information System Journal*, 15, pp. 61-82.
- Irani, Z., Al-Sebie, M. and Elliman, T. (2006). Transaction Stage of e-Government Systems: Identification of its Location and Importance [Online]. *Proceedings of the 39th Hawaii International Conference on System Sciences*.  
<http://bura.brunel.ac.uk/bitstream/2438/4486/1/250740082c.pdf>  
[Accessed 04 April 2009]
- Jaeger, P. and Thomson, K. (2003). E-Government around the World: Lessons, Challenges, and Future Directions. *Government Information Quarterly*, 20, pp. 389-394.
- Janssen, M., Wagenaar, R. and Beerens, J. (2003). Towards a flexible ICT-architecture for multi-channel e-government service provisioning. In *System Sciences, 2003. Proceedings of the 36th Annual Hawaii International Conference on*, p. 10. IEEE.

- Janssen, W. and Zeef, P. (2006). Vision and Valuation of a Citizen-Centric Shared Information Portal [Online]. Proceedings of the 19th Bled eConference, eValues, Bled, Slovenia.  
<http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1040&context=bled2006> [Accessed 08 April 2009]
- Janssen, M., Chun, S. A. and Gil-Garcia, J.R. (2009). "Building the next generation of digital government infrastructures." *Government Information Quarterly* 26.2 (2009): pp. 233-237.
- Janssen, M., Charalabibis, Y., Kuk, G. and Cresswell, T. (2011). Guest Editors' Introduction: E-government Interoperability, Infrastructure and Architecture: State-of-the-art and Challenges. *Journal of theoretical and applied electronic commerce research*, 6(1), pp. I-VIII.
- Jayaradha, N. and Shanthakumar, C. (2003). E-Governance: Tackling the Hurdles [Online]. *Tamil Internet*, pp. 362-366.  
[http://www.infitt.org/ti2003/papers/58\\_jayara.pdf](http://www.infitt.org/ti2003/papers/58_jayara.pdf) [Accessed 15 June 2009]
- Johnson, R. B. and Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33(7), pp. 14-26.
- Jones, M. L., Kriflik, G. and Zanko, M. (2005). *Grounded theory: A theoretical and practical application in the Australian film industry*. University of Wollongong: Faculty of Commerce Papers.
- Jutla, D. N., Bodorik, P., Weatherbee, T. and Hudson, B. (2002). "e-government In Execution: Building Organizational Infrastructure." *ECIS*.
- Kamel, S. H. (2008). *The Role of ICT in Building a Knowledge-based Society*. Proceedings of the Egyptian German Think Tank Conference Towards an Innovative Approach to Think Tanks Management. Cairo, Egypt. June 30 – July 1.
- Karasti, H., Baker, K. S. and Millerand, F. (2010). Infrastructure time: long-term matters in collaborative development. *Computer Supported Cooperative Work (CSCW)*, 19(3-4), pp. 377-415.
- Karokola, G. and Yngstrom, L. (2009). *Discussing E-Government Maturity Models For Developing Countries – Security View* [Online]. Proceedings of ISSA 2009 conference, pp. 81-98.  
<http://icsa.cs.up.ac.za/issa/2009/Proceedings/ISSA2009Proceedings.pdf> [Accessed 07 October 2010]
- Kawtrakul, A., Mulasastra, I., Khampachua, T. and Ruengittinun, S. (2011). The challenges of accelerating connected government and beyond: Thailand perspectives. *Electronic Journal of e-Government*, 9(2), pp. 183-202.

- Kifle, H., Low, P. and Cheng, K. (2009). e-Government Implementation and Leadership – the Brunel Case Study. *Electronic Journal of e-Government*, Volume 7, No. 3, pp. 271-282.
- Kim, S. and Lee, J. (2012). Citizen Participation and Transparency in Local Government: An Empirical Analysis. Paper Prepared for the 2nd Global Conference on Transparency, Utrecht University, Netherlands.  
<http://www.transparencyconference.nl/wp-content/uploads/2012/05/Kim-Lee.pdf>
- King, D. and Kimble, C. (2004). Uncovering the Epistemological and Ontological assumptions of Software Designers. Proceedings of 9<sup>th</sup> AIM Conference: Critical Perspectives of Information Systems. [http://www.chris-kimble.com/Publications/Documents/King\\_2004a.pdf](http://www.chris-kimble.com/Publications/Documents/King_2004a.pdf)
- Khoumbati, K. and Themistocleous, M. (2006). "Integrating the IT infrastructures in healthcare organisations: a proposition of influential factors." *The Electronic Journal of e-Government* 4.1: pp. 27-36.
- Klein, H. K. and Myers, M. D. (1999). A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS quarterly*, pp. 67-93.
- Klischewski, R. (2001). Infrastructure for an e-government process portal. European Conference on e-Government, MCIL, Reading, UK.
- Klischewski, R. and Askar, E. (2010). Success factors of developing G2G services: the case of Egypt. In Proceedings of the 4th International Conference on Theory and Practice of Electronic Governance, pp. 152-160. ACM.
- Klischewski, R. (2012). Identifying Informational Needs for Open Government: The Case of Egypt. In System Science (HICSS), 2012 45th Hawaii International Conference on, pp. 2482-2490. IEEE.
- Knafl, K. A. and Howard, M. J. (1984). Interpreting and reporting qualitative research. *Research in nursing & health*, 7(1), pp. 17-24.
- Kolstad, I. and Wiig, A. (2009). Is transparency the key to reducing corruption in resource-rich countries?. *World Development*, 37(3), pp. 521-532.
- Kovacic, Z. (2005). The Impact of National Culture on Worldwide e-Government Readiness. *Informing Science Journal*, 8, pp.143-158.
- Krishnan, S. and Teo, T. S. H. (2012). Moderating effects of governance on information infrastructure and e-government development. *Journal of the American Society for Information Science and Technology* 63.10 (2012): pp. 1929-1946.

- Kubicek, H., Cimander, R., Breitenstrom, C., Fromm, J., Archmann, S., Iglesias, J. C. and Torresani, M. (2009). Three dimensions of organizational interoperability: Insights from recent studies for improving interoperability frame-works. *European Journal of ePractice*, 6(1), pp. 3-14.
- Kudo, H. (2004). 7.Reform of Public Management Through ICT: Interface, Accountability, Transparency. (L. Jones, K. Schedler, & R. Mussari, Eds.) *Research in Public Policy Analysis and Management*, 13, pp. 153-174.
- Kumar, R. and Best, M. (2006). Impact and Sustainability of E-governance Services in Developing Countries: Lessons Learned from Tamil Nadu, India. *The Information Society*, 22, pp. 1-12.
- Kumar, V., Mukerji, B., Irfan, B. and Ajax, P. (2007). Factors for Successful e-Government Adoption: A Conceptual Framework. *The Electronic Journal of e-Government*, 5 (1), pp. 63-77.
- Lam, W. (2005). Barriers to e-government integration. *Journal of Enterprise Information Management*, 18, pp. 511-530.
- Lau, E. (2003). Challenges for E-government Development, OECD E-Government Project [Online]. presented at 5<sup>th</sup> Global Forum on Reinventing Government.  
<http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN012241.pdf> [Accessed 13 August 2010]
- Lau, F. (1999). Toward a framework for action research in information systems studies. *Information Technology & People*, 12(2), pp. 148-176.
- Layne, K. and Lee, L. (2001). Developing fully functional e-government: A four stage models. *Government information Quarterly*, 8, pp. 122-136.
- Lee, A. (1991). Integrating positivist and interpretivist approaches to organizational research, *Organization Science* (2), pp. 342-365.
- Lee, A. S., Liebenau, J., DeGross, J.I. (1997). *Information systems and qualitative research*. Chapman & Hall, London, U.K.
- Lee, J., Kim, H., and Ahn, M. (2011). The willingness of e-Government service adoption by business users: The role of offline service quality and trust in technology. *Government Information Quarterly* 28, pp. 222–230.
- Lodico, M. G., Spaulding, D. T. and Voegtler, K. H. (2010). *Methods in educational research: From theory to practice* (Vol. 28). Wiley.com.
- Lollar, X. L. (2006). Assessing China's E-Government: information, service, transparency and citizen outreach of government websites. *Journal of Contemporary China*, 15(46), pp. 31-41.

- Long, David, E. (2013). The Hajj and its Impact on Saudi Arabia and the Muslim World. <http://susris.com/2013/10/13/the-hajj-and-its-impact-on-saudi-arabia-and-the-muslim-world-david-e-long/> [Accessed 12 December 2013]
- Lungo, J. H. and Nhampossa, J. L. (2004). The Impacts of Legacy Information Systems in Reporting Routine Health Delivery Services: Case Studies from Mozambique and Tanzania. In International ICT Workshop. [http://www.uio.no/studier/emner/matnat/ifi/INF5220/h05/undervisningsmateriale/Nhampossa\\_Lungo\\_LIS.pdf](http://www.uio.no/studier/emner/matnat/ifi/INF5220/h05/undervisningsmateriale/Nhampossa_Lungo_LIS.pdf)
- Magalhães, R. (2011). Infrastructure and infrastructuring as a bridge between information systems design and organization design. No 2011-6, Spatial and Organizational Dynamics Discussion Papers from CIEO-Research Centre for Spatial and Organizational Dynamics, University of Algarve.
- Maier, R. and Thalmann, S. (2012). Collaborative ethnography for information systems research Studying knowledge work practices and designing supportive information systems. *Australasian Journal of Information Systems*,17(2), pp. 137-160.
- Mark, G. and Su, N. M. (2010). Making infrastructure visible for nomadic work. *Pervasive and Mobile Computing*,6(3), pp. 312-323.
- Markus, M. L., Fedorowicz, J., Bodeau, D. and Brooks, J. (2009). Characterizing and Improving Collaboration and Information-Sharing Across Emergency Preparedness and Response Communities. [http://www.srv1.mitre.org/work/tech\\_papers/tech\\_papers\\_09/09\\_1830/09\\_1830.pdf](http://www.srv1.mitre.org/work/tech_papers/tech_papers_09/09_1830/09_1830.pdf)
- McGarrell, E. F., Giacomazzi, A. and Thurman, Q. (1997). Neighborhood disorder, integration, and the fear of crime. *Justice Quarterly*, 14, pp. 479-500.
- Meesters, M. and Jaremba, U. (2007). E-government in Austria [Online]. [http://www.zenc.nl/uploads/29/54/2954d277fd8e53ab168d1ae55d8c85a2/egovernment\\_in\\_austria.pdf](http://www.zenc.nl/uploads/29/54/2954d277fd8e53ab168d1ae55d8c85a2/egovernment_in_austria.pdf) [Accessed 04 February 2010]
- Meyer, J. (2000). Qualitative research in health care: Using qualitative methods in health related action research. *BMJ: British Medical Journal*,320(7228), p.178.
- Miles, M. B. and Huberman, A. M. (1984). *Qualitative data analysis: a sourcebook of new methods; Qualitative data analysis: an expanded sourcebook* (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage.
- Miller, A. (1974). Political Issues and Trust in Government: 1964-1970. *The American Political Science Review*, 68 (3), pp. 951-972. <http://www.jstor.org/stable/pdfplus/1959140.pdf>



- Mimicopoulos, M. G. (2004). E-government funding activities and strategies [Online]. United Nations, New York, 2004.  
<http://unpan1.un.org/intradoc/groups/public/documents/un/unpan021913.pdf>. [Accessed 15 March 2009]
- Minh, N. (2009). e-Government Service Development – A Vital Factor In Business Environment Improvement In Vietnam [Online].  
<http://www.veam.org/papers2009/E-Government%20Service%20Development.pdf> [Accessed 16 August 2010]
- Mohammad, H., Almarabeh, T. and Abu Ali, A. (2009). E-government in Jordan. *European Journal of Scientific Research*, 35 (2), pp.188-197.
- Moon, M. (2002). The Evolution of e-Government among Municipalities: Rhetoric or Reality?. *Public Administration Review*, 62 (4), pp. 424-433.
- Myers, M. D. (1997). Qualitative research in information systems. *Management Information Systems Quarterly*, 21, pp. 241-242.
- Naffa, K. (2005). Jordan e-Government Program. Available at:  
<http://www.oecd.org/dataoecd/42/43/36279592.pdf> [Accessed 09 March 2010]
- Ndou, V. (2004). E-Government for developing countries: opportunities and challenges”, *EJISDC*, 18 (1), pp.1-24.
- Neuman, W. L. (2004). *Basics of social research*. Pearson.
- Niehaves, B. and Stahl, B.C. (2006). "Criticality, Epistemology, and Behaviour vs. Design - IS Research across different sets of paradigms," 14th European Conference on Information Systems (ECIS 2006), Göteborg.
- Noor, K. (2008). Case Study: A Strategic Research Methodology. *American Journal of Applied Sciences*, 5 (11), pp. 1602-1604.
- Norris, D., Fletcher, P. and Holden, S. (2001). Is Your Local Government Plugged in? [Online]. Highlights of the 2000 Electronic Government Survey. International City/County Management Association, Washington, DC, USA. <http://www.umbc.edu/mipar/Documents/e-gov.icma.final-4-25-01.pdf> [Accessed 17 February 2010]
- Nurdin, N., Stockdale, R. and Scheepers, H. (2011). Understanding organizational barriers influencing local electronic government adoption and implementation: the electronic government implementation framework. *Journal of theoretical and applied electronic commerce research*,6(3), pp. 13-27.

- ODPM (2003). Local e-Government: process evaluation of the implementation of electronic local government in England . Office of the Deputy Prime Minister, London. Available at: <http://www.communities.gov.uk/documents/localgovernment/pdf/145935.pdf>
- Onojaef, D. and Leaning, M. (2007). The Importance of Partnerships: The Relationship between Small Businesses, ICT and Local Communities. *Issues in informing science and information technology*, 4, pp. 725-736.
- Orlikowski, W. J. and Baroudi, J. J. (1991). Studying information technology in organizations: Research approaches and assumptions. *Information systems research*, 2(1), pp. 1-28.
- Palvia, S. and Sharma, S. (2007). E-Government and E-Governance: Definitions/Domain Framework and Status around the World [Online]. Foundations of E-Government. ICEG 5th International Conference on E-Governance. [http://www.csi-sigegov.org/1/1\\_369.pdf](http://www.csi-sigegov.org/1/1_369.pdf) [Accessed 02 June 2009]
- Pardo, T. (2000). Realizing the promise of digital government: It's more than building a Web site [Online]. Albany, NY: Center for Technology in Government. <http://www.netcaucus.org/books/egov2001/pdf/realizin.pdf> [Accessed 28 June 2009]
- Pasquier, M. and Villeneuve, J.P. (2007). Organizational barriers to transparency: a typology and analysis of organizational behaviour tending to prevent or restrict access to information. *International Review of Administrative Sciences*, 73(1), pp. 147-162.
- Phang, C. W., Kankanhalli, A. and Ang, C. (2008). Investigating organizational learning in eGovernment projects: A multi-theoretic approach. *The Journal of Strategic Information Systems*, 17(2), pp. 99-123.
- Pieterse, W., Ebbens, W. and Dijk, J. (2005). The Opportunities and Barriers of User Profiling in the Public Sector [Online]. *Lecture Notes in Computer Science*, 3591 (pp. 269-280). [http://www.utwente.nl/ibr/cfes/docs/EN\\_artikelen/2005-Opportunities\\_and\\_%20Barriers.pdf](http://www.utwente.nl/ibr/cfes/docs/EN_artikelen/2005-Opportunities_and_%20Barriers.pdf) [Accessed 07 October 2010]
- Rakhmanov, E. (2009, November). The barriers affecting E-government development in Uzbekistan. In *Computer Sciences and Convergence Information Technology, 2009. ICCIT'09. Fourth International Conference on*, pp. 1474-1480. IEEE.
- Raus, M., Flügge, B. and Boutellier, R. (2009). Electronic Customs Innovation: An Improvement of Governmental Infrastructures. *Government Information Quarterly*, 26, pp. 246-256.

- Remenyi, D., Pather, S. and Klopper, R. (2011). Some Philosophical Assumptions Underpinning Academic Research. *Management, Informatics and Research Design*, 354. *Alternation*, 18,1 354 - 373 ISSN 1023-1757.
- Riley, T. (2005). Successful eGovernment in Canada [Online]. <http://www.egovmonitor.com/node/709> [Accessed 24 September 2010]
- Robinson, O. C. (2011). The idiographic/nomothetic dichotomy: Tracing historical origins of contemporary confusions. *History and Philosophy of Psychology*, 13, pp. 32-39.
- Rönnbäck, L., Holmström, J., Hanseth, O., Borg, T., Frykman, A. and Thomsson, S. (2006). Changing the Installed Base: Exploring IT integration challenges in the process industry, *Proceedings of IRIS 29*.
- Rotchanakitumnuai, S. (2008). Measuring e-government service value with the E-GOVSQUAL-RISK model. *Business Process Management Journal*, 14(5), pp. 724-737.
- Runeson, P. and Höst, M. (2009). Guidelines for conducting and reporting case study research in software engineering. *Empirical Software Engineering*, 14(2), pp. 131-164.
- Sancho, M. R., Cañabate, A., Botella, A. and Casanovas, J. (2011, March). e-Catalunya: An e-Government Service for Virtual Communities of Practice. In *SRII Global Conference (SRII), 2011 Annual*, pp. 707-715. IEEE.
- Scholl, H., Nahon, K., Ahn, J., Popova, O. and Re, B. (2009). E-Commerce and E-Government: How do they Compare? What can they Learn from each other? [Online]. 42nd Hawaiian International Conference on System Sciences, Hawaii. <http://ekarine.org/wp-admin/pub/E2ECA-hicss2009.pdf> [Accessed 18 January 2010]
- Serafeimidis, V., Smithson, S. and Tseng, J. C. (1996). Complementary Approaches for Evaluating the Business Value of Information Systems Infrastructure Investments. In *ECIS*, pp. 265-282.
- Sethi, N. and Sethi, V. (2000). E-government Implementation: A Case Study of Dubai e-Government [Online]. [http://www.csi-sigegov.org/egovernance\\_pdf/22\\_185-195.pdf](http://www.csi-sigegov.org/egovernance_pdf/22_185-195.pdf) [Accessed 29 July 2010]
- Shannak, R. O. (2013). The Difficulties and Possibilities of E-Government: The Case of Jordan. *Journal of Management Research*, 5(2), pp. 189-204.
- Sheridan, W. and Riley, T. (2006). Comparing e-government vs. e-governance [Online]. In *eGov monitor*, Monday. London: Knowledge Asset Management Limited. <http://www.egovmonitor.com/node/6556> [Accessed 05 May 2009]

- Siau, K. and Long, Y. (2005). Synthesizing e-government stage models – a meta-synthesis based on meta-ethnography approach. *Industrial Management & Data Systems*, 105 (4), pp. 443-458.
- Siefert, J. W. (2002). A primer on e-government: Sectors, stages, opportunities, and challenges of online governance [Online]. CRS Report RL31057 Congressional Research Service, Washington, DC. <http://www.fas.org/sqp/crs/RL31057.pdf> [Accessed 23 March 2009]
- Sirkemaa, S. (2009, December). Managing information systems infrastructure: lessons from a VOIP-system implementation. In *Proceedings of the 3rd International Conference on Communications and information technology*, pp. 119-122. World Scientific and Engineering Academy and Society (WSEAS).
- Skiftenes, L. (2006). The state of G2G development: Maturity levels and current challenges [online]. AMCIS 2006 Proceedings. Paper 294. Paper presented at the Americas Conference on Information Systems (AMCIS), Acapulco, Mexico. <http://aisel.aisnet.org/amcis2006/294/> [Accessed 16 September 2010]
- Spirco, J., Fomin, V. and Egyedi, T. M. (2007, October). Standards and infrastructure flexibility: literature review. In *Standardization and Innovation in Information Technology, 2007. SIIT 2007. 5th International Conference on*, pp. 71-80. IEEE.
- Star, S. L. and Ruhleder, K. (1996). Steps toward an ecology of infrastructure: Design and access for large information spaces. *Information systems research* 7.1, pp. 111-134.
- Star, S. L. (1999). The ethnography of infrastructure. *American behavioral scientist*, 43(3), pp. 377-391.
- Tan, M. T., Wang, X. W. and Zhu, L. (2003). Symbolic interactionist ethnography: implications for information systems research and practice. In *ECIS*, pp. 1930-1946.
- Tewksbury, R. (2009). Qualitative versus quantitative methods: Understanding why qualitative methods are superior for criminology and criminal justice. *Journal of Theoretical and Philosophical Criminology*, 1(1), pp. 38-58.
- Tripathi, R., Gupta, M. P. and Bhattacharya, J. (2007). Selected aspects of interoperability in one-stop government portal of India. In *5th International Conference on E-Government*, Hyderabad, India.
- UK Department of Education and Skills. (2005). UK Online Centres and e-Government Research [Online]. Department of Education. <https://www.education.gov.uk/publications/eOrderingDownload/RR632.pdf> [Accessed 07 June 2009]

- UN (2002). Benchmarking E-government: A Global Perspective [Online]. Assessing the Progress of the UN Member States. <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan021547.pdf> [Accessed 12 June 2009]
- UN (2005). Global E-government Readiness Report [Online]. From E-government to E-inclusion, NPAN/2005/14, United Nations publication, United Nations, 2005. <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan021888.pdf> [Accessed 03 July 2009]
- UN (2008). UN E-Government Survey 2008: From E-Government to Connected Governance [Online]. ISBN 978 -92-1-123174-8, UN White paper. <http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN028607.pdf> [Accessed 15 March 2010]
- UN Bahrain e-Government Report. (2008). Available At: <http://unpan1.un.org/intradoc/groups/public/documents/unpan/unpan032990.pdf> [Accessed 26 August 2010]
- UNESCO (2005). Defining e-government [Online]. [http://portal.unesco.org/ci/en/ev.php-URL\\_ID=4404&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/ci/en/ev.php-URL_ID=4404&URL_DO=DO_TOPIC&URL_SECTION=201.html) [Accessed 18 April 2009]
- Van Dam, N., Evers, V. and Arts, F. (2005). Cultural User Experience Issues in E-government: Designing for a Multi-cultural Society [Online]. Lecture Notes in Computer Science. <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.92.8552> [Accessed 18 October 2008]
- Van de Walle, W. E. (1932). A Fundamental Difference Between the Natural and Social Sciences. *The Journal of Philosophy*, 29(20), pp. 542-550.
- Van Veenstra, A. F., Klievink, B. and Janssen, M. (2011). Barriers and impediments to transformational government: insights from literature and practice. *Electronic Government, an International Journal*, 8(2), pp. 226-241.
- Vassilakis, C., Lepouras, G., Fraser, J., Haston, S. and Georgiadis, P. (2005). Barriers to electronic service development. *E-service Journal*, 4(1), pp.41-63.
- Vathanophas, V., Krittayaphongphun, N. and Klomsiri, C. (2008). Technology acceptance toward e-government initiative in Royal Thai Navy, *Journal of Transforming Government: People, Process and Policy*, 2 (4), pp. 256-282.

- Verma, S., Kumari, S., Arteimi, M., Deiri, A. and Kumar, R. (2012). Challenges in Developing Citizen-Centric E-Governance in Libya. *Int. Arab J. e-Technol*, 2(3), pp. 152-160.
- Vivian, R. (2004). Elements of Good Government Community Collaboration. Future Challenges for Egovernment [Online]. Institute of Public Administration Australia, Canberra: Australian Government Information Office. pp. 27–46.  
<http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan022997.pdf> [Accessed 22 January 2011]
- Walsham, G. (1995). Interpretive case studies in IS research: nature and method. *European Journal of information systems*, 4(2), pp. 74-81.
- Wangpipatwong, S., Chutimaskul, W. and Papasratorn, B. (2008). Understanding citizen's continuance intention to use e-government website: a composite view of technology acceptance model and computer self-efficacy. *The Electronic Journal of e-Government* 6, (1), pp. 55–64.
- Warnick, W. (2001). Public/Private Sector Competition Issues in Disseminating Information in an E-Government Environment [Online]. The Congressional Internet Caucus Web site.  
<http://www.netcaucus.org/books/egov2001/pdf/competit.pdf>. [Accessed 02 April 2009]
- Weerakody, V., Sarikas, O. and Patel, R. (2005). Exploring the Process and Information Systems Integration Aspects of E-Government. eGovernment Workshop '05 (eGOV05), September 13 2005, Brunel University, West London, UK.
- Weerakkody, V., Baire, S. and Choudrie, J. (2006). E-government: the need for effective process management in the public sector. In *System Sciences, 2006. HICSS '06. Proceedings of the 39th Annual Hawaii International Conference. IEEE*.  
[http://ieeexplore.ieee.org/xpls/abs\\_all.jsp?arnumber=1579436&tag=1](http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=1579436&tag=1)
- Weerakkody, V., Janssen, M. and Hjort-Madsen, K. (2007). Realising Integrated E-Government Services: A European Perspective, *Journal of Cases in Electronic Commerce, Idea Group*, 3 (2), pp. 14-38.
- Weerakkody, V., Dhillon, G., Dwivedi, Y. and Currie, W. (2008). Realising Transformational Stage E-Government: Challenges, Issues and Complexities [Online]. *AMCIS Proceedings. Paper 181*.  
<http://aisel.aisnet.org/amcis2008/181/> [Accessed 06 November 2010]
- Weerakkody, V., El-Haddadeh, R. and Al-Shafi, S. (2011). Exploring the complexities of e-government implementation and diffusion in a developing country Some lessons from the State of Qatar. *Journal of Enterprise Information Management*. 24 (2), pp. 172-196.

- Weill, P. (1992). "The Role and Value of Information Technology Infrastructure: Some Empirical Observations," MIT Center for Information Systems Research Working Paper No. 240.
- Wescott, C. (2002). E-Government in the Asia Pacific Region [Online]. [http://www.adb.org/Documents/Papers/E\\_Government/default.asp](http://www.adb.org/Documents/Papers/E_Government/default.asp). [Accessed 23 July 2008]
- West, D. (2001) Urban e-government: An Assessment of City Government Websites [Online]. Brown University Urban E-Government. <http://www.insidepolitics.org/CityWhitePaper.pdf> [Accessed 05 March 2010]
- West, D. (2003). Global e-Government [Online]. <http://www.insidepolitics.org/egovt03int.pdf> [Accessed 05 March 2010]
- West, D. (2004). "E-government and the transformation of service delivery and citizen attitudes" Vol. 64, No. 1.
- West, D. (2008). State and Federal Electronic Government in the United States [Online]. Government Studies at Brookings. [http://www.brookings.edu/~media/Files/rc/reports/2008/0826\\_egovernment\\_west/0826\\_egovernment\\_west.pdf](http://www.brookings.edu/~media/Files/rc/reports/2008/0826_egovernment_west/0826_egovernment_west.pdf) [Accessed 06 March 2010]
- Westland, D. D. and Al-Khouri, A. M. (2010). "Supporting Use of Identity Management to support e-Government progress in the United Arab Emirates," Journal of E-Government Studies and Best Practices, Vol. 2010, pp.1-9.
- Wicks, A. C. and Freeman, R. E. (1998). Organization studies and the new pragmatism: Positivism, anti-positivism, and the search for ethics. Organization science,9(2), pp. 123-140.
- World Bank (2001). Issue Note: E-Government and the World Bank. November 5, and World Bank (2003) World Development Indicators. Available at, <http://www.worldbank.org/data/wdi2003/>
- World Bank Group (n.d.) "E-government definition" [Online]. <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/EXTGOVERNMENT/0,,contentMDK:20507153~menuPK:702592~pagePK:148956~piPK:216618~theSitePK:702586,00.html> [Accessed 29 September 2009]
- Ya Ni, A. and Tat-Kei Ho, A. (2005). Challenges in e-government development: Lessons from two information kiosk projects. Government Information Quarterly, 22(1), pp. 58-74.

- Yaghoubi, N., Kord, B. and Shakeri, R. (2010). E-Government Services and user Acceptance: The Unified Models' Perspective. *European Journal of Economics, Finance and Administrative Sciences*. Issue 24, pp. 36-49.
- Yildiz, M. (2007). E-Government research: Reviewing the literature, limitations, and ways forward, *Government Information Quarterly*, 24, pp. 646-665.
- Yin, R. (2003). *Applications of case study research*, London: Sage.
- Yin, R. (2009). *Case study research: Design and methods* (Vol. 5). Sage.
- Zaman, F. (2007). Addressing e-governance Interoperability [Online]. *The Daily Star*, 5 (1138). [http://www.undp.org.bd/library/newsclips/e-gov%20interoperability\\_11aug07.pdf](http://www.undp.org.bd/library/newsclips/e-gov%20interoperability_11aug07.pdf) [Accessed 23 July 2010]
- Zarei, B., Ghapanchi, A. and Sattary, B. (2008). Toward national e-government development models for developing countries: a nine-stage model. *The international information & library review*. 40 (3), pp. 199-207.
- Zhang, J., Dawes, S. and Sarkis, J. (2005). Exploring stakeholders' expectations of the benefits and barriers of e-government knowledge sharing. *Journal of Enterprise Information Management*, 18 (5), pp. 548–567.
- Zhang, N., Guo, X. and Chen, G. (2007). Diffusion and Evaluation of the E-Government Systems: A Field Study in China [Online]. In proceedings of the 11th Pacific Asia Conference on Information Systems, pp. 271-283. <http://www.pacis-net.org/file/2007/1206.pdf> [Accessed 26 July 2010]
- Zhang, Y. and Wildemuth, B. M. (2009). Qualitative analysis of content. Applications of social research methods to questions in information and library. [https://www.ischool.utexas.edu/~yanz/Content\\_analysis.pdf](https://www.ischool.utexas.edu/~yanz/Content_analysis.pdf)
- Zhao, J., Truell, A., Alexander, M. and Davis, R. (2007). E-Government-to-Business Service Quality and User Satisfaction: An Assessment of the U.S. State G2B Web Portals. *Issues in Information Systems*. Volume VIII, No. 2.
- <http://Yesser.gov.sa> [Accessed 10 June 2008]
- <http://www.hajinformation.com/> [Accessed 12 December 2013]
- <http://www.arabnews.com/revenue-pilgrims-makes-3-saudi-gdp> [Accessed 12 December 2013]
- <http://www.al-monitor.com/pulse/business/2012/11/saudi-arabias-pilgrimage-season-economic-gains-and-unharvested-potential.html#> [Accessed 12 December 2013]



# Appendices

## Appendix 1: Ethical approval application

### University Research Ethics Application Form For Staff and Postgraduate Researchers

---

This form has been approved by the University Research Ethics Committee ('U-REC')

**Complete this form if** you are a member of staff or a postgraduate research student who plans to undertake a research project which will not involve the NHS but which will involve people participating in research either directly (e.g. interviews, questionnaires) and/or indirectly (e.g. people permitting access to data and/or tissue).

**or**

**Complete this form if** you plan to submit a 'generic' research ethics application (i.e. an application that will cover several sufficiently similar research projects). Information on the 'generic' route is at: [www.shef.ac.uk/researchoffice/gov\\_ethics\\_grp/ethics/er/ers.html](http://www.shef.ac.uk/researchoffice/gov_ethics_grp/ethics/er/ers.html)

**Documents to enclose with this form, where appropriate:**

This form should be accompanied, where appropriate, by an Information Sheet/Covering Letter/Written Script which informs the prospective participants about the proposed research, and/or by a Consent Form.

Further guidance on how to apply is at:

[www.shef.ac.uk/researchoffice/gov\\_ethics\\_grp/ethics/form.html](http://www.shef.ac.uk/researchoffice/gov_ethics_grp/ethics/form.html)

Guidance on the three ethics review procedures that together comprise the University's Ethics Review System (i.e. on the University's procedure, the NHS procedure, the Alternative procedure) is at:

[www.shef.ac.uk/researchoffice/gov\\_ethics\\_grp/ethics/er/ers.html](http://www.shef.ac.uk/researchoffice/gov_ethics_grp/ethics/er/ers.html)

**Once you have completed this research ethics application form in full, and other documents where appropriate, check that your name, the title of your research project and the date is contained in the footer of each page and email it to the Ethics Administrator of your academic department. Please note that the original signed and dated version of 'Part B' of the application form should also be provided to the Ethics Administrator in hard copy.**

# University Research Ethics Application Form

## Cover Sheet

<p>I confirm that in my judgment, due to the project's nature, the use of a method to inform prospective participants about the project (e.g. 'Information Sheet' / 'Covering Letter' / 'Pre-Written Script'):</p>		
Is relevant:	Mark 1 Box	Is <u>not</u> relevant:
<p><b>X</b> (if relevant then this should be enclosed)</p>		

<p>I confirm that in my judgment, due to the project's nature, the use of a 'Consent Form':</p>		
Is relevant:	Mark 1 Box	Is <u>not</u> relevant:
<p><b>X</b> (if relevant then this should be enclosed)</p>		

<p>Is this is a 'generic' application (i.e. does it cover more than project that is sufficiently similar)?</p>		
Yes:	Mark 1 Box	No:
		<p><b>X</b></p>

## Part A

**A1. Title of Research Project:** The adoption of e-government services among businesses: A case study of Umrah Services in Saudi Arabia

**A2. Contact person** (normally the Principal Investigator, in the case of staff-led research projects, or the student in the case of supervised-postgraduate researcher projects):

Title: Mr.            First Name/Initials: Hasan            Last Name: Hashim  
 Post:            NE1 4LZ            Department:            Information Studies  
 Email: [H.A.Hashim@sheffield.ac.uk](mailto:H.A.Hashim@sheffield.ac.uk)            Telephone: 07501696575

**A2.1. Is this a postgraduate researcher project?** Yes

**If yes, please provide the Supervisor's contact details:**

Dr Angela Y. Lin, Department of Information Studies

E-mail: [a.lin@sheffield.ac.uk](mailto:a.lin@sheffield.ac.uk), Telephone : (0114) 222 2634

**A2.2. Other key investigators/co-applicants** (within/outside University), where applicable:

Please list all (add more rows if necessary)

Title	Full Name	Post	Responsibility in project	Organisation	Department

**A3. Proposed Project Duration:**

Start date:

May 2010

End date:

April 2011

**A4. Mark 'X' in one or more of the following boxes if your research:**

X	has the primary aim of being educational (e.g. student research, a project necessary for a postgraduate degree or diploma, other than an MD or PhD)
---	---

\* If you have marked boxes marked \* then you also need to obtain confirmation that appropriate University insurance is in place. The procedure for doing so is entirely by email. Please send an email addressed to [insurance@shef.ac.uk](mailto:insurance@shef.ac.uk) and request a copy of the 'Clinical Trial Insurance Application Form'.

**A5. Briefly summarise the project's aims, objectives and methodology.**

(this must be in language comprehensible to a lay person)

**Aims:**

This research aims to investigate the adoption of e-government among businesses "Umrah companies in Saudi Arabia".

**Objectives:**

- Investigate and assess Government to Business (G2B) process and procedures and identify the associated problems.
- Identify the key success and failures factors of Government to Business (G2B) service delivery
- Investigate the designed and existent e-government system between Government to Business (G2B)
- Assessing the level of electronic or online services delivered, internet usage, online engagement, technological level, employees' skills, etc.
- Investigating the e-government adoption and level of satisfactory of business in dealing with government online.

**Methodology:**

A mixed method of quantitative and qualitative research method will be used for this study. A questionnaire will be used to collect data on business adoption of e-government in order to identify gaps and challenges faced by the businesses when using e-government. Qualitative interviews will be followed up with selected businesses to investigate further the issues identified from the questionnaire results.

**A6. What is the potential for physical and/or psychological harm / distress to participants?**

---

None

**A7. Does your research raise any issues of personal safety for you or other researchers involved in the project?** (especially if taking place outside working hours or off University premises)

No

**If yes, explain how these issues will be managed.**

**A8. How will the potential participants in the project be:**

**i. Identified?**

There are 150 private companies (Umrah Companies) who share accessing online with the Ministry of Hajj internal portal through the authorized service providers who facilitate the interaction of the Umrah companies with government. The initial investigation (pilot study) will be applied on 25 to 30 companies to test the significance of the study and reliability and validity of Questionnaires. After that, the remaining companies will be investigated.

**ii. Approached?**

Umrah companies' owners, managers and/or supervisors will be approached by telephoning them and inviting them to participate in the project through an appointment settlement for a face to face self completed questionnaire which can be completed at the same time or collected the next day.

**iii. Recruited?**

All the 150 companies listed in the Ministry of Hajj official website will be invited to participate in the project. They will be contacted by telephone first to ask if they are willing to take part in the project. The telephone numbers of the 150 companies are listed on the Ministry of Hajj website. An appointment will be made with those who agree to participate in the project and a copy of survey and consent form will be given to them during the meeting.

**A9. Will informed consent be obtained from the participants?**

Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
ES	<input type="checkbox"/>	O	<input type="checkbox"/>

**If informed consent or consent is not to be obtained please explain why.**

Further guidance is at:

[www.shef.ac.uk/researchoffice/gov\\_ethics\\_grp/ethics/er/guidance.html](http://www.shef.ac.uk/researchoffice/gov_ethics_grp/ethics/er/guidance.html)

**A9.1.** This question is only applicable if you are planning to obtain informed consent:

**How do you plan to obtain informed consent? (i.e. the proposed process?):**

As for participating in the questionnaire, the information about the research will be included at the beginning of the questionnaire and participants will be asked to sign a consent form.

As for participating in the interview, the researcher will contact the potential participants first to ask for permission to interview. If the participants agree, they will be asked to sign a consent form at the time of the interview.

**A10. What measures will be put in place to ensure confidentiality of personal data, where appropriate?**

- Data generated from the project will be used for this research only.
- Analysis of the data will be done by the researcher personally under the supervision of my research supervisor in my personal laptop.
- The companies' names will be coded for anonymisation.
- Data obtained from the project will be accessed by my supervisor and myself only.
- Confidentiality will be disclosed to all participants verbally and written in the information sheet (covering letter).
- Participants of interviews will be assured anonymity. All the names will be removed from the written documents. Interviews with individuals will be discrete and the contents of the interviews will not be mentioned and discussed with other interviewees.

**A11. Will financial / in kind payments (other than reasonable expenses and compensation for time) be offered to participants? (Indicate how much and on what basis this has been decided)**

Y	<input type="checkbox"/>	N	<input checked="" type="checkbox"/>
ES	<input type="checkbox"/>	O	<input type="checkbox"/>

**A12. Will the research involve the production of recorded media such as audio and/or video recordings?**

YES  NO

**A12.1.** This question is only applicable if you are planning to produce recorded media:

**How will you ensure that there is a clear agreement with participants as to how these recorded media may be stored, used and (if appropriate) destroyed?**

The participants of interviews will be asked prior to the interview if they are happy to be recorded on audio device. If participants are not comfortable with being recorded other means such as notes taking will be used. All the recorded media will be stored in my personal laptop with a password access. The recording will not be reproduced and distributed and will be destroyed after the project is finished.

## Part B

**Title of Research Project:** The adoption of e-government services among businesses: A case study of Umrah Services in Saudi Arabia

I confirm my responsibility to deliver the research project in accordance with the University of Sheffield's policies and procedures, which include the University's '*Financial Regulations*', '*Good Research Practice Standards*' and the '*Ethics Policy for Research Involving Human Participants, Data and Tissue*' (Ethics Policy) and, where externally funded, with the terms and conditions of the research funder.

**In signing this research ethics application form I am also confirming that:**

- The form is accurate to the best of my knowledge and belief.
- The project will abide by the University's Ethics Policy.
- There is no potential material interest that may, or may appear to, impair the independence and objectivity of researchers conducting this project.
- Subject to the research being approved, I undertake to adhere to the project protocol without unagreed deviation and to comply with any conditions set out in the letter from the University ethics reviewers notifying me of this.
- I undertake to inform the ethics reviewers of significant changes to the protocol (by contacting my academic department's Ethics Administrator in the first instance).
- I am aware of my responsibility to be up to date and comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal

data, including the need to register when necessary with the appropriate Data Protection Officer (within the University the Data Protection Officer is based in CiCS).

- I understand that the project, including research records and data, may be subject to inspection for audit purposes, if required in future.
- I understand that personal data about me as a researcher in this form will be held by those involved in the ethics review procedure (e.g. the Ethics Administrator and/or ethics reviewers) and that this will be managed according to Data Protection Act principles.
- If this is an application for a 'generic' project all the individual projects that fit under the generic project are compatible with this application.
- I understand that this project cannot be submitted for ethics approval in more than one department, and that if I wish to appeal against the decision made, this must be done through the original department.

**Name of the Principal Investigator (or the name of the Supervisor if this is a postgraduate researcher project): Dr. A Y. Lin (Supervisor)**

**If this is a postgraduate researcher project insert the student's name here: Hasan A. Hashim**

## **Model Information sheet**

### **1. Research Project Title:**

The adoption of e-government services among businesses: A case study of Umrah Services in Saudi Arabia

### **2. Invitation paragraph**

You are being invited to take part in a research project. It is important before you start participating in this research to know the purpose of this research, why this research has been conducted, what it will involve, and what the outcomes are. Please take time to read this information carefully and you may wish to share it with others as well. If you need any further details, clarification, or enquiries regarding any information concerning this research project, please do not hesitate to contact me. You may like to take time to decide whether or not you wish to participate in this research.

### **3. What is the project's purpose?**

This questionnaire has been designed for the purpose of assessing the e-government adoption and the electronic services that the Ministry of Hajj provides to private sector through authorized service providers companies to offer the demands for Hajj & Umrah Companies in fulfilling the requirements of their clients.



**4. Why I have been chosen?**

Since the research project concerns the private sector's views of e-government, Umrah companies' owners, managers and/or supervisors will be the main subjects of the study because you have direct engagement with government and e-government project. Besides this your broad understanding and experiences of dealing with government's standards, regulations and other issues that related to the e-Umrah system will help fulfilling the investigation and enrich the research project with validity and reliability when collecting data.

**5. Do I have to take part?**

You have the choice of whether you would like to participate or not in this research. The participation is voluntary. If you agree to participate, then you will be given this information sheet to keep. You will also be asked to sign a consent form for confirming the agreement. You will still have the chance to withdraw or discontinue at anytime without giving any reason and your participation of agreement involves no penalty or loss of benefit.

**6. What will happen to me if I take part?**

The duration of the data collection for this research project will be between June/2010 and April/2011. Therefore if you agree to take part in this research you will be contacted by us during this period. An appointment will be arranged with you to participate in filling out the questionnaire. The questionnaire will be given to you at your company and then collected either at the same time or the day after. After some time you will be contacted by us again to ask for your permission for a follow up interview. The interview will take place at your company or working place. It will take approximately between 30-40 minutes. We will be asking you various questions regarding your experience of government to business e-services in particular the level of adoption and satisfaction with e-services, etc.

**7. What is expected from you?**

We are expecting you to help us complete the questionnaire and answer all the questions, clearly, and precisely.

**8. What do I have to do?**

Spend sometime to answer the questionnaire and participate in an interview.

**9. What are the possible disadvantages and risk of taking part?**

There are no expected risks, discomfort, or disadvantages in taking part in this research.

**10. What are the possible benefits of taking part?**

Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will improve government to business relationships when dealing electronically. Also, it is hoped that this work will improve the IT sector in

private sector by identifying success and failure factors that allow enhancing the private sector's IT Infrastructure along with online service.

**11. What happens if the research study stops earlier than expected?**

If the research project is terminated for any reason, you will be informed and all information collected will be destroyed.

**12. What if something goes wrong?**

If something goes wrong due to complains you may contact the supervisor of this research project Dr. Angela Lin, or the University of Sheffield Registrar and Secretary office. E-mail: [a.lin@sheffield.ac.uk](mailto:a.lin@sheffield.ac.uk)

**13. Will my taking part in this project be kept confidential?**

Participants of this research project will be assured anonymity, confidentiality, and privacy. All the names will be removed from the written documents. Questionnaire and Interviews with individuals will be discrete and the contents of the questionnaire and interviews will not be mentioned and discussed with other interviewees.

**14. What will happen to the results of the research project?**

The results of this research will be published in a PhD thesis, journals and conference proceedings. However your name and your company will not be identified in the report.

**15. Who is organizing and funding the research?**

The University of Sheffield in the United Kingdom is organizing the research. Royal Embassy of Saudi Arabia, Saudi Cultural Bureau in London, United Kingdom is funding the research.

**16. Who has ethically reviewed the project?**

The department of Information study at the University of Sheffield has managed the ethics review process and approved it.

**17. Contact for further information?**

**Supervisor:**

Dr Angela Y. Lin, Department of Information Studies

E-mail: [a.lin@sheffield.ac.uk](mailto:a.lin@sheffield.ac.uk), Telephone: (0114) 222 2634

**Investigator:**

Hasan A. Hashim, Department of Information Studies

E-mail: [H.A.Hashim@sheffield.ac.uk](mailto:H.A.Hashim@sheffield.ac.uk), Telephone: (0044) 7501696575

**18. Will I be recorded, and how will the recorded media be used?**

This part will concern those who will be selected later on for participating in the interviews. When you are being selected as a participant of interviews, you will be asked prior to the interview if you are happy to be recorded on audio device. If you are not comfortable with being recorded other means such as notes taking will be used. All the recorded media will be stored in my personal laptop with a password access. The recording will not be reproduced and distributed and will be destroyed after the project is finished.

**Model Participant Consent Form**

**Title of Project:** The adoption of e-government services among businesses: A case study of Umrah services in Saudi Arabia.

**Name of Researcher:** Hasan A. Hashim

**Participant Identification Number for this project:**

**box**

**Please initial**

1. I confirm that I have read and understand the information sheet dated: *[insert date]* for the above project and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.

3. I understand that my responses will be anonymised before analysis. I give permission for members of the research team to have access to my anonymised responses.

4. I agree to take part in the above project.

\_\_\_\_\_  
Name of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

Name of Person taking consent (if different from researcher)	Date	Signature
_____	_____	_____
Researcher	Date	Signature
<b>Copies:</b>		
One copy for the participant and one copy for the Principal Investigator / Supervisor.		

## Appendix 2: Preliminary/Quantitative study

### Part I: Survey

**User Profile.** Please provide the information asked for in the spaces provided below

Company Name or Company ID:

\_\_\_\_\_

Length of Service in the Hajj:

\_\_\_\_\_

Number of employees dedicated to electronic services:

\_\_\_\_\_

Total number of employees:

\_\_\_\_\_

Services online/electronic (please enumerate)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**User Characteristics.** Encircle the appropriate answer which indicates the extent of your company’s agreement or disagreement on the following statements where:

SD – Strongly disagree

D – Disagree

N – neutral

A – Agree

SA – Strongly Agree

1. Our company thinks that electronic services are costly      SD    D    N    A

2. Our company does not engage in electronic services because these are risky.	SD	D	N	A	SA
3. Our company engages in electronic services/transactions because this is more cost effective than manual services/transactions.	SD	D	N	A	SA
4. Our company has complex technological needs for electronic services/transactions that is why we do not encourage these. (i.e. server requirements)	SD	D	N	A	SA
5. Our company has the necessary IT personnel/employee to solely handle electronic services.	SD	D	N	A	SA
6. Our company sent our employees to train on IT related services in preparation for electronic services.	SD	D	N	A	SA
7. Our company is willing to conduct/is currently providing electronic services/transactions even when it has posed privacy risks to our company (i.e. providing internal operating procedures to service providers, possible posting of internal company information to websites)	SD	D	N	A	SA
8. Our company has clear and specific objectives in relation to the provision of electronic services (i.e. gradual shift from manual to online; intensive planning and training in light of the upcoming shift from manual to online).	SD	D	N	A	SA
9. Our company has identified the needs on IT and personnel and the services that need to be online <b>vs</b> those need to be maintained as manual operation.	SD	D	N	A	SA
10. Our company has shifted to fully electronic services/transactions	SD	D	N	A	SA
11. Our president/CEO has deep interest in IT and online that is why we shifted to electronic services	SD	D	N	A	SA
12. Our services are limited to forms downloading and delayed services and transactions to provide us enough time to validate requirements and requests from our end users	SD	D	N	A	SA
13. Our company has sufficient support from the government in terms of IT and IT related services (i.e.	SD	D	N	A	SA

web design, IT training etc)

14. Our company is fully linked to the government in terms of the requirements and standards for the electronic services (i.e. constant communication with the government, open lines of communication).	SD	D	N	A	SA
15. Our company employees have limited access to the internet (limited to the IT personnel only with training).	SD	D	N	A	SA
16. All of our company employees are well trained in conducting electronic services.	SD	D	N	A	SA
17. Our company offers real time electronic services with real time feedback and real time online customer service.	SD	D	N	A	SA
18. Our company specifications for electronic services were clearly considered by the service provider and were followed to the letter.	SD	D	N	A	SA
19. Our company employs online purchases and accepts electronic fund transfers.	SD	D	N	A	SA
20. Structural changes have been implemented to comply with the needs and requirements for electronic services	SD	D	N	A	SA
21. Our company thinks that rendering our services online gives us more control over our services because of the systematic and efficient implementation of procedures	SD	D	N	A	SA
22. Our company provides electronic services because our clients prefer to transact online	SD	D	N	A	SA
23. Our company provides electronic services because our clients have more convenience and flexibility	SD	D	N	A	SA
24. Our company provides electronic services because of the enjoyment that our employees get from the delivery of the services.	SD	D	N	A	SA
25. Our company provides electronic services because it was requested by our clients	SD	D	N	A	SA
26. Our company recognizes the standards posed by the government through the service providers	SD	D	N	A	SA

27. Our company provides electronic services because these are more reliable than their manual counterparts	SD	D	N	A	SA
28. Our company provides electronic services that are easy to use and user friendly	SD	D	N	A	SA
29. Our company appreciates the web design provided by the service provider because it is easy to use and navigate	SD	D	N	A	SA
30. Overall our company prefers electronic services better than manual services	SD	D	N	A	SA

**User Satisfaction.** Rate the following factors related to your provision of electronic services as to how you are satisfied with each. 1 is the lowest while 5 is the highest

- \_\_\_\_\_ 1. The website design from the service provider
- \_\_\_\_\_ 2. The rate of use of electronic services by customers
- \_\_\_\_\_ 3. The level of control over our services due to the electronic services
- \_\_\_\_\_ 4. The support given by the service provider
- \_\_\_\_\_ 5. The support given by the government
- \_\_\_\_\_ 6. The ease of use of the website as provided
- \_\_\_\_\_ 7. The ease of navigation of the website provided
- \_\_\_\_\_ 8. The level of IT/Internet knowledge of our users
- \_\_\_\_\_ 9. The reliability of the services rendered online
- \_\_\_\_\_ 10. The speed of delivery of our services

**E-government adoption.** Answer the following questions briefly.

Do you fully support the move for e-government adoption? What are your reasons?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Do you have full intention to implement the e-government services? What are your reasons?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Appendix 3: Primary/Qualitative study - Template of Interview script

### Dimension (1): Embeddedness

(1) What is the design of the current e-umrah system? (2) Is it an individual system or part of an overall bigger system? (3) If it is part of an overall bigger system, what is its current role or position? (4) What part does it play in the overall system? (5) What kind of activities or operations are you engaged in everyday? (6) How does your everyday activities or operations relate to the e-umrah system? (7) How often is the e-umrah system used?

### Dimension (2): Transparency

(8) Do you provide feedback to the service providers? If yes, in what form? (9) Do you get asked to provide feedback by the service providers? (10) Is there any form of constant communication between you and the service providers? (11) If yes, do you feel that your input is being considered and applied by the service providers? (12) Are you receiving support from the service providers? (13) What kind of support? (14) In what circumstances did you give feedback to the service providers in order for them to improve the services? (15) Has in your opinions the system improved by service providers after you giving the feedbacks? (16) What would you do if you encounter the problems (e.g. who did you talk to if there are problems with the system or the problems related to using the system (e.g. work practices changed because of the system which you did not feel comfortable with)? (17) What were the solutions to the problems? (18) Have there been any occasions when interaction with and around the system has not been transparent in use (e.g. functionality, interface, standards, human communication, and system support) (19) and has therefore become problematic in some way?

### Dimension (3): Reach or Scope

(20) From your point of view, do you think that the current e-Umrah system has reached its scope? (21) And what are the issues that this system still needs to achieve in order to fulfil its scopes and reach its goals? (22) Who currently uses the system in the company? (23) Does the company have plans to make everyone use the system or the usage is only restricted to a few? (24) Why? (25) How can you describe the engagement of the international travel agents to the system? (26) Who provides them with membership to engage in the system? (27) Do you receive feedback from them? (28) How do you support them? (29) Are there any issues regarding using the system?



**Dimension (4): Learned as part of membership**

**(30)** Do you feel that you are too familiar with the system that you begin not to notice its limitations (limitations are not bothering you anymore)? **(31)** How can you describe the familiarity of new participants when they engage with the e-Umrah system? **(32)** And to what extent do they require in order to be familiar with the system when they practice the system? **(33)** For how long have you been using the system? **(34)** Do you use the system everyday or is it depending on the type of task? **(35)** Are there any tasks that are not related to the system and which should be in the system? **(36)** What is the length of time of using the system (e.g. all the day, 2hrs, 4hrs, 6hrs a day) or is it limited to a particular set of tasks or drawing on all aspects of the system)

**Dimension (5): Links with convention or practice**

**(37)** Do you feel that the e-Umrah system is in constant development and improvement? **(38)** In what way? **(39)** What rules/conventions, if any, do users work with which affect the use/design of the system when you deal with others such as ministries in term of communication, arrangements, design, maintenance, support? **(40)** How do you feel about the link with the other electronic systems of the other involved ministries? **(41)** Do service providers connect you with them? **(42)** What type of work do you deal with them?

**Dimension (6): Embodiment of Standards**

**(43)** How do you feel about the link with the other electronic systems of the other involved ministries? **(44)** Who set the rules, standards, notifications, and modification to the system? **(45)** What do you think of the design of the current system? **(46)** Do you think it has been built up to a sufficient and satisfactory standard or do you think it still needs modification?

**Dimension (7): Built on an installed base**

**(47)** What was the system/set of procedures used before the new system was engineered and put in place? **(48)** What was the relationship of the latter to the former? **(49)** How would you describe the work practice, operations, and activities before and after the new system? **(50)** What were the challenges (Barriers) before the new system and **(51)** what occurred after and solved? **(52)** And what are the current challenges and barriers that still needs to be solved?

**Dimension (8): Become visible upon breakdown**

(53) Do you feel that the service provider is constantly updating and improving the system? (54) In what way(s)? (55) Are there any limitations in the system? (56) What are they? (57) How do any issues of breakdown become visible e.g. logging, impromptu individual communication with manager, weekly/monthly meeting etc and (58) what are the conventional protocols used to handle these breakdowns?

**Appendix 4: Star and Ruhleder (1996) list of dimensions/Definitions**

Dimension	Definition
Embeddedness	Embeddedness. Infrastructure is "sunk" into, inside of, other structures, social arrangements and technologies;
Transparency	Infrastructure is transparent to use, in the sense that it does not have to be reinvented each time or assembled for each task, but invisibly supports those tasks;
Reach or Scope	This may be either spatial or temporal infrastructure has reach beyond a single event or one-site practice
Learned as part of membership	The taken-forgrantedness of artifacts and organizational arrangements is a <i>sine qua non</i> of membership in a community of practice (Lave and Wenger 1992; Star, in press). Strangers and outsiders encounter infrastructure as a target object to be learned about. New participants acquire a naturalized familiarity with its objects as they become members
Links with conventions of practice	Infrastructure both shapes and is shaped by the conventions of a community of practice, e.g. the ways that cycles of day-night work are affected by and affect electrical power rates and needs. Generations of typists have learned the QWERTY keyboard; its limitations are inherited by the computer keyboard and thence by the design of today's computer furniture (Becker 1982
Embodiment of standards	Modified by scope and often by conflicting conventions, infrastructure takes on transparency by plugging into other infrastructures and tools in a standardized fashion.
Built on installed base	Infrastructure does not grow <i>de novo</i> : it wrestles with the "inertia of the installed base" and inherits strengths and limitations from that base. Optical fibers run along old

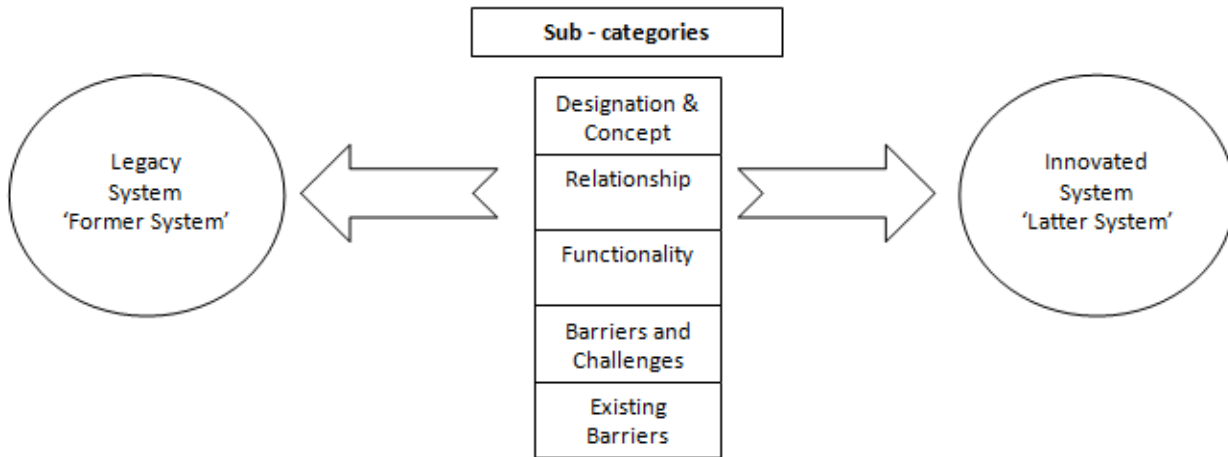
	railroad lines; new systems are designed for backward compatibility; and failing to account for these constraints may be fatal or distorting to new development processes
Become visible upon breakdown	The normally invisible quality of working infrastructure becomes visible when it breaks; the server is down, the bridge washes out, there is a power blackout. Even when there are back-up mechanisms or procedures, their existence further highlights the now-visible infrastructure.

(Source: Star and Ruhleder (1996) pp.113)

### **Appendix 5: Model of the coding system (data coding sample for one dimension)**

#### **Exploration of dimension (Open Coding Phase)**

This section portraits of the responses of the all companies and identifies through the coding the categorisations and structural organisations of this dimension and how possibly the storyline would be established. The companies have shaped this dimension according to figure1. Furthermore, the companies have identified numerous issues such as (1) the designation and the concept of former system (Legacy System LS), (2) the relationships of the later (IS) to the former (LS) systems, (3) the sequence of changes in the functionality and tasks of the former (LS) to the later (IS) systems, (4) the barriers and challenges arose before and after later system (IS) was engineered, and (5) the existing challenges that still in existence and have not been solved.



**Figure1:** the appearance of built on installed base (IB) dimension

Category	Sub - Category	Description
Built on installed base <b>IB</b>	Legacy System	LS (Major Code)
	Relationship of Legacy and Innovative System	R-L S&IS (Major Code)
	Legacy and Innovative System Functionality	LS&IS-F (Major Code)
	Legacy System Barriers and Challenges	LS-B&C (Major Code)
	Innovative System Barrier and Challenges	IS-B&C (Major Code)
	Existing Barriers	EB (Major Code)

**Table1:** the table of selective coding built on installed base (IB) dimension

**Structuring themes of dimension (Axial Coding Phase)**

**(1) Designation and the concept of former system (Legacy System LS – Major Code)**

Co. No.	Major Code	Evidence
1	LS (Legacy System)	In the previous time there used to be numerous randomizations and redundancies and when we used to make business we used to do everything manually. Also, the ministry of hajj did not have lots of rules, regulations and procedures and when we dealt with the international travel agencies they used to submit two copies of visitors list one to the Saudi embassy at their country and the other one to us to know the number of visitors to ensure their accommodation and transportation

2	<b>LS (Legacy System)</b>	It used to be a set of procedures consist of letters signed and submitted to the Saudi embassies and consulates around the world
3	<b>LS (Legacy System)</b>	The old system/set of procedure used is based on manual procedures and processes through letters and official documents where international travel agent write a letter containing the list of visitors and send it by fax to the ministry of hajj to certify it and stamp it and then send it to the Saudi embassy to issue the visas. After that, development has taken place in this system since the international agent send the letter containing the visitors list one to us and the other to the Saudi embassy and after we certify it and get the approval of the ministry of hajj and receiving the barcodes for each visitor we send them to the international travel agent to go to the embassy and submit the visitors barcodes for visa issuance and then the duty of the Saudi embassy is to verify between the orders letter they received from the ministry of foreign affair and the letter from the ministry of hajj and then they issue the umrah visa if the two copies are matched and then these procedures and processes of work have developed and dealing electronically through the internet
4	<b>LS (Legacy System)</b>	It used to be paper lists submit to the embassies/consulates and in accordance the embassies/consulates generate official lists stamped and signed.
5	<b>LS (Legacy System)</b>	It used to be manual/paper work system.
6	<b>LS (Legacy System)</b>	The old system used to be like the Hajj system where the Hajj representative travel to a specific country and manually make the Umrah visitors groups and submit it to the embassy/consulate for approving the visas where at that time there were no system for Hajj nor Umrah.
7	<b>LS (Legacy System)</b>	It used to be based on list we send it to the service provider even the visas when it comes they don't have the name of the company but this latest version of the system has much reduced the phenomena of departure failure (escape/disappearance/lost/non-departed/remain inside of the country).
8	<b>LS (Legacy System)</b>	It used to be a list where the Umrah visitor applies for visa via embassies/consulates and wait for the visa to be issued and the Umrah visitor was the

		person who is responsible about his Umrah programme and the one who takes care of flights, hotels, and transportation' reservations
9	<b>LS (Legacy System)</b>	It used to be lists contain all those who applied through the embassy/consulate seeking for Umrah visa. It was also based on the Umrah visitors who are responsible to make their own packages/programmes where they make the reservation for their whole journey and look for hotels and transportation. Afterward in 2001 and 2002 the ministry built this new system and encouraged the Umrah companies to work through it so the work of the system from the beginning used to be through gathering all the data which contain the lists of the Umrah visitors in floppy disks and submit to the ministry of Hajj where they print it out on papers and send these requests to embassies and consulates.
10	<b>LS (Legacy System)</b>	The old system used to be simple but now when they created the electronic system it became complex and require lots of demands.
11	<b>LS (Legacy System)</b>	The Umrah companies used to take copies of the passport and make all the reservations that the visitors need which include flight but they complete the process and pay for their flight tickets and send the lists to the embassies/consulates. There were no such electronic payments nor packages/programmes which is a new system the one that we are dealing with. In other word, we used to deal with embassies/consulates to get visas.
12	<b>LS (Legacy System)</b>	There wasn't a system before this one. The international agents along with their commission of tourism with the Saudi embassies/consulates used to work together and that idea formulated into an automated system.
13	<b>LS (Legacy System)</b>	It was a primitive system and the international agent used not to enter the visitors' data so they used to send to us the copies of passports and all documents and we used to do their work. In addition, the operational plan used to be paper-based through formal letters and applied 4 years ago and before we used to carry as many applications of Umrah visitors as we can numbers of visitors. The old system used also to take much time and efforts when conducting transactions. For instance, the death and escape cases used to take nearly five days and now it does

		not take long time and became instant the maximum time it takes if you submit the transaction in the morning it end in the afternoon here in Makkah branch I do not know about Madinah how long it used to take and does it take now for what concern this case.
14	<b>LS (Legacy System)</b>	It used to be paper-based system, and the organisation used to be paper-based, and all transactions used to be entered manually which required time and great efforts.
15	<b>LS (Legacy System)</b>	It was a manual system (paper-based) you call the international agent and request from them to send the paid visas fees in a list and we submit it to the ministry through one of our representative and this list include the name of visitors, nationality, passport number and after we submit to the ministry we send a copy to the international agent to check with the embassies/consulate to receive the visas from embassy.
16	<b>LS (Legacy System)</b>	There used to be one service provider which called 'Labbaik' and all Umrah companies were its clients. There was no complexity or development. There wasn't also electronic payments for visa fees nor making payments through bank and all payments used to be conducted manually through paying to visa value fees and there wasn't packages/programmes and it was just lists of groups seek for visas and pay its values and collect visas and for the Umrah visitors to travel to Saudi and manage their programmes individually.
17	<b>LS (Legacy System)</b>	It used to be some kind of randomisations for instance someone submit his/her passport to embassy/consulate and based through the request of performing Umrah he/she get visa issued according to the request.
18	<b>LS (Legacy System)</b>	It was a manual system. We used to conduct all transactions manually through sending and receiving paper works.
19	<b>LS (Legacy System)</b>	It was a manual system has particular formats and it was very simple because the number of visitors used to be lower than now.
20	<b>LS (Legacy System)</b>	The old system used to be random.
21	<b>LS (Legacy System)</b>	All the transactions used to be manual and it used to be based on list and there wasn't an electronic

		payment nor transactions and it required lots of time and efforts to achieve transactions.
22	<b>LS (Legacy System)</b>	It used to be random system and each year it developed until services have translated and turned to electronic.
23	<b>LS (Legacy System)</b>	It used to be old procedures and uncivilised which was through the embassies and consulate you apply for visa through putting the names of visitors under a list and submit it to the ministry to approve the visas and it was very difficult procedures. Imagine millions of Umrah seekers stands on the embassies/consulates doors to get visa i even believe there is no comparison between the old procedures and this invented system.
24	<b>LS (Legacy System)</b>	It was restricted for receiving visitors' programmes and the penalties which require payments for each company and notifications inform about the ending date of the visitors visas and packages of each visitor.
25	<b>LS (Legacy System)</b>	It used to be pure manual work such as printing the visas and submit them by hand to the ministry and had load of problems also you had to make payment manually through getting vouchers from the ministry and make deposits for each visa's voucher.
26	<b>LS (Legacy System)</b>	I do not know how it was exactly but from what I heard, it was a manual system and was not a system but set of procedures and requests and unorganised and unarranged settings.
27	<b>LS (Legacy System)</b>	It used to be through embassies and now the age of Umrah companies 11 years since the beginning of the establishment of the system and in the beginning of the system we used to do many things manually such as hotels but now we become able to enter it electronically through submitting them as scanned copies. So everything began manual (paper-based) and transformed into electronic but still not fully electronic since there is manual procedure in existence.
28	<b>LS (Legacy System)</b>	The old system used to be through the ministry of Foreign Affair directly through sending list of data which contain the information of visitors via the responsible company which is responsible for their service.
29	<b>LS (Legacy System)</b>	For instance the hotels and transportations and our employees contracts used to be manual through send



		them to the ministry and our representative used to go himself to the ministry with the documents and submit it himself beside the load of documents/papers and miss up of documents exist.
30	LS (Legacy System)	The data entry used to be manual where the international agent sends the whole documents and the Umrah Company print all documents and submit them manually to the ministry so there was randomisation.
31	LS (Legacy System)	We are one of the companies who used to work before 2001 and there was no organised system. The work was all manual through letters and contracts between Umrah companies and international agents where we finally submit the applicants' list to the embassies/consulates and under these letters we get visas so there was no role for the ministry of Hajj'
32	LS (Legacy System)	The old system is that the Umrah used to open twice a year. The first opening is in the month of Rabi I (the prohpets' birthday), then in the months of Rajab, Shaban, and Ramadan so the international agent's representative used to come and make the reservations of hotels and transportations and there was not receptions and farewell nor programmes/packages and this helped to have high rate of escapes and today with the new e-Umrah system things have developed and become bigger through the net and the number of visitors who come have increase and developed because the numbers were stable and not able to develop and increase and now more than 4 million and above come during the year to perform Umrah and accomplish their Umrah demands.
33	LS (Legacy System)	Old time used to be manual. Even the visitors' data the Umrah companies used to enter it in the system and the international agent did not use to engage in the system. the escape case used to be manual and annoying.
34	LS (Legacy System)	I have heard and saw that there is development going on every year.
35	LS (Legacy System)	It needed more work and it was paper-based system and randomised and did not consider a system by all means.
36	LS (Legacy System)	There are two systems or phases of system's development. The first was about visa issuance from

		the embassies/consulates. Umrah visitor who desires to come for Umrah applies from the embassy/consulate and receive visa and come to the country and manage by himself when such as they look for flights, transportations, and accommodations and take full responsibility for all journey. The second phase when the ministry established the new innovated system which conducts all operations and activities through service providers and in the beginning of the system they did not fully activate it the international agent used to send copies of the passports and we enter the data in service providers' system
37	<b>LS (Legacy System)</b>	The Saudi ambassador or counsel was the one who had the authorities to grant it for visitors who apply and was individual elaborations from the ambassador or counsel Which means the ambassador/counsel decides for this year for example to authorise 100,000 visas to distribute to country's citizens where the embassy/consulate at so they did not know how to measure amount of capacity where the country's hold.
38	<b>LS (Legacy System)</b>	I don't have much knowledge about the old system except that it was paper-based system and wasn't a system just set of procedures.
39	<b>LS (Legacy System)</b>	It was based on paper work, letter which contains visitors who applied for visa and based upon this list they all have their request accomplished and come to collect their visas.
40	<b>LS (Legacy System)</b>	The old system used to be based on direct communication between us and the ministry of Foreign Affair which require bringing some visitors for Umrah purposes. For 7 or 8 years the international agent is the one who enter the data.

**(2) Relationships of the latter (IS) to the former (LS) systems**

<b>Co. No.</b>	<b>Major Code</b>	<b>Minor code</b>
1	<b>R-LS&amp;IS (Relationship of Legacy and</b>	We established using the system gradually. The ministry of hajj used to release the rules and regulations from time to time every year through notification and/or suggestions letters of development,

	<b>Innovative System)</b>	improvement, and/or changes.
<b>2</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	When the new system built the old one cancelled since the system has been completely changed.
<b>3</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The former system was complex and random and spends lots of efforts and time and then transformed into quick, efficient and effective electronic system
<b>4</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	There is no relationship between the lists system and the new one except that the list of Umrah visas applicants have translated from paperwork (manual) into electronic.
<b>5</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	There is a relationship because the new one is built based on the old one's aspects. However, the major development took part recently.
<b>6</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The system was based on paperwork and through time it has greatly improved through the addition of the electronic services however it is founded on the previous paper work system
<b>7</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	Of course it is under development every year because the mistakes of previous year are considered for the following year and this is the process of development in each year.
<b>8</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The latter is built based on the former with much adjustments and additional developed regulations that serves the Umrah visitors
<b>9</b>	<b>R-LS&amp;IS (Relationship of Legacy and</b>	The system has completely evolved and differed entirely and as for the old system's procedures there is no longer any old procedures remain in this system because all the old procedures have been developed

	<b>Innovative System)</b>	and reengineered in a practical way than it was.
<b>10</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The Umrah visitors' data is the linkage between the latter and former.
<b>11</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	We used to work direct with embassies/consulates and the relationship is that the idea of Umrah services has developed in a way that facilitate Umrah visitors' services and to deliver Umrah services in comfort way.
<b>12</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	There became a significant improvement to the system. Before we used to face insufficiency with information and each year we fall with mistakes and errors and the responsible for the system became aware of these mistakes and began to improve it and then the system became way improved that it was before even us had a great experience because we have experienced the stages of improvement every year since the establishment of the system.
<b>13</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The new system was built based on the standards of the old one with plenty of additional features and adjustments.
<b>14</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The new system is an improvement of the old
<b>15</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The system when established began manual (paper-based) for a year or two and then became electronic then it started to go over phases of development until it became almost electronic
<b>16</b>	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	It is a fully continuous development of the old system and every year the ministry introduce new things.

17	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	There wasn't any system that was just a set of procedures and translated into services in the new developed system in organised and comprehensive and improved manner.
18	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	It was a manual system and turned to electronic and became more organised.
19	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	Of course it is much developed because it covered all the gaps of the previous old/manual system.
20	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	It is much improved since it is transformed into electronic system.
21	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	It became much improved and the old system vanished and every year it facilitates more the transactions and makes work easy but the progress of development goes slowly.
22	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	Changed a lot and developed.
23	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	There is no relations except the old procedures and complains of visitors in term of facing difficulties when they perform Umrah because of unorganised agreements which caused problems was the idea of inventing the system.
24	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	Of course it has been significantly developed which facilitated to users to implement Umrah packages/programmes clearly and accurately so each visitor knows his rights and what is required to do. Even the payments orders for each company have improved significantly.

25	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	It became much developed and totally modified than the old one.
26	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The former was the base of the latter and then the ministry has developed many new standards, regulations, and rules which were much advanced and organised manner.
27	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	There has been a significant difference.
28	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	Before the transactions in the beginning of establishing the system used to be based on documents and all of them became electronic so there is a big difference.
29	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	Much better.
30	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The new one is a replacement to the old one which is more developed and corrected, amended, and added lots of old system's defects.
31	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	There was no system which was just set of procedures used to get visas.
32	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	Different system, it used to be individual's elaborations from a particular group and become controlled by regulations and standards.

33	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The payment is the relationship between the two the old one used to be manual through paying the visas fees through vouchers at bank then it turned to electronic and conducted through the bank's website and appear in the system as paid vouchers.
34	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The old one was based on paper work and the latter is electronic.
35	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	It is a development of the old system, and the innovated system is a new one based on old and earlier experiences.
36	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	Of course developed 100% and the difference is significant which used to be exhaustive and manual and the information are weak and it things were mess and were mess up with information then it became codified, systematic, and considerable.
37	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The paper-based got cancelled in term of visas. I am talking about the visa issuance procedures only but we had no relationship between the ministry of Hajj and us. Everything was paper work and the notifications received by fax.
38	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The new one is an improvement and addition and adjustment of the old one and the new one is a corrected version of the old one.
39	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	The new system began with some ideas of the old one.
40	<b>R-LS&amp;IS (Relationship of Legacy and Innovative System)</b>	Developed over the year.

**(3) Sequence of changes in the functionality and tasks of the former (LS) to the later (IS) systems**

Co. No.	Major Code	Evidence
1	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	It has been changed far to the better. Everything is organized in a way of arrangements, communications, and electrical dealing. Now they go according to plans and schedule due to the guarantee of packages from both parties their international travel agencies and the Saudi Umrah companies
2	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	transactions used to be random, insufficient, and had high rate of mistakes but when the new system developed it organised everything and all Umrah aspects has been arranged in systemized way.
3	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	I have already reported details about the operations and activities of the system
4	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	Before the system there were no services provided to Umrah visitors and no one responsible for them. And after the establishment of the system we become responsible for the Umrah visitors from A to Z (from the moment that Umrah visitors arrive till they leave back to their country).
5	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	Before it used to be pure manual/paperwork processes and now it turned to electronic and most of the work practice, operations, and activities became available and conduct through the system.
6	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	They have been facilitated through time and became better.
7	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	There became a major shift which we could not expect nor believe that this system is built based on strong base and thought that this system or project will not remain and will fail to remain and expand throughout the years and at this time the system becomes powerful and reduced exiting the country's failures which more than 600 or 700 thousands used to be recorded for exiting failures cases and the new system has decreased this amount and no longer exist a lot as



		before.
8	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	In the beginning of this e-Umrah system we used to struggle with the data entries and used to input all the information of visitors. There also used to be a great load of paper work spread all around the offices and we used to hire large number of employees who their duties are to enter the data of all visitors with the countries we are assigned to deal with.
9	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	The numbers of visitors and Umrah services have increased and there is a big difference comparing to 2003 where we used to work with 24 thousand visitors' applications and packages/programmes and as for this year we are working with 52 thousands visitors since the number of Umrah visitors increase this year to 4.8 million visitors.
10	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	Before the operations used to be simple and very easy did not have any complexity from the ministry.
11	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	Depends on the company's services, and its quality of services delivered so the case and that occur according to the percentage of service quality which each Umrah company deliver but it become more organised and accurate because before it used to be difficult on ministries, embassies, and Saudi ports since we dealt with miss up of documents problems and unorganised process and procedures of work in addition to the great increase numbers of Umrah visitors every year and the paper-based transactions.
12	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	Now there is rights and guarantees for Umrah visitors and perform better services than before. before the relationship was direct with the international agent where they used to reserve accommodation anywhere and make anything without supervision and saving visitors rights and desires but now there are standards and conditions to save visitors rights such as saving their rights after they buy a package and making sure that the visitors the package has met the agreement of visitors.
13	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	Easier and faster than before and much simpler than the old several stages procedure. the visas used to take 72 hours from the moment of submitting the application and after 2 years the visa process has improved and turned out to take 48 hours and after a year it turned

		out to take 24 hours and this year it take less than 12 hours or 2 to 3 hours to issue the visas and this is how the electronic visa system gradually developed
14	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	In the development process and become better.
15	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	The system was varied greatly and became radically different since it transformed from manual transactions to electronic and now within half an hour you conduct transaction and achieved its result. Also, the ministry of Interior (Elm) has introduced the new follow up system which supplies the ministry of Hajj with the entry and exiting data of each Umrah visitor who enter and exit the country to follow up with them and track their movement inside until they leave the country
16	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	Before this electronic system, there was a severe lack and all operations used to conduct manually with the ministry of Hajj, passports and after that everything turned to electronic except the passport case and all services are in the system such as operational plan (input the data in the system and work manually until you receive the approval and close the open request in the system), follow ups/progress of visitors inside the country, and visa issuance.
17	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	It became much improved and developed and more sophisticated because of the modern technology which facilitate and deliver rapid services and make work effortless.
18	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	It used to be based on official letters, signature and stamps and became electronic.
19	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	The process of work used to be difficult and take more time and massive efforts and of course this new system has solved all these issues and developed to a large extent.
20	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	Very broad difference turning from manual transactions into electronic which is contemporary and much advanced.

21	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	After the system it became easy, simple, fast, and the electronic payment become through the bank and saves your rights. (international agent used to work with you and got issued visas without paying them in the bank) so the system has established to secure the companies and Umrah visitors rights and facilitate and organise Umrah and lead to easy transactions.
22	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	Reduced the time and efforts and it is a great idea when this system was invented since it enabled us to deal with our customers through the internet.
23	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	It is much improved and organised therefore the Umrah visitor is the most beneficiary part.
24	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	In the old time there wasn't any package/programme and it was a field work. Nor there were any particular demands or mechanism on how visitors act when they are in Saudi ground. Also at the beginning of the Umrah companies' engagement, the visitors had no communications with the Umrah company when they enter the Saudi borders and thus they become vulnerable to exploitation.
25	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	It reached high level of development especially when you compare between the old and new system and imagine the shift.
26	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	It was paper based transactions based on letters and documents.
27	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	It improved for the better, the ministry has entered many issues in the system and they do not desire to work manually through representatives and correspondence procedures and prefer working with service providers and for the transactions to conduct electronically.
28	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	Before this invented system the operations used to be very simple and after the system was established the Umrah companies became restricted by the ministry due to new standards placed which obliged Umrah companies to apply them.

29	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	In the old time there used to be lots of primitive things all are manual/paper-based and require lots of time and efforts but now with the system/website everything is available and offered.
30	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	It became so different and the difference is major one and the standards became more complex than used to be so there is more control and dominance to the Umrah visitor through his presence and absence (entering and exiting the country progress).
31	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	It used to be totally different. (
32	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	From what I observe, there is no development paralleled the evolution of Umrah market but the level of services did not improve much and still there are insufficiency or lack of capacity are witnessed in the Umrah market and this is maybe because the numbers of visitors has increased and need more hotels and transportations developments in additions to the numbers of visitors and the problems of airlines as well.
33	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	It developed and improved and there is a radical shift.
34	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	It has changed to the better and save significant time and efforts.
35	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	Before it was much easier, after it became routine and there are lots of obstacles and difficulties.
36	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	As Umrah there is nothing changed but there were systems, procedures, and arrangements which codified and became good.
37	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	The Umrah used to be a related part to the visa but now it became an umbrella for all services, I have transportations, hotels, and Umrah services and the Umrah used to be partial and now it became an umbrella for them. You find sufficient companies which

		achieved profits and have no problem to operate some more work. The investment is diverse, the future view of Umrah is bigger which means in the future there will be companies under these Umrah companies because in each month the number of visitors will be 1,500,000 which means the same as Hajj's capacity.
38	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	A system enhances, facilitate, and save to all company's employees representatives and all kind of employees. Now the company just put the passport number of the Umrah visitor in the system and check the whole information such as what is his package's duration what is his hotel and it is easy for all.
39	<b>LS&amp;IS-F (Legacy and Innovative System Functionality)</b>	We used to conduct payments through sending company's representatives and do the payments in the bank and now it became electronic
40	<b>LS&amp;IS-F (Legacy and Innovative System Functioning)</b>	There is a vast improvement in services.

#### **(4) Barriers and challenges arose before and after the latter system (IS) was engineered**

##### **4.1 Legacy system Barriers and challenges**

<b>Co. No.</b>	<b>Major Code</b>	<b>Evidence</b>
1	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Since the beginning of establishing this business we do the best to guarantee visitors packages and this is the most challenging issues that we worked with in the previous time.
2	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Delays of embassies and consulates in issuing visas and lack of knowledge of the Umrah programs were the barriers of the previous system. As for the lack of knowledge of Umrah programs which we recently call it packages visitors used to come here without given them receptions from and to the airport. In addition, they used to have barriers in accommodation reservations and the rate of escape or disappearance of visitors used to be high and now with the new system all these challenges and barriers has been solved in a

		better word reduced.
3	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	In the old time the employees used to spend days and sometimes weeks to submit the letters to the minister deputy for umrah to sign and stamp the letters due to huge number of letters and requests which created slow and random transactions which affected negatively in the old system
4	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	They did not have accommodations, transportations, or programs to follow which caused them with lots of barriers concerning these issues.
5	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Slowly of processes and huge load of works were the barriers of old system.
6	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	It used to be random work you never know all the details of the visitors nor the international travel agents and when the visitors come to Saudi they used to stay longer than the duration of stay for instance if their visas indicate to stay for one month they used to stay for two or three month and that was normal (Staying of visitor in the country for longer period).
7	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	There used to be no system before and whoever desire to go to perform Umrah used to apply through the embassies and consulate and request for visa. Then the new system to a place in designing and implementing during the years 2000 to 2002 then we in the year 2002 they released this system which we are working on till now and there is a great difference in the first years of the system and at the current time.
8	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	The Umrah visitor was the one who take care of all the journey and they used to struggle and have many troubles with what concern transportations or hotels.
9	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Before the system there used to by individual barriers for Umrah visitors since they used to be vulnerable to fraud packages.
10	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	I do not believe we had barriers before.

	<b>Challenges)</b>	
<b>11</b>	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	There were not much barriers because we had good administration which manage hotels operations and we have our operations' team who follow up and support fieldwork that consist of hotels and transportations activities and maintenance and beside we are linked with ministries through service providers but we had paper-based transactions which were the problems to us at that time.
<b>12</b>	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Random system based on huge amount of paper works and no rights to save Umrah visitors when they agree with unknown agents.
<b>13</b>	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	The paper-based style was the main barrier because of the loads of documents which required a great capacity to conduct all applicants' requests
<b>14</b>	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	The paper-based was the main barrier and when the percentage of electronic transactions increased in the system the percentage of effectiveness and efficiencies of work flow become much improved
<b>15</b>	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	The main barrier was with the paper work system and solve when we gradually shifted to electronic.
<b>16</b>	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Paper-based transactions caused loads of work, errors, and other problems concern visitors which solve when the system turned to electronic.
<b>17</b>	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	There were no companies and it was random process whoever wants to perform Umrah visit the embassy and self apply there for visa and receive the visa issued but the case become different now and developed to be private companies who deliver services for visitors and organise their journey.
<b>18</b>	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	There were lots of problems such as the ministry used to suffer from sleeping on roads because of false packages, selling visas in black market, and non existence of packages/programmes save Umrah visitors rights and facilitate their journey and other issued treated by the ministry of Hajj.

19	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Undelivered faxes and documents, loss of many passports and transactions, delays in receiving ministry's decisions, notifications, or instructions.
20	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Randomisation and unorganised processes and procedures were the barriers.
21	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	I have no enough information about the manual transactions barriers but what I know is that there used to be lots of loss such as losing documents, passports, and undelivered information because of the massive load of documents.
22	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	It frequently used to be problems with inconsistency o processes such as unorganised processes and loss of documents and delays of requests.
23	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Anything was expected to happen, visitors themselves could not estimate the cost of their programmes/packages and they used to suffer and become bankrupt and get surprised till they return back to their countries and sometimes when consequences occur to them such as death the country suffer from the load of consequences cases occur to them and solve them and now with the occurrence of the Umrah companies as partners in the Umrah, they have provided the appropriate packages/programmes, and managed the death cases, and the health affairs and give them the package that include all the necessary services of their journeys till they return back to their homes to not get surprised and overestimate or underestimate the cost of their journey which they were not expected.
24	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	There used to be lots of problems during that time such as right savings from making false agreements or contracts.
25	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	It lied under the data entries and its mistakes, edits, and corrections. Besides other barriers which were different than these.
26	<b>LS-B&amp;C (Legacy</b>	Losing passports, documents, and having unscheduled



	<b>System Barriers and Challenges)</b>	journey were the barriers before this new system.
27	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Loss of documents, randomisations, and chaos the visitor used to go to the embassy and submit his passport and come over and they used to search for accommodations and transportations and there were no guarantees for the services.
28	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	The barriers were through escapes of visitors and the procedures of visitors were simple which based on placed list to follow up of those visitors who had escaped after their arrival and who of them were departed.
29	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	Paper-based, unorganised Umrah journey, lack of arrangements, lack of rights, and lack of information.
30	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	It was based on paper work and the absence of control over visitors through saving their rights because of lack of arrangements was a significant subject. Beside the load of documents and delays were other subjects which disrupt the work and lead to loss of documents and passports.
31	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	When the visitors get the visas and have an amount which reserved for the journey they used to fall under fraud deals which they pay money over services and programmes and find nothing when they arrive.
32	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	There was lack of many things such as communication, arrangement, cooperation, and guidance. Beside visitors used to take care of their own programmes even when the international agent's representative do the reservations of hotels they were limited and liable to fall in fraud companies or individuals who get advantages from them.
33	<b>LS-B&amp;C (Legacy System Barriers and Challenges)</b>	It used to be so slow, and the payment process was conducted at the bank and there was no electronic services so they used to print the vouchers and go to the bank and pay it and employees used to face overcrowding which prevents them from paying the fees and sometimes affect the visitors request and delays the process of issuing visas or exclude them to have visas

34	LS-B&C (Legacy System Barriers and Challenges)	Losing of documents, passports, and the follow up progress used to be difficult.
35	LS-B&C (Legacy System Barriers and Challenges)	The problems lied in the documentations when lost and the data was difficult to get it in an easy way there has to be a form of correspondences till operations done.
36	LS-B&C (Legacy System Barriers and Challenges)	There was no one responsible for the visitors all are self responsible no company organise their journey and sleep at the holy mosques when they are out of money and they get high rates for accommodations and stay in the country for a long time without supervisions and when the second promotion (phase) of the system occurred there were a little follow up on the escape/not departed visitors case.
37	LS-B&C (Legacy System Barriers and Challenges)	There wasn't any view the ambassador/counsel is the decision maker and the one who manage with full authorities and has a limited view and not living in Makkah inform him that he will have a quote of visas with the amount of 100,000 and these procedures had completely changed.
38	LS-B&C (Legacy System Barriers and Challenges)	Losing document was the most issue which I heard about and visitors used to manage and organise their Umrah trips which cause sometimes much difficulties.
39	LS-B&C (Legacy System Barriers and Challenges)	
40	LS-B&C (Legacy System Barriers and Challenges)	Through the years the system is becoming in more discipline and control.

#### 4.2 Innovated system Barriers and challenges

Co. No.	Major Code	Evidence
1	IS-B&C (Innovative	What occurred after establishing this e-Umrah system is that the information was too cluttered and then they

	<b>System Barrier and Challenges)</b>	have improved it and made it easy and useful. They also have made the inputs easy throughout time because in the beginning of establishing the system we used to assign nearly 10 employees to access the system and conduct the electronic operations and activities now it became less. The service provider has developed themselves through offering training and worked with increasing the services and reducing the number of employees who conduct electronic services.
2	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	What I would like to mention is that the rate of escape or disappearance of the visitors has been reduced and its rate has been gotten lower and lower throughout the years
3	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	All the problems and barriers were pure technical and solved however still some of them to be solved
4	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	Insufficiency of Umrah visitors' data and delays in sending and receiving data were the issues occurred and solved. The previous system was useless in data and there were no specific or exact unit responsible of the whole system to communicate with. Also, there used to be lots of errors occurs in the system but the system gotten improved every year till it reached its current position.
5	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	Complexities of transactions which we have to do for every application for every applicant and imagine if we have 200,000 applicants and we input their data and copy and submit their full applications in both online and paper works. We also used to have huge amount of documents which make us lose concentrations and make depressions to employees.
6	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The processes and procedures of each individual (Umrah visitor) used to take long time approximately 45 minutes. We also used to write every single details such entering all passport's data, entering and leaving the country, and entering and leaving the hotel and this was so terrible and time consuming and imagine if you do it for each individual and have huge amount of groups. This is of course will cause you a great efforts and suffering but now things are different whenever the system improves and develops more lots of issues turned to pure electronic entering the Umrah visitors become easy through International travel agents entry/exit became electronic, and the updates of each

		process became electronic and that made lots of facilitations in the system.
7	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The data entry process used to cause so many efforts and errors which were responsibility of ministry, system, Umrah companies, service providers, or international travel agents and these errors were alot.
8	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The entries of data processes became much easier since the ministry permitted the International travel agents to access to the system and conduct the data entries because in the past we used to do it ourselves and we used to receive faxes and posts from the international travel agents and enter the data in the company and make huge mistakes sometimes mixing the names of different countries of a different groups together because of the large amount of documents which make us lose concentrations of tasks.
9	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	Ministry used to accept data in a form of floppy disks, payment used to be manually, and lots of problems and mistakes when doing the data entries. We used to have huge boxes that contain floppy disks and papers and it is been fixed to electronic which allow us to use no paper which solved the old way of dealing.
10	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	After inventing the new system we used to struggle with both paper-based and electronic submissions but it has been solved and we now practice the operations electronically.
11	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The paper-based style and its barriers has been solved through the new electronic system.
12	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The hotels used to be uncategorised (all of the hotels) but has been solved but a high percentage of hotels still uncategorised and listed in the system and still there is insufficiency of hotels categorisation and the services offered to Umrah visitors which related to hotels services are so weak.
13	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	Most of them was the case of non departure visitors and got decreased. Now there is Tasheel company where they welcome visitors and receive their passports when they enter the country to scan it and approve their arrival to reduce the rate of non departure cases and in case if the company's representative of the Umrah company has not presented the visitors remain in the

		air/land/sea port until the representative show and Tasheel do not give the passports unless they meet with the representative and give it to him personally.
14	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The visa fees payment was manual and become electronic and the case of hotels and sending its data used to be paper-based and become electronic.
15	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The delays in visa issuance it used to take 48 hours and now it takes half an hour or an hour to be issued and there wasn't a system for follow up and track Umrah visitors and now we became able to follow up these huge numbers in a better way. The quotes of visitors operational plan (Before it used to be unlocked you can submit the number of visitors that you want and now it became limited and when you apply with the number you attach you might get approval for it or not) also the hotels information used not to be in the system and were unlocked you can make reservation and book to your visitor at any hotel and now it turned to be different after the ministry has classified them and included them in the system so the system became a little complex than before and before there wasn't any electronic subscription with the transportation so now it became fully integrated electronic system and apply in the ground.
16	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The payment was through bank and become electronic. Also the data entries used to enter the data for each visitor but now the process became much simpler and faster. Also the ports case got improved when the ministry of Interior introduced the new system of supplying Umrah system with the entry and exiting data of visitors before there wasn't any linkage and no data available. The large number of letters through fax was another barrier and solved and practicing the work through conducting paper work transactions inside and outside the company.
17	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	It used to be payments problems for visas fees and problem of the arriving and departing visitors which there were no data for them and thus the supervision become difficult for the ministry of Interior to follow up and control those visitors's movements. Besides the problem of visa issuance used to be much difficult and requires to conduct its transactions manually through paper work where you print the visa and send it by fax or email.

18	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	They reduced the percentage of visitors who remain in Saudi and the Umrah Company became fully aware of setting up and implementing Umrah package/programme.
19	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	They all have been solved after the establishment of the new system.
20	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The failure to leave the country and escape cases rates used to be so high.
21	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	After the system built and released to use there were problems such as we used to pay electronically and at the same time go to the bank and have lots of documents to finish the processes of payments. Other issue is visitors movements, we used to enter manually all the cases of escapes for instance we enter 600 copy of passports of those who escaped to submit it to the ministry but when linked with Elm (ministry of Interior system and data centre) it facilitate the work and the process of this case became much easier for us.
22	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	There are changes occur each year and when you call service provider's technical support they feedback with new adjustment happened as a type of development.
23	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The paper work transactions were the major problems and have been solved when shifted to electronic.
24	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	Its problem used to be the mixing of our visitors with other Umrah companies' visitors in the system and the Umrah visitor used not to have full package/programme.
25	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The old manual procedures solved by replacing them with developing this innovated electronic system which solve all the old barriers.
26	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	Based on the disadvantages of the old system they invented the new system to get efficient and effective services and to make the transactions go smoothly beside we used to conduct loads of payment

	<b>Challenges)</b>	transactions which caused us much time and efforts and turned to electronic through accessing to the company's account though SAMBA bank website and pay electronically the visa fees vouchers and when transactions are completed we perceive it directly through the system.
27	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The data contained lots of errors and mistakes, and the fall of information from the system used to occur all the time (the linkage used to be weak in the early phase of the system and then it became to develop between the two ministries Hajj and Foreign Affair and there used to be lots of technical problems.
28	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	First of all the system was through the ministry of Foreign Affair through submitting statements which contain all the arriving visitors from one of the country then we receive reference number for each group and check with the next day to receive the approval of the number of visitors who are approved to come for Umrah from the embassy of the visitors' country. Of course, after the system the invention of this automated system integrated all procedures and enable to conduct in the system through the international agent through service provider's portal so they send the electronic applications of those who desire to come for Umrah and later on they have to check with the embassy at their country to collect the visas.
29	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	To reach this stage there used to be lots of barriers such as contracts and data entry which concern visitors in addition to the paper-based operations and no transparency all were barriers.
30	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	All the transactions used to be manually and developed to deal electronically which saved times and efforts and added many advantages to companies.
31	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	Always there used to be problems, problems in the data entries, technical problems, system's problems, and update which always lead the system to breakdown and impede the course of work and visitors services.
32	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The not departed visitors' case is the most if they apply it as instructed it might be successful and this is maybe because there are difficulties to implement some of the articles which listed by the ministry because you are dealing with many people who have divers views and thoughts. So the supervision is weak and the business

		used to be selling visas and that's it.
33	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	It used to be so slow, and the payment process used to conduct at bank and there wasn't electronic so they used to print the vouchers and go to the bank and pay it and employees used to face overcrowding which unable them to pay the fees and sometimes affect the visitors request and delays the process of issuing visas or exclude them to have visas.
34	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	There were many such as introducing the ministry of Interior system to the e-Umrah system, facilitate services so they can all be available through system, Payments used to be manual and shifted to electronic.
35	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	the barriers were In the data entries which needed a massive quantity of employees and documents to conduct because it was primitive system the dates of visas and passports all enter it and the number of visitors was enormous and that means every section had at least from 5 to 6 individuals who are specialists in entering the data correctly and have the knowledge of all Umrah transactions and processes of operations and tasks that related to their sections
36	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The old one was a huge shift and all problems were on the Umrah companies the visitors have no Umrah experience and throw all the responsibilities on the Umrah companies. The system was complex to understand (incomprehensible) and was extreme pressure at work and when follow up with visitors and entering their data which required significant efforts and time.
37	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The manual intervention was a lot in the old system and now it became one entry and move alone in the system (International agent/Umrah companies/Ministry of Hajj/other ministries) single information from a single source and completed so the information take a rotation to all parts of the system and there is no manual interference but only limited.
38	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The first problem was the linkage between the five parts of the system it was difficult and was not simple besides the hacking and hackers who access the system and delete and solve some issues are other solved cases.
39	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	The passport information entry, visa, fees vouchers all used to be manual in the beginning of this new system. The required documents such as company's



	<b>Challenges)</b>	employees' names and their contracts, hotels and transportations contracts were manual and became electronic but still there are some issues concerning hotels and transportations need to be reconsidered.
<b>40</b>	<b>IS-B&amp;C (Innovative System Barrier and Challenges)</b>	In the past, the escape/ not departed case wasn't important and not a cause for concern because there was no way they can be tracked, however the electronic system transformed this issue which became much easier to control and supervise.

**(5) Existing challenges that still in occurrence and have not been solved in Innovative system (IS).**

<b>Co. No.</b>	<b>Major Code</b>	<b>Evidence</b>
<b>1</b>	<b>EB (Existing Barriers)</b>	I mentioned previously which occurs under two issues the database obstacles and the update of system information.
<b>2</b>	<b>EB (Existing Barriers)</b>	I have mentioned the four issues that I have pointed before which included 1- application for escape (Ta5alof) 2- application for death procedures 3- transportation licences and 4- Umrah visa's extensions to be added in the umrah system beside the integration of umrah system with other ministries in order to give more transparency and let us able to contact with the involved and communicate with the involved parties of the system.
<b>3</b>	<b>EB (Existing Barriers)</b>	The system is in need to be developed and improved through unifying the interfaces to all umrah companies and develop the communication methods between us and other involved parties. in addition the integrations between the ministries need to be considered to unify all parts of the e-umrah system in order to get rid of the differences in the system's parts. The ministry of hajj should also consider the mechanism and communications in the Saudi embassies under the same standards and criteria in all countries
<b>4</b>	<b>EB (Existing Barriers)</b>	Our current challenges and barriers are with the Passport department (Ministry of Interior). For instance, in death cases you require to shift from the electronic use to paper work and escape/disappearance/non-departed case is the same issue.

5	<b>EB (Existing Barriers)</b>	Immigration department, hotels, and transportations are the main barriers that still exist. We also have other problem which concern individual Umrah visitors those who come from south Africa and United kingdom for instance we have to hire private cars and when the ministry of Hajj finds out they report violation of rules' ticket because the private cars are not listed in the system and there is no registrations for such services and if you want to adjust this issue in the system we have to refer back to the system and develop more the transportations categories such as buses, Mini vans, or small cars because the system is built based on groups not individuals that is why they have to reconsider the design of system to what serves individuals as well.
6	<b>EB (Existing Barriers)</b>	We need further electronic solutions for these issues of escape, Invitation of Umrah visitors by others, and Umrah visas extensions. We also need schedules for the daily flights to know the arrival flights and relate it to our groups that coming in these flights and this can be happening by the service providers. the problem is that the flights information are inaccurate and as far as i know the service provider attempted to organise the flight schedules with airlines but they did not receive response. If the airlines companies cooperate with the service providers and allow them to implement the airlines companies' daily schedules and update in the system this will improve the system
7	<b>EB (Existing Barriers)</b>	Hotels, Passport/Immigration and other points which have previously mentioned
8	<b>EB (Existing Barriers)</b>	The most subject which concern us is those Umrah visitors who are recorded non departed in the ministry of Interior system (passport/immigration offices at Saudi ports) and they are departed to their lands. Sometimes we receive penalties because the ministry of Hajj finds that we have one representative for all groups and they require for each group a representative who takes care of each group from the moment they arrive to the country till they depart back to their homes.
9	<b>EB (Existing Barriers)</b>	Not linking all the Saudi ports (land, air, sea) together in the system are other challenging issues. The government supposes to link all these three ports together under one system. For example a UAE visitor has entered Saudi through land and left the country to India by air or sea then in that case the passport/immigration office do not find this in the system because the passport department's land system

		is not connected with air or sea systems and as a result they count this as non departure/escape/disappearance/failure to leave the country case against the Umrah company
10	<b>EB (Existing Barriers)</b>	Passport/immigration offices, contracts' certification takes long time I suggest to reconsider their procedures so they can facilitate them more since submitting and receiving contract to the ministry and receive its approval require 2 to 3 days to approve.
11	<b>EB (Existing Barriers)</b>	Re-thinking on the subject of non departure/absence of visitors/failures of visitors to leave the country, and making studies on international travel agents via surveys. I suggest to work with the countries' expeditions such as the system of Hajj when the ministry of Hajj advice us that we will have 100 thousands visitors and they put the roles and regulations with the countries which we will deal with unlike the reviews of the previous year performance and progress and evaluate our last year work and decide whether if they add the share of that country or not.
12	<b>EB (Existing Barriers)</b>	It is about passport/immigration ports and it lies in the entries and exits of visitors from the system. there is also other barrier which concern transportation which where the transportation companies should improve their services and increase the number of their drivers and vehicles especially in the seasons such as Ramadan because we have vast amount of visitors and we need them to increase the capacity of transportation to withstand this massive amount of visitors during that month and this service is not in the system and there are no categorisations and lists for transportation which should be included in the system.
13	<b>EB (Existing Barriers)</b>	The operational plan, there are committees for monitoring and follow ups are assigned to check Umrah companies offices in Makkah, Madinah, and Jeddah and they sometimes visit one of our branches and find no employee because sometimes the manager is checking some cases in the government agencies and the other employees distributed at the airports and banks carrying out some field work operations so the committee threaten to close the office and request a pledge from the general manager informing that they do no close the branch office in any way. I hope that the ministry reconsider the mechanism of this case or organise it in the system. This type of problems

		especially happen in the peak time (seasons) in the month of Rajab, Shaban, and Ramadan because of being busy with the movements of groups of visitors and the visa issuances.
14	<b>EB (Existing Barriers)</b>	The case of hotels' classifications and the permitted quotes (operational plan) for each country in term of numbers of Umrah visitors need to be solved.
15	<b>EB (Existing Barriers)</b>	Currently the ministry are working to add a new thing in the system which concern international travel agents. They want to list all the international travel agents (Incoming proposal and not good and illogical) so they want to give each Umrah company 10 international travel agents from each country (the ministry say that they want to distribute international agents to all Umrah companies and this is the ministry's opinion and the reason why is because the Umrah companies who are not fully operating and have less work can operate and be fully active). The operational plan should be fully electronic, hotels should be fully electronic (still problems and complexities occur in the hotels classifications and not solved because it is new to the system), The failure to leave the country case is the barrier. We suggest the process to be fully electronic even the proof when we submit all the Umrah visitor who did not departed. It should be submitted through the system even the pledges if they can find a way to be electronic would be better. The death case also I suggest to be electronic and i think the certificate of death is enough as a proof along with a copy of the passport.
16	<b>EB (Existing Barriers)</b>	Already indicated in the previous question which mentioned the remaining goals that still need to be achieved (Question (21)). First of all the barrier of passport/immigration offices mistakes/errors are the barrier of the system. We had this year 2011 nearly 250 Umrah visitors who had failed to leave the country (non departure/escape/disappeared/lost) and have problems with the passport department. we worked hard till we proved a 100 case and could not complete the procedures of the remaining 150 because of the routine and slow responds and processes of the passport department which took long time. Also, the hotels case is another subject. There are lots of locked unclassified hotels and the system does not accept the unclassified hotels and for example the city of Madinah has 40 classified hotels only. So before the ministry impose classified hotels in the electronic system and let all

		<p>Umrah companies and by these massive number of visitors who come annually in the Saudi, they should complete all the classifications of hotels before they apply it in the system because it still under development and let us as Umrah companies suffer to make appropriate packages/programmes to our clients. Also, not linking all the Saudi ports (land, air, sea) together in the system is another issue. There suppose to link all these three ports all together so for example a UAE visitor has entered Saudi through land and when he left the country he did not go back from the way he entered he left to India by air or sea then in that case the passport/immigration office count this as non departure/escape/disappearance/failure to leave the country case. Another issue is the operational plan. You enter the system every country you are involved with along with the number of Umrah visitors at each country that you desire to work with for the upcoming season and you enter the international travel agents that you works with, and after you submit it through the system the next step is that you have to go to the ministry and the ministry reduce the number that you have requested and does not give us the demanded number that we desire to bring so this is another case which we face problem where there should be a certain mechanism/procedure/process (assess the last number of the last year progress and sometime they give us a lower number of visitors than the last year for instance last year we used to work with 100,000 visitors so the next year they reduce it to 70,000 visitors). We wish if they reconsider this case and its mechanism because after we receive the approved numbers demanded clients and we found out that this is not the demanded numbers of our quote then we send official letter and the process turn into paper-based procedures and there is no transparency in the giving and taking of this and some other problematic cases which mentioned before.'</p>
<p><b>17</b></p>	<p><b>EB (Existing Barriers)</b></p>	<p>The fully connections with all parts of the system beside the mentioned issues in previous questions which concern development and improvement</p>
<p><b>18</b></p>	<p><b>EB (Existing Barriers)</b></p>	<p>Problems with airlines and its overcrowding in the airports because of lack of discipline from the airline companies to go according schedule of flights and that cause delays in exiting the country, updating information from the passport department side, and implementing additional fields which include the actual entry and exit of each visitor.</p>

19	<b>EB (Existing Barriers)</b>	I think the linkage is one of the core barriers in addition to hotel classifications follow up with visitors when enter and exit the country, existing paper work activities are some of the issues which still need to be achieved to fulfil the scope and reach the comprehensive goals.
20	<b>EB (Existing Barriers)</b>	There is a need for modification or adding some standards and procedures such as in transportation and hotels which has to be fully classified and there is also a need for initiate reference to these cases problems hotels and transportations.
21	<b>EB (Existing Barriers)</b>	The case of departure of visitors, procedures of death, and the new screen which concern hotels. (they have a new screen for hotels which shows the dates of contracts from the date of 999 till the date of 999 and shows the number of rooms (100 room) and each room contain (4 beds) and you have a specific date where it must match the period that the visa will be issued to visitors.
22	<b>EB (Existing Barriers)</b>	Hotels, transportations, and entry and exit of visitors.
23	<b>EB (Existing Barriers)</b>	I believe the ministry of Hajj shall reconsider the structure of hotels and transportations procedures and insert them in the system as services and sometimes it depends on the problematic case and the solution take into account for the following year because each year has its positive and negative cases and upon these issues the ministry impose solutions.
24	<b>EB (Existing Barriers)</b>	The problem which occurred is that they adhered the Umrah companies to depart their visitors from the port they came from and imposed fines for those who do not follow the instructions. I suggest if they develop these procedures more so I can enter the date of their departures and inform them with the name and location of departure and these entries are linked with the passports and Tasheel offices so there can be mechanism in case if the passport department overlooked there is another way to report these information. Therefore this case causes greater barrier for the Umrah companies and overcrowding problems in the Saudi ports.
25	<b>EB (Existing Barriers)</b>	The primary barriers lies under the entry and exit of visitors cases, and the secondary barriers such as delays of visas to be issued from the embassies and consulates beside to what previously mentioned cases

26	<b>EB (Existing Barriers)</b>	The three issues which I pointed previously which contracts, guarantees letters, in addition to that the arrangements.
27	<b>EB (Existing Barriers)</b>	Currently there is not much problems, everything suppose to be conducted in the system instead of sending representatives to the ministry and of course the reports of escapes we face the most and conduct it manually via printing all the documents and take proclamation number (ticket number) from the system to alert them that we are working on it.
28	<b>EB (Existing Barriers)</b>	All the existed barriers have been reported previously.
29	<b>EB (Existing Barriers)</b>	Tawasul system and Excel reporting format.
30	<b>EB (Existing Barriers)</b>	Exiting mistakes
31	<b>EB (Existing Barriers)</b>	There used to be a problem but since the ministry was notified about it they solved it during couple of days and the solution was that they add a new screen about the ports where visitors enter and exit and then they solved it through redesigned it with more descriptive details which is that the Umrah company used not to know the port where the visitor enter and exit and whether by land/sea/air and now they can determine in the system the port which the visitor enter and exit and the dates of entry and exit
32	<b>EB (Existing Barriers)</b>	The passport department and kingdom's ports, also the adoption of technology is another case there are some people still prefer manual transaction and by this they are lacking many things and limits some authorities. Of course the mechanism of hotels' classification, you have 4 thousand classified hotel and 10 thousand unclassified thus the ministry order you to deal with the classified only and the classified is few and does not cover the amount of visitors and if they can find solutions for this it will solve significant problem.
33	<b>EB (Existing Barriers)</b>	For what relate to visitors who exited the kingdom and are still stuck in the system, it does not make anxiety to us as much as it put the company under great risk.
34	<b>EB (Existing Barriers)</b>	The exiting of visitors. (elimination of visitors who travelled back home from the departures data in the system), and reconsider the easiest procedures for

		<p>proving death cases since it depends on embassies and consulates and other countries but we hope cooperation.</p>
35	<b>EB (Existing Barriers)</b>	<p>Currently, if they add the correspondences (Umrah communicational) system in the system so there is no need for manual operations by letters with the ministries through sending our representatives and it develop into electronic. And the most significant thing is transparency which means you know what is for you to do and what for others toward you even when we ask service providers they say they do not have the clear picture or mechanism even if we can to have the knowledge of knowing the operational plan processes from the ministry of Hajj this will be better. In other words, if they give us the annual requirement for the whole year what do we do and what is for us and what against us that would be better.</p>
36	<b>EB (Existing Barriers)</b>	<p>the ministry in the case of hotels forces Umrah company with hotels contracts to accommodate visitors so they require us to make a contract with Umrah visitor and set up a package for each to make a hotel reservation for instance in Hilton and if could not find in Hyatt Regency. The second problem is the transportations' contracts you find yourself ended up signing a contract with one of the transportations companies and the visitors cannot accept the cost and is not willing to pay 50 and want to pay 10 and find yourself forced to buy the contract. There are lots of companies sell visas and set up packages but the Umrah visitors enter the country and manage their journey which means there are too many gaps in the system.</p> <ul style="list-style-type: none"> <li>• So we go along with the package procedures and follow the notifications of the ministry and circumvent the notifications in some ways according to what we perceive proper so we conduct our work and follow the notifications. (so we put an operational plan that we have 25,000 visitor and based on that we rent hotels and discovered according to the notification that we are unable to do what we have done because the ministry send us the annual quote which indicate that we have a monthly share of 2000 visitor from each country and this is what confuse us and endure us heavy financial losses because we have made the whole packages and got surprised that the number was weak then</li> </ul>



		<p>we have surplus in hotels.</p> <ul style="list-style-type: none"> <li>• It will be different as a business but we do efforts to match as much as possible.</li> <li>• It covers the requirements and all services are conducted through the system</li> <li>• The check on international agents, international agents status, we would want to know the status of all international agents, their level of services, the number of escape/not departed visitors cases which each one had, so it gives you the whole information</li> <li>• There is a CD which the ministry distribute to all Umrah companies after each season contain information about international agents but we need it to be updated regularly</li> </ul>
37	<b>EB (Existing Barriers)</b>	<p>Give us a clear vision, a system we can work on and conduct all operations, or announce to me the three years plan or mechanism and before the seasonal year for Umrah begin so that I can make plan for the packages. I am a businessman and look for profits and you as a ministry are not concerned about profit or loss but we are concerned and this is the most important step. The other step is that the procedures which are linked with ministries other than ministry of Hajj we want the operations and transactions to be accelerated. The Saudi commission for tourism and antiquities are linked through email and you ministry of Hajj as a primary player in the system connect them between your system and their system. i hope that the exchange of information is needed because the obsession of fear is not beneficial and we understand that it is their rights to fear about the information security but it is not their rights to disrupt companies.</p>
38	<b>EB (Existing Barriers)</b>	<p>The linkage need to be enhanced and more develop, problems of visitors' entry and exit in the system, they should be scanning solutions to electronically read the visitors' information rather than manually conduct it manually and these are ports problems and we wish to find solution for all ports when the visitors get the stamp and this problem caused most of Umrah companies to be closed</p>
39	<b>EB (Existing Barriers)</b>	<p>The only point lies in solving the problems of exiting with the passport department.</p>
40	<b>EB (Existing Barriers)</b>	<p>The case of escape/ not departed I feel they became highly obsessed about it. Some information are not included in the system and we attach it for the ministry and it is not accurate and the hotels they put its information in an approximate way because what</p>

---

		happen is that there are lots of changes occur so because of that we put approximate packages/programmes in the system and not accurate.
--	--	--