The Influence of Culture on the Successful Implementation of ICT Projects in Omani E-government

An Explanatory Approach Using a Multiple Case Studies Strategy from an Information Systems Perspective

A thesis submitted for the degree of
Doctor of Philosophy

By

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to

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July 2018

DECLARATION

I confirm that this study is wholly my own work. The thesis does not incorporate, without proper acknowledgement, any material submitted previously for a degree or a diploma at any university. I also declare that this work is original and has not been submitted previously for any degree award.

I declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I declare that the ideas, results, findings and conclusions reported in this thesis are entirely my own efforts.

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SUMMARY

To date, there have been relatively few studies which have investigated the impact of culture on e-government implementation. Of these, some have focused on failed e-government projects while others have sought to identify the factors leading to success. However, the limited number and scope of studies to date has meant that the impact of culture on public sector ICT implementation is still not well understood. The research described contributes to improving our understanding of this phenomenon by investigating the impact of culture on the successful implementation of four ICT projects in the Omani public sector. The objective of the research was to gain a deeper understanding both of the factors which can support such success and those which may hinder it. This gap in our knowledge has a specific significance when it comes to e-government projects where cultural dimensions typically go well beyond the boundaries of the implementing organisation itself. This is something that is particularly the case in Arab countries.

The research follows a mixed methods sequential explanatory research design. This guides the direction of the collection of the data, the analysis of data, and the mixture of quantitative and qualitative data in multiple case studies. The mixed methods approach is adopted to gain a deeper understanding of the phenomenon under investigation, i.e. effects of cultural dimensions on the successful implementation of ICT in Omani public organisations.

The quantitative data were collected and analysed in the first stage of the research (a survey of 857 employees). In the second stage, 41 semi-structured interviews were undertaken and analysed. This strategy is particularly useful when unexpected findings emerge from the first stage of quantitative research, as the researcher can then investigate these in more detail in the qualitative stage. This strategy also provides further confirmation for the research model and answers the research questions.

The findings from this research in some cases confirm those found in other studies and in a number of instances contradict those found in previous work. The findings show of the six national culture dimensions tested against the user satisfaction rating regarding the use of the systems in four public organisations, only three dimensions, Uncertainty Avoidance, Individualism/Collectivism and Indulgence/Restraint were found to exert a significant influence on the successful implementation of ICT projects in Oman. For organisation culture, the findings also show that two dimensions out of four Need for Security and Results-Oriented were shown to have an impact on successful ICT implementation in e-

government projects. In addition, all seven workplace factors namely Self-Efficacy, Peer Influence, Resistance to Change, Legacy System, Top Management Support, Project Management Standards and Communication are found to significantly influence ICT implementation. The results of this study showed that Self-Efficacy scored the highest correlation of factors with ICT, followed by Top Management Support while Resistance to Change displayed the lowest correlation with ICT success. This study has also revealed the nature and correlation between the different dimensions/factors related to (national and organisational) culture and the workplace and how this correlation contributes to successful of ICT implementation. Further, this study identified and explored four new dimensions and factors that may stimulate successful ICT implementation in the Omani context which has presented the key findings of the qualitative data. These dimensions/factors are identified as tolerance, effective leadership, experts in ICT and situational-awareness.

To date, culture has not yet received as much concern or attention as it deserves in the world of e-government studies is still not well understood, especially when it comes to the public sector. This study addresses this gap and the extant literature, and the research findings provide both a theoretical and a practical contribution in the field of e-government. The results of the research include a preliminary framework that captures the factors that influence the successful implementation of ICT. The findings of this research can inform not only further studies of successful implementation of ICT in e-government projects in public sector, but also those based on other studies of information systems such as e-commerce, e-learning, e-voting in public and private sectors. The findings also have practical implications for research in Oman.

DEDICATION

O Allah! All praise and gratitude be to You.

ACKNOWLEDGEMENTS

Thanks to all friends for their support and encouragement. Very special thanks go to all members of my family, especially my brothers and sisters, for the assistance they provided me with. Words cannot express the amount of gratitude that I have for all of you.

ABSTRACT

Given the importance of ICT in the modern world, it is surprising that so little attention is paid to the impact of culture on the success of the implementation of ICT. While an enormous amount of research has gone into understanding the factors that can hinder the successful implementation of ICT, the impact of culture has been largely ignored. This lacuna has a particular significance when it comes to e-government projects where cultural dimensions normally go well beyond the boundaries of the implementing organisation. As a result of this gap, any study investigating the impact of culture on ICT project success, including this one, currently lacks a validated theory with which to understand the impact of cultural factors on e-government projects and, in the case of this research, specifically in Omani public sector. More specifically, there seems to be a lack of knowledge on how culture affects the success of ICT implementation in public organisations.

A major reason for this gap in research is the absence of an overlap between those who research culture and those who study information systems (IS) success. Existing IS success models focus on other factors such as systems quality and ease of use, generally ignoring the more subtle, but potentially equally important impact of culture.

This research first identified cultural variations in four public organisations in Oman and then investigated how these variations and characteristics of national culture affect the degree of success of ICT projects in these organisations. This investigation used a mixed of quantitative and qualitative methods to explore the culture of each organisation, the culture within the ICT project teams and how both of these sat within the broader national culture of Oman. A conceptual framework based on Hofstede's models of both national and organisational culture was used to provide a theoretical framework. The research identified a range of cultural dimensions and workplace factors, the behaviours that followed from these dimensions/factors and how these interacted with each other. For policy-makers, it is expected that the findings of this research will enable them to devise approaches that take account of cultural factors, finding ways to address those that obstruct and harness those that contribute to project success.

RESEARCH OUTPUTS

Al-lamki, Z & Bannister, F. (2016) 'The influence of national culture on the successful implementation of ICT in the public sector in the Sultanate of Oman'. EGPA conference, Utrecht, Netherlands.

Al-lamki, Z., Bannister, F. & Keaney, A. (2017) 'The impact of organisational culture on the success of e-government implementation in Oman'. EGPA conference, Milan, Italy.

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ABBREVIATIONS

CS	Closed System
CSF	Critical Success Factor
EDUP	Education Portal
EGDI	E-Government Development Index
E-government	Electronic government
eOman	Oman Digital
ERP	Enterprise Resource Planning
ESCWA	United Nations Economic and Social Commission for Western Asia
EU	European Union
G2B	Government-to Business
G2C	Government-to-Citizen
G2E	Government-to-Employee
G2G	Government-to-Government
GCC	Gulf Cooperation Council
HEAC	Higher Education Admission Centre
HESS	Higher Education Statistical system
HIS	Healthcare Information System
HR	Human Resource System
ICIS	International Conference on Information Systems
ICT	Information and Communication Technology
ICT	Individualism Versus Collectivism
IR	Indulgence/Restraint
IS	Information System
ISO	International Organisation for Standardisation
IT	Information Technology
ITA	Information Technology Authority
ITTF	Information Technology Task Force
ITTS	Information Technology Technical Secretariat
ITU	International Telecommunication Union
JO	Job-Oriented
L/STO	Long/Short-Term Orientation

MF	Masculinity Versus Femininity
MOH	Ministry of Health
MOHE	Ministry of Higher Education
MOCS	Ministry of Civil Services
NDC	National Data Centre
NeG	National e-Payment Gateway
NITC	National Information Technology Committtee
NS	Need for Security
OCERT	Oman Computer Emergency Response Team
OGN	Oman Government Network
OmanTel	Oman Telecommunications Company
OSI	Online Service Index
PD	Power Distance
QUAL	Qualitative
QUAN	Quantitative
RO	Results-Oriented
ROP	Royal Oman Police
SDGs	E-government to sustain development
SH	A'Shifa System
SQU	Sultan Qaboos University
TCD	Trinity College Dublin
UAE	United Arab Emirates
UAE	Uncertainty Avoidance
UN	United National
US	United State

1.   Introduction

1.1   Background to Research

In his book, Cultures and Organisations, Geert Hofstede (2010) discusses the key concepts of inter-cultural dynamics, providing some insightful advice for individuals and organisations to help in building and improving inter-cultural communication and cooperation. He develops what he calls cultural dimensions theory to explain national cultural differences and outlines how to approach the correlation between cultural issues and technical/organisational ones. He seeks to explain the cultural differences between countries and between organisations. This model, which Hofstede first proposed in 1980 has been refined and improved over a number of decades. It stresses the fundamental distinction between national culture and organisational culture and their consequences for management.

This study examines the impact of culture on the successful implementation of Information and Communication Technology (ICT) in the public sector in Oman. Given the importance of ICT in the modern world, it is surprising that relatively little attention is paid to the impact of culture on the implementation of ICT. In the world of public administration, the focus of this study, the number of ICT applications in e-government is rapidly increasing worldwide (UN, 2016). According to The Standish Group (2015) and Heeks (2002), there are challenges when ICT applications are being introduced in government organisations. Some of these potential problems are due to the cultural discrepancies between host institutions and head offices (Rai *et al*, 2009). Some research, such as that undertaken by Aladwani (2013), aims to solve the problems arising with the implementation of ICT that are associated with technology transfer services. However, the impact of culture on the successful implementation of ICT in terms of both employees and the public has largely been ignored in the literature though there have been some attempts to explore the interaction between ICT and culture. For example, Hua *et al.* (2014) developed a framework which aims at investigating the interaction between technology, culture, task and person.

Heeks (2002) points out that some countries have been using ICT in their governmental processes and procedures since the 1950s. There are papers on technology in government dating back to the early 1960s (Bannister & Grönlund, 2017). According to the International Telecommunication Union, henceforth ITU (2010), 84% of the 161 member countries of the ITU have already met the objectives of the World Summit on the Information Society

(WSIS) of having a national ICT strategy (ITU, 2011). E-government innovation has been the central focus of the push to utilise ICT with the aim of enhancing efficiency by facilitating access to information and providing electronic public services. In a more recent report, the ITU (2014) found that the number of people using the Internet globally had reached almost 3 billion by 2014. Two-thirds of the world's Internet users are from developing countries. Indeed, it is noted that in developing countries, the number of Internet users doubled in five years from 974 million in 2009 to 1.9 billion in 2014 (ITU, 2014). One consequence of this is a rising demand for e-government services.

E-government initiatives have been targeted at raising government performance levels, on the one hand, and improving governmental services, on the other. In particular, e-government initiatives aim to increase effectiveness as well as citizen participation in the decision-making process (Almarabeh & AbuAli, 2010; Porumbescu et al., 2012). However, several researchers indicate that a large percentage of e-government implementation initiatives around the world have not succeeded in achieving their aims, despite having similar goals for both the direction and vision of e-government (Petter et al., 2013; Rana, 2013; Strong & Volkoff, 2010; Laumer & Eckhardt, 2012; Dwivedi et al., 2015). According to Dwivedi et al. (2015), there is a need for in-depth studies to help us understand the success factors in the implementation of ICT in e-government projects in public organisations not just what these factors are, but how they influence the success or failure of such projects. Several researchers (Bruque et al., 2008; Laumer & Eckhardt, 2012; Maier et al., 2013; Dwivedi et al., 2015) make the (rather obvious) point that the failure to implement successfully e-government projects is detrimental to organisations. Gole and Shinsky (2013) describe several examples of failures of e-government projects in the public sector. One such details the FiReControl project in the UK in 2010 that is used to handle emergency calls from the public, in addition to managing accidents. It was designed to enhance inter-organisational collaboration by providing a secure network between local government departments and the fire services. Despite the project costing £245 million, the government decided to cancel it for several reasons. One of these reasons was that it could not be delivered within the agreed time-frame. There were also financial constrains as the approved budget was insufficient to continue developing the system. Another challenge the project faced was the complexity of designing a system to meet the needs of Fire and Rescue Services. Governance arrangements were complex and ineffective, which led to unclear lines of responsibility and slow decision-making to deal with issues that affect the success of the project. While, therefore, the project was cancelled for many reasons, it is noteworthy that

some of these reasons were a result of cultural factors such as power distance and uncertainty avoidance.

Another example of an IS implementation setback within the public sector is the malfunctioning portals and Enterprise Resource Planning (ERP) applications at the Universities of Massachusetts, Stanford and Indiana that left more than 27,000 students unable at best to find their classes and at worst prevented from collecting their financial aid cheques (JR *et al.*, 2018).

JR *et al.* (2018) state that these examples show that the success or failure of ICT projects may be due to cultural issues. Azam and Quaddus (2013) contend that the role of culture is a controversial one in terms of the adoption and implementation of information technology (IT) processes. Some scholars believe that culture has a major influence in determining whether or whether not organisations within a given country will adopt certain technologies. Other scholars are conscious of how national culture impacts the degree to which technologies are accepted and how they are undertaken (Thatcher *et al.*, 2006; Bai & Cheng, 2010; Aldraehim *et al.*, 2012).

As noted above, at the time of writing this dissertation, there have been relatively few studies that have investigated the impact of culture on e-government implementation. Of these, some have focused on failed e-government projects while others have sought to identify the factors leading to success. The limited number and scope of studies to date has meant that the impact of culture on public sector ICT implementation is still not well understood. According to Eberlein (2008), organisational culture extends across the boundaries of national and professional cultures (see Section 2.3). Jackson (2011) points out that organisational culture continues to be valued as an influential factor in the success or failure of adopting information systems (IS). The same author states further that despite the contribution of many recent research studies to date, some challenges are still to be encountered. The first challenge is that studies deal with organisational culture as if it were a common practice perfectly understood by all members of an organisation whereas this is rarely true. The second challenge is that studies tend to downplay the dynamics of culture and how this may impact the adoption of information systems over time.

There is a modest literature on culture and ICT implementation given the importance of the topic. The majority of such studies as have been done, focus on the adoption and implementation of new technologies (e.g. Lee *et al.*, 2013; Al-hujran *et al.*, 2011; Azam and

Quaddus, 2013; Brdesee *et al*., 2012; Fuming *et al*., 2011; Jackson, 2011). A number of scholars have undertaken this type of research in developed countries, and some studies have been conducted in Arab nations. A subset of the latter have examined issues around the impact of culture on ICT in Oman. Overall, the Omani research identifies the cultural factors that impact ICT adoption in Omani public organisations and that improve the implementation of electronic systems in that sector. This study seeks to make a number of contributions to the understanding of ICT in the field of e-government.

This research examines the cultural dimensions of Omani public organisations using Hofstede's cultural dimensions theory. To understand the behaviour of employees in terms of their adoption and use of ICT, it is necessary to gain insights into how culture affects both of these. In this research, data collected from various public organisations were investigated. This study aims to empirically test and validate the combination of Hofstede's models of both national culture and organisational culture, in addition to the workplace factors.

Awareness of these impacts is important to Oman as the government seeks knowledge and a deeper understanding of how to implement ICT projects successfully and efficiently. This knowledge has potential benefits for the diffusion of ICT innovation in the Omani public sector.

1.2 Research Problem

Creswell (2009) defines a research problem as a question that leads to the need for a research study to be undertaken. This research examines the impact of culture on a successful adoption and implementation of ICT. The main question in this research is the impact of national culture and organisational culture on successful adoption and implementation of ICT in the Omani public sector. Examining cultural influences presents the opportunity to identify activities/barriers and describe the potential impacts on enablers using ICT in public organisations in terms of the successful implementation of e-government applications. In his review of the e-government literature, Yildiz (2007) refers to the fact that there are some limitations in the empirical studies on e-government research. Yildiz suggests that there should be more empirical research conducted in this field to create new theoretical arguments and offer new e-government concepts. If this can be done, a better understanding of both e-government policy processes and actors can be achieved.

As noted above, there have been few studies which examine the effect of cultural factors on the success of ICT in Oman. One of these studies is by AlShihi (2006) who regards culture as a factor impacting in the diffusion of e-government in Oman. He suggests that this finding requires further exploration. The current research seeks to identify cultural variations in four public organisations in Oman and investigate how culture affects the degree of success of ICT projects in these organisations.

1.3   Research Question

The main aims of this study are to identify procedures to improve and facilitate the successful implementation of ICT of e-government projects in Omani public organisations. The primary question in this study is as follows:

- How, and to what extent, do cultural factors influence the successful implementation of ICT in Omani public administration?

There are three secondary research questions, which are:

1. What are the cultural factors that support or hinder the successful implementation of ICT projects in public organisations in Oman?

2. To what extent does Omani national culture interact with other factors in the workplace? And how does this interaction support or hinder the successful implementation of ICT?

3. To what extent does organisational culture interact with other factors in the workplace? And how does this interaction influence the successful implementation of ICT?

1.4   Theoretical framework and methods

This research is based on a theoretical framework, namely Hofstede's models of the national and organisational cultural theories, and workplace factors that seek to capture the cultural dimensions influencing the success of ICT implementation in the Omani public sector. This framework provides a way to identify the cultural dimensions that may play an important role in the successful implementation of ICT or which may act as barriers to success. The objective is to gain knowledge around how managers and employees perceive the

implementation of ICT and its services to better understand how this influences the success or failure of ICT projects.

To answer the research questions, both primary and secondary data sources were used including an extensive literature review, a survey and semi-structured interviews. This research adopted a constructivist approach for the construction of meaning obtained from the interviews. The research takes a pragmatic philosophical approach, using a mixed method sequential explanatory design.

The quantitative data were collected and analysed in the first stage of the research (a survey of 857 employees). In the second stage, 41 semi-structured interviews were undertaken and analysed. This strategy is particularly useful when unexpected findings emerge from the first stage of quantitative research, as the researcher can then investigate these in more detail in the qualitative stage. This strategy also provides further confirmation for the research model and answers the research questions. Formal ethical approval from the university was obtained before the data collection stage.

The data were gathered from four public organisations in Oman, namely the Ministry of Higher Education, Ministry of Education, Ministry of the Civil Service and Ministry of Health. These four organisations use the following four systems respectively: Admission System (HEAC), Education Portal (EDUP), Al-Mawred System (HR) and A-Shifa System (SH). The data analysis was conducted using the Statistical Package for the Social Science SPSS version 23 for quantitative data. Thematic analysis was used to analyse the qualitative data. A detailed description and discussion of the research methods can be found in Chapter 6.

1.5 Research Objectives

This research aims to examine the effect of cultural dimensions[1] on the success of ICT in Oman and its contribution will be to assist public organisations in improving the take-up of technology performance in e-government services by:

- Providing guidance and a plan to organisations for ICT adoption;

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[1] In what follows, the term 'dimension' is used to refer to the cultural factors identified by Hofstede cultural dimensions theory and the terms 'factor' refers to aspects of workplace.

- Developing a theoretical framework that incorporates the two types of culture: national and organisational. This theoretical framework explains the factors within the workplace for creating successful e-government indicators;

- Defining the most significant cultural dimensions that contribute to the expansion of successful e-government initiatives for Arab countries in general and Oman, in particular;

- Investigating the relationships between culture and successful ICT implementation in Omani public organisations;

- Identifying any obstacle that hinders the effective implementation of e-government.

This research gives an in-depth understanding of the impact of cultural dimensions upon the successful implementation of ICT in Omani public organisations. For the government, this research offers an in-depth-study of the various cultural aspects that can affect the use of ICT systems in the country's public organisations.

1.6   Scope of the Study

This study examines the relationships between culture and ICT and focuses on the two levels of culture: the national culture and the organisational culture. At the national level, the applicability of traditional Western-based management theories to non-Western cultures - with consideration of the influence of the national culture on the development, the use and acceptance of ICT- have been explored by a number of scholars (Myers & Tan, 2002; Straub, 1994; Walsham, 2002; Straub *et al*., 1997). According to Karahanna *et al.* (2005), organisational culture has a strong influence on the work environment; examples include focussing on tasks, improving efficiency and enriching the individual's experience within an organisation. Boynton and Zmud (1987) have suggested that organisations should assess the role of organisational culture and its impact on information technology planning.

1.7   Research Significance

The Omani government has invested heavily in large-scale ICT projects (Al-hadidi, 2010). One of the major components of this investment involves the creation of the Information

Technology Authority (ITA). To improve e-government, several major projects have been undertaken in public organisations in recent years (ITA, 2015).

Al-hadidi's research shows that extensive ICT support has been provided to Omani public organisations since the introduction of ICT into the government sector in 2001. There has been some investigation of culture and ICT, with a focus on the adoption of new technology. Some researchers believe that organisational culture affects both the success of ICT implementation and the work environment (Dasgupta & Gupta, 2010). For example, an organisation with a manager who promotes a healthy working environment and supports the use of modern ICT solutions will realise better employee performance and a more rapid work flow.

The amalgam of culture and ICT is a dynamic and relevant process for this research. The objective of this perspective is to develop a model for the e-government work environment. This model will identify the critical factors influencing successful ICT implementation in Omani e-government. It provides guidance to policy-makers who take appropriate decisions for successful e-government projects in the Omani public sector.

1.8   An Overview of the Sultanate of Oman

Oman was selected as the case study country for two reasons: the first is that it is the workplace of the dissertation's author, i.e. the Omani public sector. The second is that the implementation of e-government is still in its early stages, as it did not commence in Oman until 2003. Moreover, as noted above, existing literature and studies have not sufficiently covered the cultural dimensions involved in the diffusion and successful implementation of ICT in public organisations. The following sections describe the geographic characteristics of Oman and provide details about the development of ICT in both the ICT sector and e-government.

1.8.1   Geography and Regions

Oman is located on the South-Eastern coast of the Arab Peninsula in Asia. It is bordered by the United Arab Emirates to the Northwest, Saudi Arabia to the West, and Yemen to the Southwest. It overlooks the Arabian Sea on the Southeast and the Oman Sea on the Northeast. This location opens a channel of political, economic and cultural communication with others. It is the third largest country in the peninsula with an area of 309,500 square

kilometres (Ministry of Information–Oman, 2017). Oman is divided into 11 main administrative regions: Muscat, Dhofar, Musandam, Buraimi, Al Dakhiliya, Al Batinah North, Al Batinah South, Al Sharqiyah North, Al Sharqiyah South, Al Dhahira and Al Wasta (see Figure 1.1). There is a total of 61 wilayat or states. The governmental system in Oman is a monarchy. The Renaissance period in Oman began with the accession of His Majesty Sultan Qaboos Bin Said Al Said to the throne on 23 July 1970 (Ministry of Information, 2014a). The country's landmass consists of 82 percent desert and dry riverbeds, 15 percent mountain ranges and three percent of coastal plains (Oman, 2017). Agricultural land is limited, consisting of only seven percent of the country. The climate of Oman is, for most of the year, hot and dry with a few occasions of rainfall during the winter and spring seasons. The country shares with Iran one of the most strategic water straits in the world, namely the Strait of Hormuz through which the world's oil tankers pass.
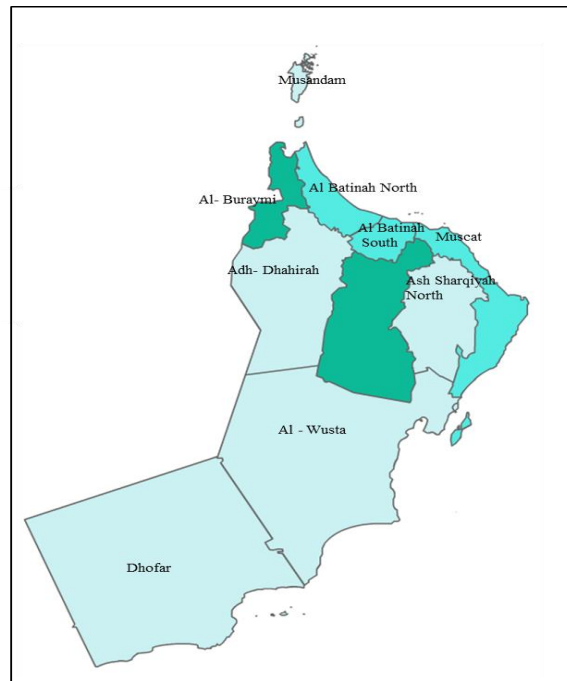
Figure 1.1: Map of Oman

Source: https://www.ncsi.gov.om/Pages/omanmap.aspx

1.8.2   Population

The population of Oman is 4,658,303 million as of statistics published in March 2018 (National Centre for Statistics and Information, 2018). Arabic is the official language, along with widespread use of English language.

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An estimate made by the World Bank suggests that the population of Oman will reach five million by 2023 (World Bank, 1994). Al-Rahbi (2008) points out that its population has doubled twice between 1970 and 2004. Young people aged between 15 and 29 account for 30 percent of the total population (Oman, 2017). This rapid population growth can be attributed to many factors, including better healthcare and higher living standards made possible by the discovery of oil in the 1960s. The subsequent escalation of oil prices in 1973 led to an increase in the national revenue and an influx of foreigners. Non-Omanis currently make up around 30 percent of the total population (Oman, 2017).

1.8.3 The Public Sector in Oman

The Basic Statute of the state in Oman was issued by HM the Sultan of Oman in 1996 (Ministry of Legal Affairs 1996). It is regarded as a constitutional document which defines the rights of the citizens and the foundation for government policy and legislation development. The articles included in the document are based on traditional Omani social and Islamic values which grant the freedom of speech, freedom of religion, gender equality and impartial justice to all, the right to privacy and private ownership of property, and citizens' rights to participate in decision-making.

The public sector in Oman is part of the government and is concerned with providing various services to the public. Figure 1.2 below illustrates the Omani government administrative system (Al Obthani *et al*., 2013). As the model shows, the public sector in Oman consists of six organisational clusters: Council of Ministers, Special Councils and Committees, the Ministries, Public Establishments, Regional Public Administration, and Public Institutes. The figure also indicates that His Majesty (HM), the Sultan, is the Head of State and he manages the Government through two types of councils: the Council of Ministers and various special purpose councils and committees. These councils consist of various ministers who are members representing their seats according to their specialties and expertise.

The Sultan is the state's Prime Minister and appoints cabinet members who report directly to him through the Council of Ministers. The Council of Ministers aids the Sultan in formulating and implementing general state policies. The Supreme Council of Planning, headed by the Sultan, is responsible for approving the annual developmental budgets for the country and allocating budgets for various government organisations.

The Ministry of Civil Service was established in 1988 to supervise the implementation of civil service law and regulations by all government units (Ministry of Civil Service 2018). The number of government agencies that fall under the umbrella of the civil service is 38, including 23 ministries, 4 of which have been selected for the purpose of this study. It is worth mentioning here that there have been no substantial changes in the public sector in the past few decades.
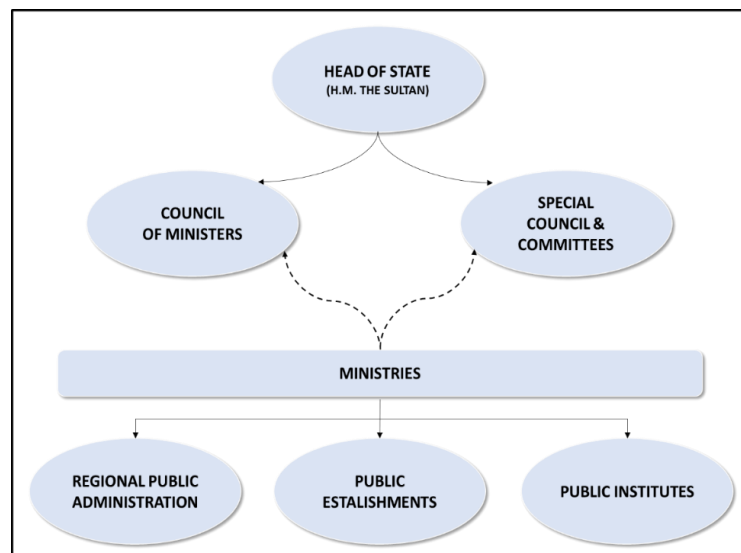
Figure 1.2: The Governmental Structure in the Sultanate of Oman

Source: *(Al Obthani et al. 2013).*

By end of 2016 the total number of employees in those 38 government agencies was 177,717 of whom 154,512 were Omanis representing 86.9% and 23,205 were Expatriates representing, 13.1 % of the workforce. The majority of civil service employees are employed in the Ministry of Education and the Ministry of Health, representing (69%) of the total (Ministry of Civil Service, 2018).

1.8.4   E-government in Oman

Many projects in Oman emerged from *Oman Vision 2020*, a statement of national strategy that aims, among other things, to create a dynamic diversified economy, targeting emerging economic opportunities in various fields. In 2003, the country started to work on the "Digital Oman" initiative, an ambitious project to transform its traditional economy into a knowledge-based economy. The project aimed to activate the use of information technology and human capacities in economic activities through the promotion of efficiency, cost-

saving, the transfer of knowledge and product-based technologies (Information Technology Authority, 2007).

The realisation of these objectives was part of the rationale for the formation of the National Information Technology Committee (NITC) in May 1998. It was subsequently included as part of the sixth five-year plan (2001-2005) that focused on the development of the information technology sector (Ministry of National Economy, 2008). The NITC was tasked to:

- Prepare a national policy and implementation strategy for information technology;

- Promote further engagement in the Information Technology industry by designing software solutions and setting up networks to keep up with the modern information revolution;

- Monitor the development of standards and criteria for the integration of information technology in the public sector, and

- Form technical and project teams to lead the implementation of national IT projects (Information Technology Authority, 2007).

Due to the uncertain issues related to the Y2K phenomenon, the government gave priority status to the activities of the NITC. In 1999, the NITC was directed to form the Information Technology Technical Secretariat (ITTS) attach itself to the Ministry of National Economy which was tasked to aid the NITC in formulating the national IT strategy. The NITC, in 2000, formed the Information Technology Task Force (ITTF) within the ITTS. The ITTF is composed of senior IT specialists from different ministries in the government. It was commissioned to produce a task plan for the transition to a knowledge-based economy as well as the development of e-government. In collaboration with the consulting firm Gartner, the ITTF prepared a strategic technology plan which: (I) focused on young Omani investors in establishing small/medium IT enterprises; (II) offered job opportunities to young Omanis by adopting projects supporting the economy, and (III) supported initiatives towards the privatisation of Information Technology and lowering the dependence on public expenditure (Gartner, 2007).

To implement the national strategy of Digital Oman and further develop the IT sector, the Omani government has set specific strategic objectives that reflect the needs of society. E-

Oman has become the e-government brand of the Digital Oman strategy, with various objectives embodied in different initiatives. E-Oman includes a number of initiatives such as the National Data Centre (NDC) and the National IT Training and Awareness Programmes. The National Data Centre (NDC) is responsible for providing data housing solutions to the public sector. The Oman Government Network (OGN) is dedicated to securing a network to connect government entities. The National e-Payment Gateway (NeG) and Oman Computer Emergency Response Team (OCERT) are responsible for defending against security risks and breaches (Ministry of National Economy, 2008).

The seventh five-year development-plan (2006-2010) placed more emphasis on the active role of ICT in achieving the sustainable development goals. The Information Technology Authority (ITA) was established in 2006 by Royal Decree No 52/2006 as an independent government agency to administer the implementation of e-Oman strategy and provide technical support to other government departments (Information Technology Authority, 2012a). Subsequently, the ITTF was decommissioned and a new management team was assigned to the ITA. As a result of this initiative, Oman climbed up in the UN's world e-Government development ranking to 64th position in 2012, compared to its 82nd ranking just two years previously in 2010 (United Nations, 2012). According to the United Nations e-government development survey (2014), Oman has shown improvements between 2012 and 2014; its global e-government development ranking improved from 64th in 2012 to 48th in 2014, placing Oman among the top 50 countries for the same period (United Nations, 2014). However, the 2016 United Nations e-government development survey showed that the country had fallen from 48th to 66th place (United Nations, 2016). There is no available data or information which identifies the reasons behind this regression.

1.9   Literature Review Process

A comprehensive literature search was conducted using multiple databases (Science Direct, Emerald Insight, IEEE, JSTOR, ProQuest, MIS Quarterly, SAGE and Google Scholar) for the period from 1970 to 2018. The search included both peer-reviewed journal articles and non-peer reviewed research. Many articles were accessed in response to particular search terms. For example, in the Science Direct database, a search was conducted for the term "e-government implementation" and 208,951 references were retrieved. Searching outputs were merged and duplicates were removed. Figure 1.3 below shows the search strategy adopted to conduct the literature review of this study.

Studies were primarily selected on the basis of their relevance to the objectives of this study. The main concern was to include studies and reports that collected, measured, and analysed data linked to the cultural dimensions of ICT in e-government projects.

The literature review was divided into three chapters based on the research questions and the objectives of the current study. This is to facilitate ease of reading and to give a clear picture of the subject of the study.
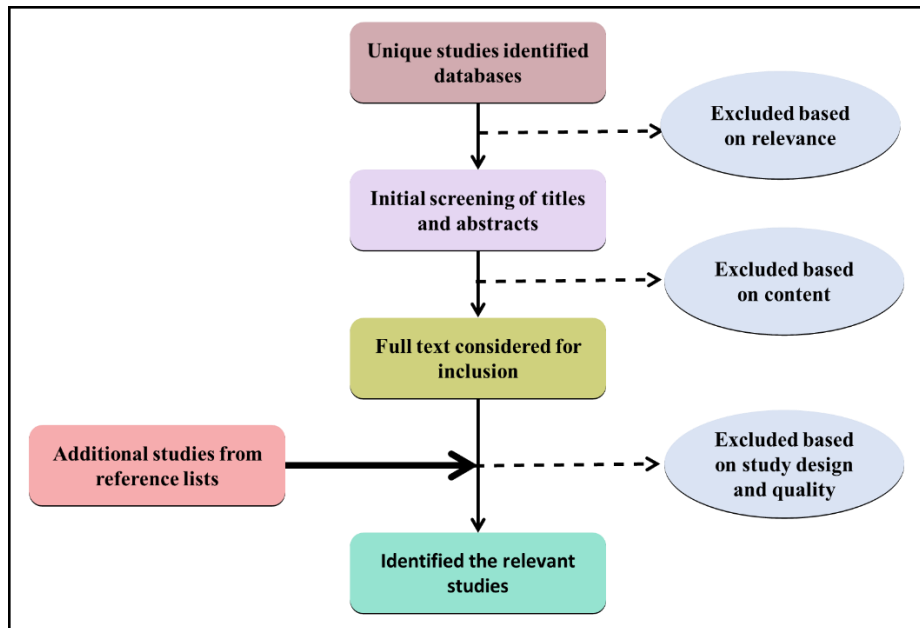
Figure 1.3: Literature Search Process

Chapter 2 discusses the definition of culture as well as the levels and theories of culture in the literature. It also illustrates the relationship between culture and the implementation of technology. It presents the results and findings of previous research in this regard. The search resulted in finding more than 557 research documents including journal papers, conference proceedings, unpublished theses and reports. The amount of research on culture in the Omani context was extremely limited. There was only one book about Oman (Jones, Ridout, Nicholas, 2012, Oman, Culture and Diplomacy). No study was found to have extensively investigated the impact of culture on ICT in Oman.

Previous research focused on various areas such as descriptive culture theories (Hofstede, 1991; Hofstede, Hills& Sage, 1980; Hofstede, Hofstede & Minkov, 2010; Hofstede, 2015; House *et al*., 2002), cross-cultural comparison (Akkaya, Wolf & Krcmar, 2012; Aladwani, 2013; Anjum, Zia, & Raza, 2014; Arslan, 2009; Cabinakova *et al*., 2013; Carter & Weerakkody, 2008; Chang, 2002; Erumban & de Jong, 2006; Keil *et al*., 2000; Sanakulov

& Karjaluoto, 2017), cultural impact on e-service (Aldraehim, Edwards & Watson, 2012; Bankole & Bankole, 2017; Hua, Liu & Chan, 2014; Lee, Trimi& Kim, 2013; Nguyen, 2016; Robey & Rodriguez-Diaz, 1989; Straub, 1994; Zhao, 2013), national cultural theory (Schwartz, 1999), empirical studies about national culture and adoption of e-government services (Al-hujran, Al-dalahmeh & Aloudat, 2011; Alshare *et al*., 2014; Azam, & Quaddus, 2013; Bagchi, Hart, & Peterson, 2014; Kaba & Osei-Bryson, 2013; Kovacic, 2005; McCoy, Galletta & King, 2007; Moghadam & Assar, 2008; Thowfeek & Jaafar, 2010), organisational culture and ICT (Cabrera, Cabrera, & Barajas, 2001; Fuming, Wei & Linfeng, 2011; Jackson, 2011;), theory of organisational culture (Denison *et al*., 1995; Hofstede, 1998; Schein, 2004; Schein, 2010), review of culture in information systems research (Leidner & Kayworth, 2006) models of national culture in information systems research (Myers & Tan, 2002) and understanding tolerance (Williams, 2012).

Chapter 3 focuses on defining e-government and the literature on the adoption and implementation of e-government including the benefits and challenges of e-government implementation. The search resulted in more than 197 research documents including journal papers, conference proceedings, unpublished theses and reports. There were over 30 research documents which investigated aspects of e-government in Oman.

Previous research in the Omani context covered a variety of areas such as the description of e-government practices (Al-Gharbi & Al-Kindi 2010), the challenges to implementing e-government initiatives in Oman (Abanumy, Al-Badi & Mayhew 2005; Al-Busaidy & Weerakkody 2009b; Al-Busaidy & Weerakkody 2011a; Sarmrih and Sriram, 2015), success factors for implementing e-government at organisational levels (Al-Azri, Al-Salti & Al-Karaghouli 2010; Al-Busaidy & Weerakkody 2008; Al-Shihi, 2006; Al- Senaidi, 2009), e-government adoption and implementation from a government perspective (Al-Mamari, 2013; Al-Mamari, Corbitt and Gekara, 2013) and e-government adoption and implementation from the government employees' perspective (Al-Busaidy & Weerakkody 2009; Al-Busaidy & Weerakkody, 2011).

Chapter 4 examines the literature concerning the factors which lead to the successful implementation of IS projects. In this case, the search process identified over 105 relevant publications. The amount of research on e-government in Oman was small; only three documents were found to deal with this issue in Oman.

The search process for this chapter used a number of search terms and formulations to try to identify all of the literature on this topic. So for example (search terms underlined and examples in parentheses) the search looked for terms such as <u>IS Success Models</u> (Rai, Lang& Welker, 2002; Rana, Dwivedi & Williams, 2013; Delone& Mclean, 1992; Delone & Mclean, 2003), <u>information system success</u> (Rai, Maruping & Venkatesh, 2009; Sabherwal, Jeyaraj & Chowa, 2006; Agourram, 2009; Al-adaileh, 2009; Bradley, Pridmore& Byrd, 2006; Dwivedi *et al.*, 2015; Petter, DeLone & McLean, 2013), and <u>success factors</u> (Ribeiro *et al.*, 2013; Rohatgi, Scherer & Hatlevik, 2016; Saarinen, 1996; Shatat & Dana, 2016; Tarhini *et al.*, 2015   Ziemba *et al.,* 2016; Al-kaabi, 2010; Al-Naimat, Abdullah, & Ahmad, 2013; Aueaungkul, 2013; Bullen& Rockart, 1981; Dickinson, Ferguson & Sircar, 1984; Dwivedi *et al.*, 2013; Eberlein, 2008; Huijgens, van Deursen & van Solingen, 2016; Martino, 2012; Morrison, 2012; Müller & Skau, 2015; Napitupulu & Sensuse, 2014).

1.10   Dissertation Outline

This dissertation is organised as follows:

Chapter 1: Introduction and Background to the Research

This chapter presents the introduction, which provides an overview of the research problems and questions. It defines the objectives of this study. The chapter highlights the theoretical framework and methods. It includes an overview of the Sultanate of Oman, its e-government projects and a brief description of the literature review process. Finally, the outline of this study is provided.

Chapter 2: Literature Review of Culture and ICT

This chapter discusses the literature on culture and discusses and explores the concept of culture. It presents and critically examines several definitions of culture and its dimensions. It explores the different levels of culture and discusses the most influential theories and models of national and organisational cultures. Specifically, it examines the work of Hofstede and his scores for Arab countries and discusses a number of critiques of Hofstede's work. This chapter also discusses how culture plays a significant role in the successful implementation of ICT. This chapter concludes by identifying several distinct themes which are concerned with the studies of national and organisational levels of culture in the IS literature.

Chapter 3: Literature Review of E-government Characteristics

This chapter examines the concept of e-government and its key characteristics. It lists the different definitions of e-government from the extant literature. This chapter focuses in particular on the literature of e-government adoption and the nature of the services provided by e-government. It discusses the features of e-government implemented worldwide with a focus on the Arab world in general and Oman, in particular. A key objective in this review is to identify how scholars have attempted to achieve a better understanding of the barriers and challenges facing e-government implementation and what can hinder its successful implementation.

Chapter 4: Literature Review of Information Systems Success

This chapter begins by providing broad definitions of Information System. It examines critically two widely-cited models of IS success (the 1992 Delone & Mclean model and the 2003-updated IS success model of DeLone and McLean) that help in understanding the performance of a system. This chapter also explores the use of Critical Success Factors (CSFs) as prerequisites for successful systems as well as exploring the concept of success factors more generally.

Chapter 5: Research Model

This chapter introduces the research model used as the basis for understanding the impacts of cultural dimensions on the successful implementation of ICT project in e-government. The proposed research model is comprised of three components: national culture, organisation culture, and workplace factors.

Chapter 6: Research Methodology

This chapter describes the methodology adopted in the execution of this research. This includes the research process, the research philosophy and the research strategy. This chapter also describes the research method used to collect the required data, which involves mixed methods, i.e. a quantitative study (questionnaire) followed by a qualitative study (interviews) as well as the case study and sampling techniques used in this research. Data preparation practices, and an introduction to the data analysis procedure are also described.

Chapter 7: Research Findings

Chapter seven presents the findings from the data analysis of both the quantitative and qualitative data, based on the questionnaires and the semi-structured interviews respectively. The includes descriptive statistics of the demographic profile of the sample.

Chapter 8: Discussion

The penultimate chapter discusses the findings and what these imply for the research questions set out in chapter one. This chapter discusses the interactions between the national and organisational cultures and workplace factors. This is followed by a discussion of the relationship between these three areas and employee perceptions of the level of satisfaction with using the four systems. The findings are examined in the light of existing theories.

Chapter 9: Conclusions

The final chapter concludes the research by reviewing the contribution of its findings, which include the novelty of the developed framework. The contribution of the research to theory and practice is outlined. The chapter also discusses the limitations of the research and includes some suggestions for future potential studies. Finally, the chapter presents the recommendations for practice that emerged from this research.

2. Literature Review: Culture

2.1 Introduction

In this chapter a number of definitions of culture are reviewed. The chapter explores the concept of culture and its levels such as national, occupational, organisational and group (*Hofstede et al.*, 2010). These various levels of culture are defined to suit the context and scope of this research. The chapter then proceeds to discuss the models of national and organisational cultures that identify the factors that may influence the take-up and successful implementation of ICT in the Omani public sector. This is followed by an identification of the different themes of IT culture.

2.2 The Concept of Culture

The word 'culture' stems from a Latin root that means " *the tilling of the soil, as in agriculture*" (The Hofstede Centre, 2014, p.1). There is a wide range of definitions, perceptions and dimensions of culture found in the literature (Baligh, 1994). Such diversity presents a challenge to the understanding of what culture is (Stroh *et al*., 2002). Indeed, many researchers have noted that culture is not an easy concept to define (Tayeb, 1994; Davison & Martinsons, 2003; Groeschl & Doherty, 2000; Lammers & Hickson, 1997; Baligh, 1994; Stroh *et al*., 2002; Low, 2006). Ajiferuke and Boddetvyn (1970) find that: "*Culture is one of those items that defy a single all-purpose definition and there are almost as many meanings of culture as people using the term*" (p.154). Hofstede (2015) concludes that many definitional disputes still continue about culture, standing in the way of its definitional progress.

Various disciplines, ranging from psychology to cross-cultural business management, define culture from their different perspectives. It is therefore perhaps not surprising that there is still no universally agreed definition of the concept of culture; it can mean different things to different researchers and, indeed, different things to the same researcher in different contexts. Sun (2004) examines the question of why the definition of 'culture' differs from one scholar to another. Over 300 definitions were offered in a literature review of culture conducted by Hillier (2003) and that number keeps growing (Taras *et al*., 2011). This includes 164 different definitions of culture identified by the anthropologists Kroeber and Kluckhohn in their seminal work Culture: A Critical Review of Concepts and Definitions (cited in Leidner & Kayworth, 2006).

Sackmann (1992) notes that several studies present all aspects of culture as tacit or implicit artefacts such as ideologies, coherent sets of beliefs, shared values, basic assumptions, important understandings and collective will. Some researchers propose that culture includes explicit observable cultural artefacts such as norms and practices (Hofstede, 1998; Leidner & Kayworth, 2006; Groeschl & Doherty, 2000), myths, rituals, ceremony, ideology, and language (Pettigrew, 1979; Karahanna *et al*., 2005) or symbols (Burchell *et al*., 1980). One of the earliest definitions was proposed by Tylor (1870), who defined culture as a complex whole constituting knowledge, beliefs, arts, morals, laws, customs, as well as patterns of habit acquired by an individual as a member of society (cited in Avruch, 1998). This definition set a precedent for the many definitions that followed, i.e. to position or define culture as being comprised of several factors or components; in this case, six specific components and one generalised one which could cover just about anything.

Regardless of the element of 'knowledge', the elements in Tylor's list are all plausible components of a popular, day-to-day conception of culture. Few researchers would dispute that custom is a dimension of culture. In many societies it is customary for young men (and often young women) to go through a transitional rite upon entry into adulthood. However, Tylor's list contains several gaps. One obvious omission is 'values', and there are other less obvious omissions such as ethics and symbols. This illustrates one problem in defining culture and the factors of which it is comprised; this becomes clearer below, where further definitions are discussed.

Fiske (2002, p.85) follows a similar perspective to Tylor's, defining culture as: "*a socially-transmitted or socially-constructed constellation consisting of such things as practices, competencies, ideas, schemas, symbols, values, norms, institutions, goals, constitutive rules, artefacts and modifications of the physical environment*". Fiske's definition focuses on the socially embedded norms of individuals; social elements that help to construct and strengthen the culture of a community.

Spencer-Oatey (2008, p.3) expresses a more expansive view of culture than Fiske:

> "*Culture is a fuzzy set of basic assumptions and values, orientations to life, beliefs, policies, procedures and behavioural conventions that are shared by a group of people, and that influence (but do not determine) each member's behaviour and his/her interpretations of the 'meaning' of other people's behaviour*".

Both Spencer-Oatey (2008) and Fiske (2002) include 'values' and 'beliefs' as being two of the basic concepts in their definitions of culture. Spencer-Oatey's definition is far-reaching and includes seven factors that facilitate the characteristics of culture. These factors form the basic assumptions, values, orientations to life, beliefs, policies, procedures and behaviour. They are shared by a group of people who are also influenced by the cultures of other groups to which they belong. In the same vein, Kvedaraviciene and Boguslauskas (2010) define culture as an integrated pattern which reflects the human knowledge, beliefs, behaviour, values and practices operating in a country, or in any other institution or group.

A further definition is given by Kroeber and Parsons (1958, p.583) who provide a cross-disciplinary definition of culture as being "*transmitted and created content and patterns of values, ideas, and other symbolically-meaningful systems as factors in the shaping of human behaviour and the artefacts produced through behaviour*". It is clear that in their definition of culture human behaviour consists of three patterns, namely patterns of values, ideas and symbols. Values and ideas are tacit or implicit artefacts. 'Symbols' is another factor included in this definition, which refers to explicit observable cultural artefacts. Kroeber and Parson claim that human behaviour reflects the creation and production of innovative tools that present the culture of a group of people and distinguish them from each other. In the Sumerian civilisation, for example, writing evolved from the use of patterned images such as carved nails and the oldest known cuneiform. This tool dated back to the year 3000 BC. Kroeber and Parsons' definition of culture has a number of gaps; it does not address the other factors that shape culture such as beliefs, attitudes, norms and other social and religious factors.

Hofstede (2010) and Straub (2002) contend that these values are acquired early in life, generally from the individual's family and neighbours and, later, at school. Schwartz (2012) maintains that 'values' is one important central factor of a personality, as distinct from attitudes, beliefs, norms and traits. Karahanna *et al.* (2005, p.5) state that values are often "*stable in nature but can change over time, reflecting changes in culture*".

Kluckhohn (1965) regards culture as being the result of the learning acquired through practices among members in a specific group. He suggests that shaping culture arises from learning that occurs through the communication and interaction of individuals in a particular group with each other. As a result of this learning and communication, the individual's knowledge of regulations, rules, beliefs, values and symbols stand out in their behaviour.

Through this knowledge, the acquisition of the characteristics of culture can occur. One of the drawbacks of Kluckhohn's definition is that it does not explicitly address the factors that comprise the culture and that guide the behaviour of individuals, such as the values, norms, symbols and beliefs. These factors are shared among individuals through communication at different levels of culture. Straub *et al*. (2002) state that a plethora of cultures and sub-cultures influences everyone; some are ethnic, some national and some organisational.

Foa and Chemers (1967) express similar views, describing culture as a function of complex rules and social customs directed by various community organisations. Their definition focuses on the rules and customs being basic components of culture in each society; customs such as greeting rituals, paying respect to others, and religious and social ceremonies. This definition makes at least two assumptions. The first is that it assumes that analysing the behaviour of an individual within a society does not provide a specific identification of that society's rules, but rather it shows the perception of that individual of the shared cultures to which he/she belongs. The second assumption is that the behaviour of an individual can be influenced by their shared culture, which is in turn influenced by different levels of cultures. Their definition clearly states that individuals learn by adapting themselves to their natural and social environment and by acquiring thought patterns. For example, at an organisational level culture can influence whether or not employees are willing and able to adopt new ways of working, such as using new technologies. There are gaps in the definition put forward by Foa and Chemers. An obvious omission is 'values'. Values, along with beliefs, attitudes and other factors not mentioned explicitly in this definition, are important factors in shaping culture.

Clark (1990) defines culture as a distinctive pattern of behaviour and personality traits. This definition resuscitates the personality approach to culture, resurrecting the popular concept of 'national character'. There is some ambiguity as to what national character refers to; sometimes it involves patterns of observable behaviours and at other times it is a collection of personality traits. Clark's definition does not discriminate between personality traits and values, although it seems to suggest that values are a subcategory of traits. He suggests that human behaviour and personality traits shape culture and distinguish groups from one another. Clark's definition is similar to that of Kroeber (1952) but does not explicitly explain the factors/dimensions that shape an individual's behaviour and personal characteristics such as values, beliefs, symbols, attitudes, customs and norms.

Another definition of culture is offered by Kerne (1998, p.8):

> *"The open set of everyday behaviours and ritualized practices that characterise the social actions of a group of people, as well as associated artefacts, values, and states of consciousness. An aggregate assemblage of expressions through all media—including verbal and visual languages, art, and production—and the aesthetic sensibilities that underlie these expressions".*

Kerne's definition embraces the broad nature of how individuals acquire behaviours and values through interaction within the social environment. Although his definition addresses some of the necessary factors of culture such as behaviours and practices, it ignores one important issue, namely the role of geographical factors in influencing culture. The geographical nature of the place to which individuals belong contributes to their identities and attributes. People respond and adjust to the conditions they face in order to develop patterns of behaviour and customs. For instance, to cope with life in desert areas such as that of the Governorate of AL-Wusta, the Omani people, who prefer living in the open air, live in tents and not apartments. Their tents are divided into two halves: one for men and the other for women. The women do most of the work, while the men socialise and make plans for the whole tribe. To endure the extreme heat of the desert they travel to the nearest areas to collect dates. Eating dates helps them to keep cool. In this way, it becomes the cultural pattern of common behaviour in the desert region.

A more widely-quoted definition of culture was put forward by Hofstede *et al*. (2010, p.6) which argues that culture is, *"The collective programming of the mind which distinguishes the members of one group from another"*. A key term in Hofstede's definition is the word 'programming'. Culture is not something that is easily acquired; it is the process of growing into a society. 'Culture' refers to a set of shared core values, norms, and modes of action such as sharing of knowledge, participation in rituals including activities and customs and understanding symbols such as myths, legends, dress, jargon and language. Each person has their own 'mental program'; the source of this 'mental program' is embedded within the social environment in which the person grew up. During childhood the rules of social interaction are quickly acquired, including who is who in terms of importance, who belongs in what category and the social meaning of ritual ceremonies. An example of such a ritual ceremony in Oman is death space, which is gendered. The ritual ceremony for the burial of a body dictates that only men attend the cemetery; women not allowed to attend. Another example is the culture's concern for gendered space, i.e. not to mix different genders unless

it is for the sake of work. In a similar way, most Omani homes are gendered to include formal rooms for men and their guests, while women socialise together in a separate room. These habits are derived from the Islamic tradition that it is preferable for women not to attend burial ceremonies lest their wailing is heard by men. As for the mixing of genders, this is prohibited unless it is for the sake of communication to accomplish assigned work. Hofstede (2015) explains the process of the 'mental program' which is used to describe the mental software: it starts with the family, continues with the neighbourhood and school, and ends in youth groups, the workplace and the community. To illustrate this, Hofstede (1984) comments on the culture in the United States as being weak with regard to the cultural factors/dimensions such as 'uncertainty avoidance' and 'susceptibility of risk', in addition to being more tolerant and less emotional. On the other hand, cultures such as that of Thailand which are strong in uncertainty avoidance tend to be more emotional, security-seeking and less tolerant.

In similar ways, Brake *et al*. (1995) suggest that culture is a set of values, ideas, norms, beliefs and attitudes, which are rooted in the members of the community (cited by Obeidat, 2012). Culture, in this way, guides the community in how the world works and how people should operate in that world. Their definition of culture gives members of the community a sense of common identity and a means of connecting with one another. Culture also distinguishes individuals from others according to their beliefs and behaviours. This means that both the individual's behaviours and actions shape his/her own culture in a society. Such behaviours are acquired by the individual through communication with others (Schein, 2004).

Some scholars explain culture in relation to language. For instance, Hofstede (2015) elaborates on language as being one of the determinants of culture and one of the ways in which culture is expressed. Hofstede explains language as, in the words of Ralph Waldo Emerson, 'the archives of history'. This points to the origins of the levels of language within their historical development: language families, national languages, regional dialects, class, gender and occupational idiolects. The multilevel nature of accents, dialects and languages parallels and follows that of culture.

Other writers explain culture from a business perspective and have identified different determinants of culture. Chang (2002) proposes that the determinants of culture are: social structure, religion, language, education, economic philosophy and political philosophy.

These determinants are important in understanding, in shaping ways of living and acting in the world. Chang's definition focuses on the social, economic and political factors of culture as being the basic factors defining it. These factors affect people's behaviour and their daily practices. One of the shortcomings of this definition is that it does not explicitly address the values of humanitarian principles, such as beliefs and behaviour which nurture the spirit of harmony of the individuals' spiritual and natural identity in their environments. McEwan (2001) defines 'values' as the principles or standards used by people individually or collectively to make decisions about what is valuable in their lives. Swaidan (2011) states that, in businesses, markets should pay attention to the cultural values of any small consumer groups (e.g. sub-cultures) when developing their internal policies and external marketing strategies. Swaidan claims that culture affects business product development, promotion, distribution and pricing. To understand the cultures that govern customers' buying behaviours and ethical norms, businesses have to be aware of the essential factors influencing customer behaviour (Singhapakdi & Vitell, 1994; Tavakoli *et al.*, 2003). Whether doing business abroad or locally, marketers must understand the cultures that govern customers' buying habits and ethical norms.

Table 2.1 shows a wide range of definitions of culture, each of which has a certain focus and group of components. Each definition provides a meaningful understanding of the terms of culture.

Table 2.1: Cultural Factors

Authors	Definition	Collective programming	Knowledge	Belief	Value	Ideas	Symbols	Behaviour	Personality traits	Basic assumptions	Norms	Artefacts	Art	Morals	Laws / rules	Custom / ritual / practices	Orientations to life	Policies	Procedures	Competencies	Schemas	Institutions	Aesthetic sensibilities	States of consciousness	Goals	Social structure	Physical environment	Religion	Language	Education	Political and Economic Philosophy
Tylor (1870)	"That complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society"		x	x									x	x	x	x															
Kroeber and Parson (1958)	"Transmitted and created content and patterns of value, ideas, and other symbolic-meaningful systems as factors in the shaping of human behaviour and the artefacts produced through behaviour".				x	x	x	x				x																			
Kluckhohn (1965)	Culture as being a result of the learning acquired through practices among members in a specific group.															x															
Foa and Chemers (1967)	Culture as a function of complex rules and social customs directed by various community organisations.														x	x															
Clark (1990)	culture as a distinctive pattern of behaviour and personality traits							x	x																						
Brake et al. (1995)	"Culture has been defined in a number of ways. But most simply, as the learned and shared behaviour of a community of interacting human host of values, ideas…"			x	x	x		x			x																				
Kerne (1998)	"The open set of everyday behaviours and ritualized practices that characterize the social actions of a group of people, as well…"	x																													
Chang (2002)	Determinants of culture are: social structure, religion, language, education, economic philosophy and political philosophy.																											x	x	x	x
Fiske (2002)	"A culture is a socially-transmitted or socially-constructed constellation consisting of such things as practices, competencies, ideas, schemas, symbols, values, norms, institutions, goals, constitutive rules, artefacts, and modifications of the physical environment"				x	x	x				x	x			x	x				x	x	x			x		x				
Spencer-Oatey (2008)	"Culture is a fuzzy set of basic assumption and values, orientations to life, beliefs, policies, procedures and behavioural conventions that are shared by a group of people, and that influence (but do not determine) each member's behaviour and his/her interpretations of the 'meaning' of other people's behaviour"			x	x			x		x							x	x	x												
Kvedaraviciene & Boguslauskas (2010)	"An integrated pattern of human knowledge, belief, behaviour, values and practices that characterize a country, region, religion or any other institution or group"		x	x	x			x								x															
Hofstede et al. (2010)	"The collective programming of the mind which distinguishes the members of one group from another".	x																													

Due to the intangible nature of culture and cultural differences, it is difficult to create an agreed, widely accepted definition of culture. Straub *et al.* (2002) argue that identifying cultural characteristics is difficult because of the lack of a robust measure that can identify the implicit levels of culture. Table 2.1 shows that a number of scholars such as Kroeber and Fiske focused their definitions on shared values as a core concept of culture. Values provide members of the same community with assumptions about how things are. Once a value is acquired at an early stage in life, it becomes integrated into a shared system of values where each value has a relative and distinctive order (Straub *et al.*, 2002). Groeschl and Doherty (2000) suggest that the reason for the various meanings in terms of culture could relate to the fact that researchers come from different fields. In addition, the researcher's background culture may influence their views on terms such as culture, values and norms and so on.

The fact that there are so many different factors involved in shaping the various definitions of culture is a major difficulty for scholars seeking to understand the notion of culture. One cause of this difficulty is that culture is not identified by a single system, but is instead identified by the combination of many aspects of human cognition and organisation (Leaf, 2005). This means that culture includes processes or systems relating to communication, learning, adaptation, representation and transformation (Fischer, 2008). Hofstede (2015) expands the definition to explain the mechanism of how culture functions as an evolved capacity for adaptation at group level, as shown in Figure 2.1. The capacity for adaptation can facilitate both rapid change and sustained stability. Every human group has this capacity to some degree, although the ability to adapt and change varies widely for both individuals and groups (or even entire civilisations). Incidentally, there are many other species in which social learning offers great benefits to survival (Whitehead & Rendell, 2014).
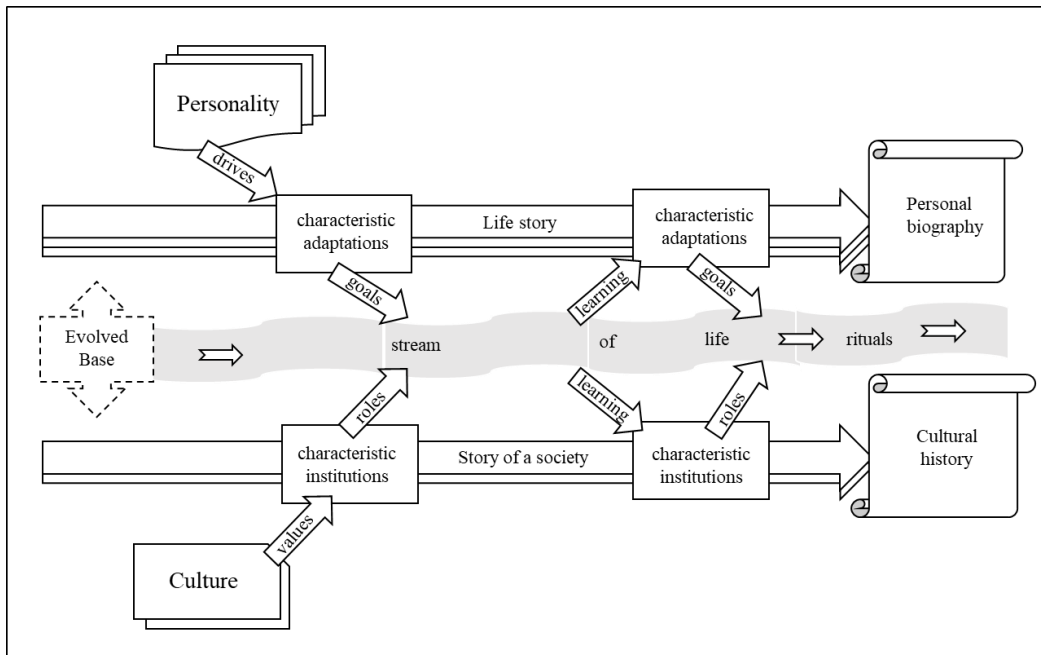
Figure 2.1: How the two structures of culture (surface and deep) are organised through the lives of individuals and institutions

Source: Adapted by Hofstede (2015)

Figure 2.1 implies that there are two structures of acculturation: surface and deep. The deep structure, acquired in infancy, cannot be (easily) changed since it resides in unconscious shared values which cannot be altered without the process of acculturation. The surface structure shows how people acculturate by learning and interacting in order to grow, develop, and play a role within an institution. They adapt and change the institutions within the cultures in which they lead their lives. Figure 2.1 is of course highly simplified, neglecting many levels of culture that play different roles in reality. This process of acculturation has the merit of connecting everyday processes with the lives of individuals and the cultures of different societies. Each day in our life is marked with the process of acculturation of events.

Bearing these definitions in mind, it is useful to have a brief overview of the various culture-levels in order to clarify the important role played by culture in shaping the individual's own culture.

2.3   Culture-levels

According to Straub *et al*. (2002), an individual's culture is created through an amalgamation of cultures across boundaries, e.g. national, organisational and professional. Leidner and Kayworth (2006) find that employees need to understand the impact of culture on various levels including national, organisational and group levels in order to achieve success in

implementing and using information technology. Culture, at national level, refers to the culture shared among people in a community or in a particular country (Hofstede, 1984). On the other hand, organisational culture is the specific culture shared among a group of people working in an organisation (Stahl & Elbeltagi, 2004). Different layers of culture can affect the behaviour of individuals to varying degrees, depending on the situation and their personal values (Straub *et al*., 2002). Hofstede (1991) suggests several levels of culture: national, occupational, organisational and group. Hofstede *et al*. (2010) classifies these levels of culture as presented in Table 2.2 below:

Table 2.2: Levels of Culture

Level	Description
National level	According to the individual's country (or countries, for people who migrate during their lifetime).
Regional/Ethnic/Linguistic/Affiliation level	As most nations are composed of culturally different regions, ethnicities, religious or language groups.
Gender level	Associated with gender differences (female versus. male)
Generation level	Separating grandparents, from parents, from children.
Social class level	Associated with educational opportunities and the individual's occupation or profession.
Employed, Organisational, Departmental/Corporate level	Associated with the particular culture of an organisation. Applicable to those who are employed.

According to Hofstede (1991), culture shapes individual values and affects the behaviour of people across nations or continents. In an earlier study, (Hofstede, 1984, p.18) defines values as *"a broad tendency to prefer certain states of affairs over others"*. People behave differently depending on the constructs of their culture in relation to values, beliefs, assumptions, expectations, perceptions and behaviours.

Some challenges arise in defining the culture of a given country. One challenge comes from the fact that there are usually different sub-cultures to be found within any national culture. In Oman, for example, the northern areas of the country are influenced by cultural traits found in Iran and the United Arab Emirates (UAE), i.e. it reflects elements of Omani, Iranian and UAE cultures. However, the southern part of Oman is similar in many ways to the culture of Yemen. Such differences are expressed in different ways, such as in traditional clothing, folk dances and music.

Another challenge related to the differences between cultures is that of gender. Women and men have different societal obligations which sometimes do not reflect typical cultural concepts. For example, in Oman women tend to be involved in undertaking more family-

and house-related tasks, whereas men are more involved in responsibilities within society. Such (internal) gender-related differences may not necessarily be accounted for when comparing different national cultures. In addition, the female dress code in the northern areas of Oman differs from that of the eastern area. This is illustrative of how the different cultural aspects affect the dress code in each area in Oman. For example, the dress worn in the southern area of Oman is one piece with a long train, while in the northern area the people wear three pieces of cloth (i.e., the dress of Duffar).

Generally speaking, there are two levels of analysis commonly pursued in research on culture: national and organisational (Fellows & Liu, 2013). This chapter reviews the literature of these two levels. The following section examines the most relevant definitions of national culture.

2.4   National Culture

Within the world of IS studies, many researchers have examined and sought to define national culture (Khalil, 2011; Aladwani, 2013; Gnanlet & Yayla-Kullu, 2013; Nassira, 2011; Bagchi *et al.*, 2014). The most common definition of national culture used is that of Hofstede (2010), who defines it as the collective mental programming of the people of any specific nationality. This mental programming frames the values, behaviour, attitudes, competences and perceptions of priority relating to a particular nationality (Obeidat *et al.*, 2012).

According to Schein (2004), these ingredients of culture are acquired from birth and are influenced by family, school, religion place (e.g. mosque, church and temple) and workplaces. These distinguish groups of co-existing people from one another. Trompenaars (1996) suggests that national culture involves shared assumptions and beliefs, values, norms, action and language patterns that distinguish one group of people from another. Similarly, Zhao (2013, p.295) defines national culture as "*a set of collective beliefs and values that distinguish the people of one nation from those of another*". The thinking underlying each of these definitions is predicated on each national culture having its own distinctive characteristics. A number of models of national culture have been developed within the literature. These are discussed in detail in the following section.

2.4.1 National Culture Models

'National culture' implies that cultural values are shared between people belonging to the same (geographically-defined) nation[2]. Many scholars have measured and compared national cultures. The most widely used models are: Hofstede *et al.* (1980, 1991); Trompenaars (1996b); House *et al.* (2002); Schwartz (1999); and Hofstede *et al.* (2010). In all these models national culture is defined using a set of different indicators.

Mooij and Hofstede (2010) state that cultural models generally use cultural variables to determine the similarities and differences between two or more cultures and place relevant cultural data into their respective categories. Many models study 'culture', but each of these models employs its own variables and scope to determine its features. Some of the most important models are discussed in the following section.

Schwartz's National Cultural Model

Schwartz's cultural framework analysis compares and studies the cultural variables of nations or sub-groups. These work on two levels of values: individual and cultural. Schwartz (1994) proposed seven cultural domains based on universal human value types as follows:

1. **Conservatism:** There is a cultural emphasis on close relations among group members and the avoidance of actions that disrupt traditional order.

2. **Intellectual Autonomy:** Emphasis is placed on the acceptance of individuals as autonomous entities that are eligible to follow their own desires and intellectual interests.

3. **Affective Autonomy:** A cultural emphasis is placed on individuals as autonomous entities who follow their own stimulation and hedonistic interests.

4. **Hierarchy:** The emphasis is on resource allocation and the legitimacy of hierarchical roles.

5. **Egalitarianism:** There is a cultural emphasis on the transcendence of selfish interests in order to promote the welfare of others, such as equality, freedom and so on.

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[2] It should be noted that, historically speaking, the nation state is a relatively recent development and that many 'nations' are geographically artificial collections of different ethnic, linguistic and tribal groups. Only a small number of nations have any claim to national cultural uniformity.

6. **Mastery:** A cultural emphasis is placed on getting ahead of other people when focusing on active mastery of the social environment.

7. **Harmony:** A cultural emphasis is on achieving harmony with the environment.

The Schwartz (1999) framework originally included teachers and students in 41 cultural groups. His data was collected between 1988 and 1992 and from it he concludes that the seven value types are useful in predicting and interpreting the differences between particular nations in areas such as decision-making, innovation and management behaviour in the work environment.

Hall's National Cultural Model

For Hall (1976) culture is not an area for study; it is a *"critical site of social action and intervention, where power relations are both established and potentially unsettled"* (Procter, 2004, p.1). Hall developed an analytical model based on core units of culture: time, space and context. He also drew a distinction between mono-chronic and poly-chronic time orientation. He maintained, for example, that people with mono-chronic time orientation deal with time in terms of sequence, while those who are poly-chronically-oriented view time in a simultaneous or parallel way. Space is another area that shows important cultural differences between societies. To illustrate this, Hofstede and Regout (1996) point out that people in Latin countries such as Spain or Italy and Arabs tend to prefer a closer relationship and stay at close to half the body distance of, say, northern Europeans, when they talk to one another. The last variable is context which refers to the amount of information that a person can comfortably manage to deduce. It can vary from a high context culture, where background information is made implicit, to the low context culture, in which background information is largely maintained explicitly in an interaction. In other words, information flow in high-context cultures value relationships and information more than schedules and tend to be fast and free. However, information flow in the low-context culture, where procedures are usually followed, tend to be slow.

Trompenaars' National Cultural Model

Trompenaars and Hampden-Turner (1993, p.6) argue that *"Culture comes in layers, like an onion. To understand it, you have to unpeel it layer by layer"*. Trompenaars (1996b) categorised his cultural model into three layers. The first layer is the Outer Layer which consists of explicit, external and observable products and behaviours and covers all aspects of life. The second layer is the Middle Layer which reflects deeper layers of culture. It is concerned with the norms and values of individual groups. Trompenaars and Hampden-

Turner (1993) regard norms as the mutual sense within a group of what is 'right' and 'wrong'. Thus, it gives us a feeling of 'this is how I should normally behave'. Values determine the definition of 'good and bad' and are closely related to shared group ideals. They provide the feeling of 'this is how I aspire or desire to behave'. The third layer is the Core, which refers to the assumption about existence that can be understood as "*groups of people organise themselves in such a way that they increase the effectiveness of their problem-solving processes*" (Trompenaars & Hampden-Turner, 1993, p.23). Hofstede (1996) points out that Trompenaars's data was collected from a multinational survey containing 16 questions intended for 15,000 managers from 30 companies across 50 countries.

Trompenaars (1996b) identifies seven dimensions in his model which are useful in the understanding of the different interactions between people from different national cultures. Table 2.3 summarises these seven dimensions.

Table 2.3: National Cultural Model

Source: House *et al.* (2001)

Dimensions	Description
Universalism vs Particularism	Universalism is the belief that ideas and practices are accepted anywhere in the world, while particularism accepts that circumstances can affect how some things are applied differently.
Neutral vs Emotional	The former refers to a culture in which people do not disclose their feelings towards others. An emotional culture, on the other hand, refers to one in which emotions are disclosed naturally and openly.
Achievement vs Ascription	In achievement people are awarded status based on how well they have accomplished their duties, while in ascription, they are honoured in accordance with who or what they are as an individual.
Sequential vs Synchronic	The former refers to the measurement of time in different ways to understand past, present and future. This measurement can be realised within sequential or synchronous time.
Internal vs External	Some believe that they monitor nature to achieve goals, on the one hand, whereas others feel that nature controls them.
Specific vs Diffuse	'Specific' refers to the focus on individuals being informal in approaching one another in the public space. In a diffuse culture, individuals are formal in terms of being accessible for both private and public spaces.
Individualism vs Collectivism	The former believes in personal freedom and individual decisions and achievements. 'Collectivism' views the group as more important than the individual.

House's National Culture Model

More recently, House *et al*. (2002) developed another model of national culture. This emphasised both management and leadership, providing the closest replication of Hofstede's study as most of the constructs used were taken from Hofstede (Tang & Koveos, 2008). Apart from this similarity, differences exist in terms of the focus and type of respondents in the study. Hofstede's study examines International Business Machines Corporation (IBM) employee values at work, whereas House *et al*. focuses on the concept of leadership within a society. As part of their research, they conducted a survey of management teams taken from 43 countries. They identify nine cultural dimensions relevant to 'leadership': uncertainty avoidance, power distance, collectivism - consisting of societal collectivism and in-group collectivism, gender egalitarianism, assertiveness, future orientation, performance orientation and human orientation. All these dimensions were derived from the work of previous scholars.

Inglehart's National-Cultural Model

Inglehart (2016) defines culture as a survival strategy for society, *"comprising a set of norms and skills that are conducive to survival in a given environment"* (p.14). This definition relies on modernization. According to Welzel, Inglehart and Klingemann (2003), modernization is related to a human development process that leads to cultural and political changes.

Inglehart claims that socioeconomic development can be linked to changes in society. These changes in society are associated with a shift from traditional cultural values to secular-rational cultural values and a shift from survival/existential cultural values to self-expression cultural values. Inglehart (1997) emphasises that "*changes in the socioeconomic environment help reshape individual level beliefs, attitudes and values through their impact on the life experience of individuals*" (p.455). Inglehart's national cultural model is based on two dimensions:

Traditional values versus Secular-rational values: This dimension reflects two different societies. According to Inglehart and Baker (2000), societies with traditional values consider religion as being very important. These societies have high levels of national pride as they respect authority. Secular-rational societies do not have emphasis on religion and they also have less for authority. Of course, there are some societies which may be somewhere in the middle between these two types of societies.

Survival values versus Self-expression values: according to Inglehart (2016), this dimension reflects a transition from a manufacturing economy to a knowledge economy. "*This is linked with pervasive changes that can be summed up as a shift from survival values towards self-expression values*" (Inglehart, 2016, p.33). This dimension is reflected by the theory of Post-modernization that moves from maximizing economic growth, to maximizing survival and well-being through life-style changes (p.456). With the transition from modernization to post-modernization, the trajectory of change has shifted from maximizing economic growth to maximizing the quality of life.

It is worth mentioning here that Inglehart's National-Cultural Model has, at large, been used in studies of politics and economy more so than in research related to ICT implementation. In fact, Inglehart focused on the influence of economic development and welfare institutions in areas such as the roles of religion, the spread of democracy and gender roles.

Hofstede's National Cultural Model

In the late 1960s and early 1970s Hofstede conducted a survey of the IBM company's employees across the world. The original aim of the work was not intended to study cross-cultural differences. Whilst analysing the results, Hofstede identified systematic variations based on how certain groups of questions were answered in different parts of the world. The subsequent follow-up work aimed at identifying those questions which showed variation between countries. In one study, Hofstede (1980) analysed cultural factors/dimensions in a survey among IBM employees in 50 countries. Shore and Venkatachalam (1995) found that where the empirical study of the dimensions of national culture is confined to a single organisation, possible influences from different organisational cultures are reduced as much as possible. As regards to the result of this study, Hofstede (1980) identified four dimensions of cultural variation: power distance, individualism-collectivism, masculinity-femininity, and uncertainty avoidance. In 1991 he added a fifth dimension: long term versus short term, which was based on results from the "Chinese Value Survey". In 2010 Hofstede *et al.* added a sixth dimension: indulgence versus restraint. This newest dimension assesses the level of engagement in activities driven by needs and desires. Hofstede recognized this sixth dimension which is based on Minkov's (2007) analysis of the World Values Survey data. These national cultural dimensions are summarised as follows:

Power Distance – This refers to the extent to which individuals accept differences in power between different people. It reflects attitudes to authority and power.

Individualism Versus Collectivism – This relates to how far individuals are integrated into their groups. In other words, individualism is a situation in which individuals are expected to look after themselves and their immediate family only. Collectivism, meanwhile, is the situation wherein individuals who belong to the same group take care of each other due to loyalty. These attitudes can be seen in the light of group membership.

Masculinity Versus Femininity – This refers to the extent to which traditional gender roles manifest themselves differently. In general, masculinity refers to a situation wherein success, money and other things are the dominant values in society. On the other hand, femininity refers to the scenario in which preference is given to relationships, caring for the weak and quality of life.

Uncertainty Avoidance – This is related to the degree to which ambiguities and uncertainties are accepted and tolerated.

Long Versus Short-Term Orientation – This dimension is about the importance attached by society to the future versus the past and present. Societies with a long-term orientation are more positive about adopting and using ICTs.

Indulgence Versus Restraint – The former relates to a society that allows relatively free indulgence of basic and natural human drives related to enjoying life and having fun. The latter refers to a society that regulates the gratification of need by means of strict social norms. Societies with a high level of indulgence accept and allow more pleasure-seeking behaviours. Members of the community can freely fulfil their basic needs and desires without flouting social norms. Cultures that embrace a high level of restraint assume that members place their desires in check in accordance with strict social norms.

When comparing cultures, Hofstede (1984) found that the United States is weak regarding uncertainty avoidance, i.e. it is more tolerant of and less emotional about risk. In contrast, the culture in Thailand is strong when it comes to uncertainty avoidance; it tends to be emotional about and intolerant to risk. Bagchi *et al*. (2014) find that US culture places a high value on individualism, a somewhat below average value on power distance, a value about average on uncertainty avoidance and a somewhat above average value on masculinity.

Baskerville (2003) claims that this model has been criticised due to some methodological weaknesses caused by using only one survey instrument for all participants, despite their multicultural background.

Among Hofstede's national culture dimensions, high power distance, collectivism, masculinity, and high uncertainty avoidance represent traditional values and collectively they reflect Inglehart's survival and traditional value types. In contrast, low power distance would be associated with Inglehart's secular/rational and self-expression values (Yeganeh, 2013).

Table 2.4: National Cultural Models

Source: Adapted from Ali *et al.* (2009)

	Focus	National Cultural Dimensions
Hofstede (1980)	Work values at work	Power Distance, Uncertainty Avoidance, Collectivism Versus Individualism, Masculinity Versus Femininity, Long/Short-Term Orientation
Hall & Hall (1990)	Communication	High Versus Low-Context Communication, Mono-chronic Versus Poly-Chronic Time, Space, Speed.
Trompenaars & Hampden-Turner (1996)	Understanding cultural diversity in business	Universalism Versus Particularism, Individualism Versus Collectivism, Specific Versus Diffuse, Neutrality Versus Emotional, Achieved Versus Ascribed, Internal Direction Versus Outer Direction, Sequential Versus Synchronic.
Schwartz (1999)	The important values in the individual's life	Mastery Environment, Harmony Environment, Conservatism, Intellectual Autonomy, Affective autonomy, Hierarchy and Egalitarianism.
House *et al.* (2001) Globe Project	Type of leadership	Power Distance, Uncertainty Avoidance, Humane Orientation Collectivism I, Collectivism II, Assertiveness, Gender Egalitarianism, Future Orientation, Performance Orientation.
Inglehart's (1997)	Modernization and Post-modernization	Traditional values versus Secular-rational values. Survival values versus Self-expression value.

2.4.2 Hofstede's Scores for Arab countries

Hofstede (1991) categorises all Arab countries as having the same cultural characteristics. His findings are based on data from seven countries: Egypt, Lebanon, Libya, Iraq, Saudi Arabia, Kuwait, and the United Arab Emirates. He designates these characteristics as "Arab culture" and categorises Arab countries as having high power distance, high collectivism, relatively strong uncertainty avoidance and moderate masculinity/femininity. At the time of his study, Hofstede's model was limited to the four dimensions presented in Table 2.5, below. The two other dimensions in his current model were added at later stages, these being long/short term orientation and indulgence vs restraint. He converts each cultural dimension

or index (PDI, IDV, MAS and UAI) into what he calls an "index score" (Hofstede, 2010). These scores are obtained from the mean scores of the content question responses for each group. The resulting scores for 'Arab culture', i.e. the seven Arab countries, are shown in Table 2.5.

Table 2.5: Arab Culture Score

Source: Adapted from Hofstede (1991)

National Cultural Dimensions	scores
Power Distance	80
Uncertainty Avoidance	68
Individualism Versus Collectivism	38
Masculinity Versus Femininity	53

Broadly speaking, the above scores suggest that Arabs tend to be very aware of their place within power structures, are risk-averse and communal rather than individualistic. They tend to be performance and achievement orientated rather than consensus orientated. One of the major questions about Hofstede's work in researching Arab culture is whether it is better to deal with all Arab countries collectively or if they should be studied separately. Lamb (cited in Obeidat *et al*., 2012) states that it is impossible to generalise most cultural values across all Arab countries. This contrasts with Hofstede's (2015) definition of culture that refers to a system of shared knowledge which regulates the social life of a group of people. In the light of this definition, Arab countries cannot plausibly be considered as being a single social group having a single culture. With regard to the power distance dimension index, Hofstede (1991) reports that the score for all 22 Arab countries was 80. Yet, he examined just seven countries. The assumption that the sample countries are representative of the full spectrum of Arab national cultures is open to question. Similarly, Schwartz (1994) found that the IBM employees surveyed by Hofstede were unrepresentative of the general population of their respective countries in terms of education, scientific and technological background or having been exposed to modernising influences. Appendix (C) summarises those who contribute to and comment upon Hofstede's work on national cultural dimensions.

Critiques of Hofstede's work

Leidner and Kayworth (2006), in their review of the literature on national culture, find that over 60% of these studies used one or more of Hofstede's cultural dimensions. Although Hofstede's work has been dominant in several disciplines, it has also been widely criticised.

Some scholars challenge Hofstede's ideas on the main question of whether or not culture is a concept that can be measured empirically. Researchers within the positivist tradition criticise the specifics of Hofstede's data gathering methodology and the statistical properties of his measurement scales. For example, Schwartz (1999) contends that Hofstede's survey is not a suitable instrument to determine cultural differences, especially when the values in question are subjective and culturally sensitive. In the same way, Baskerville (2003) states that Hofstede's national culture framework has been criticised as having methodological weaknesses because it uses only one survey instrument for all participants, despite their diverse cultural backgrounds. McCoy (2003) questions the validity of such a model in the evaluation of current technologies and criticises the length of time since Hofstede's work took place. Eckhardt and Houston (2002) refer to problems within the literature, notably the inappropriate use of Hofstede's scales to determine cultural variables at individual rather than group level.

Despite the criticism of Hofstede's model, it remains one of the most widely cited pieces of research among social science scholars (Rose, G., & Straub 1998; Søndergaard 1994; Nakata 2009). It was cited in more than 9,000 articles published in peer-reviewed journals between 1981 and 2011. Furthermore, Hofstede's research framework is based on methodical data collection and a sound theory, and his research was backed by many empirical studies (Søndergaard, 1994). In his book, *Culture's Consequences: Comparing Values, Behaviours, Institutions and Organizations Across Nations*, Hofstede (2001) contends that the variables are reliable and valid and that most of the research has authenticated his framework.

Ford *et al*. (2003) contend that the theoretical framework is relatively underdeveloped. They point out that researchers should incorporate Hofstede's dimensions within their research design after reconsidering some recommendations for developing a theoretical basis to be integrated between information systems and culture. One such recommendation is to theorise a regulating role for the dimensions, particularly in relation to the existing theories used within IS such as the technology acceptance model (Davis, 1989). Hofstede's theory is broadly used in research to display the cultural differences between organisations (Sanakulov & Karjaluoto, 2017). Shanks and Parr (2000) consider it to be a vital starting point in any analysis of cultural influence on information systems. Over time, many studies have examined the validity of Hofstede dimensions (Zhao *et al*., 2014); for an overview of earlier replications, see Søndergaard (1994) who points out that these dimensions can be reliably used to classify countries according to their national cultures, and determine the cultural distance between them.

The next section provides a number of definitions of organisational culture and elaborates on its significance in the development of organisations.

2.5   Organisational Culture

The previous section discussed several dimensions where national cultures differ; all of these have implications for organisation and management procedures. In the organisational behaviour literature, a number of organisational culture definitions have been proposed. Kilmann, Saxton and Serpa (1985, p.5) define organisational culture as "*the shared philosophies, ideologies, values, assumptions, beliefs, expectations, attitudes and norms that knit a community together*". They claim that the culture of an organisation is shaped by the behaviour of its employees and their adoption of values, attitudes, and beliefs. Their definition does not mention the structures, processes, and strategies of organisations that are considered to be the basic components of organisational culture. Strategy is one of the themes of organisational culture that is addressed by Maull, Brown and Cliffe (2001), who identify four main themes relating to organisational culture: learned entity, belief system, mental programming, and strategy. Bate (1994, p.19) offers a similar view, stating that "*culture is a strategic phenomenon: strategy is a culture phenomenon*". Therefore, he suggests, the development of strategy is just a cultural development one, indicating that all cultural changes must be viewed as strategic change. "*Cultural change is already occurring within formal and informal strategic processes*" (p.23).

Schein (2010) defines organisational culture as the shared understanding of how an organisation works and discusses its impact on how change happens within the organisation. Unlike the definitions laid out above, Schein focuses on staff knowledge of work, job functions, legal, political, regulatory environments, terms of reference and business structures as constituting organisational culture. In his vision of the organisation, business strategy is divided into administrative strategy and professional strategy. However, this definition does not address the feelings, attitudes, values, principles, and cultural background of workers. These elements usually form part of organisational culture. In addition, they play an important role in understanding staff performance.

A more useful definition is Uttal's (1983) description of organisational culture as being a "*system of shared values (what is important) and beliefs (how things work) that interact with a company's people, organisational structures and control systems to produce behavioural norms*" (cited in Santos-reyes & Beard, 2001, p.372). Uttal's definition encompasses the

aspects of law, regulation, structure and those functions of the organisation that influence the individual's behaviour in the performance of work tasks. These aspects, and the humanitarian values that arise within the work environment, make up the specific culture of the organisation. Although this definition contains the basic principles of organisational culture formation, which is indeed essential, the definition is simple and does not incorporate the interaction between these aspects. Hall (1976) states that beliefs and values dictate how people think, behave, solve problems, make decisions and plan for their working and personal lives. Another aspect that is absent in this definition is the culture of top management. The director or leader's culture represents an important role in instilling beliefs and work methods. Schein (2004) emphasises the main roles carried out by leaders in terms of both the creation and management of culture. He states that the main skills necessary in a leader are the ability to understand and work with culture, and the ability to change a culture when it is found to be dysfunctional.

Needle's (2004) definition of organisational culture also encompasses several factors. It represents the collective values, beliefs, and principles of organisational members and is a product of factors such as history, product, market, technology and strategy, type of employees, management style, and national culture. This definition focuses on the practical perspective as well as the physical one. It also describes how the behaviour of organisational members is strongly affected by the factors responsible for influencing organisational culture. Overall, Needle's viewpoint is similar to that of other scholars such as Kilmann *et al*. (1985) and Denison *et al*. (1995) in that their definitions focus on humanitarian aspects of culture such as values, beliefs and norms that are significant components of organisational culture. This means, by implication, that all these definitions are similar. In addition, they focus on the role of organisational strategy in forming organisational culture. According to Denison *et al*. (1995), organisational culture is considered to be the key ingredient of organisational effectiveness and can be regarded as a source of sustainable competitive advantage. Needle's (2004) definition advances our understanding of organisational culture and is a step further from the more limited views expressed by other researchers. Needle's definition forms the basis of how organisational culture is defined in this study.

Considering the variety of definitions, all scholars agree that members of a specific organisation carry a set of beliefs and values which form the core content of culture (Denison *et al*., 2014). In the opinion of Taras *et al*. (2011), culture is the strongest element that can affect workplace attitudes and behaviours in every organisation. Culture can determine

employee outcomes just as strongly as other elements such as demographics, personal habits and cognitive abilities. Elements that have a direct influence on the workplace environment such as organisational commitment, job satisfaction, interpersonal relationships, communication, conflict resolution style and ethics are strongly affected by cultural values. The solution through which to achieve organisational success is to comprehend the nature of management practices, along with its methods of influencing workplace outcomes. However, culture is not the sole aspect that has an influence on the workplace. In order to achieve the perfect cultural fit, communication must be considered a leadership style.

Jackson (2011) finds that organisational culture continues to be cited as an important domain regarding the success or failure of organisations in adopting information systems (IS). This is evident from the growing trend in the number of studies that have addressed cultural issues in IS literature over the last few decades. According to Hartnell *et al*. (2011), more than 4,000 articles have examined the subject of organisational culture since 1980. Several aspects drawn from the aforementioned definitions are combined to present a single and comprehensive definition of organisation culture. Organisational culture is in turn a set of values, work habits, traditions, and patterns of behaviour shared by managers and staff, with a set of strategies that govern the organisational structure (hierarchy, regulations and roles). All these are affected by the national culture (a significant part of which is drawn from religious beliefs), social factors, and by the penetration of technology throughout the work environment. This definition refers to two sets of aspects: first, the humanitarian aspect which concerns behaviours and attitudes between management and employees. These have a fundamental role in creating a good relationship between workers and management, enabling employees to participate in decision-making. The second is concerned with the practical aspects, which are important components of organisational culture, such as strategy, structure, and tools. These form the basis for how an organisation operates and achieves its goals.

Pettigrew (1979) uses the term 'organisational culture' to describe patterns of belief, symbols, rituals and myths that evolve over time and function as the glue that holds the organisation together. According to Wallach (1983), organisational culture is the shared understanding of an organisation's employees about 'how we do things around here'. According to Hofstede *et al*. (2010), the difference between national and organisational culture is based on the different mix of values and practices. At national level, cultural difference relates more to values and less to practices. However, at organisational level, cultural differences are visible mainly in practices. Hofstede (2003) also argues that

organisations do not usually attain the depth and richness of a socially acceptable understanding of paradigmatic cultures. The reason is that values are acquired mainly in the early part of an individual's life, whereas practices are learnt through socialisation with other people at workplaces or schools.

Schein (2004) states that academics and practitioners who have studied organisations over the preceding four decades collectively suggest that the concept of culture is related to the climate and practices of organisations in the handling of people. Hofstede *et al*. (1990) carried out a cultural study on 20 organisational units[3] representing 10 different organisations (five in Denmark and five in the Netherlands). The purpose was to identify the differences between organisational and national culture. The first finding was that the scores of both countries on the national culture dimensions were similar, being two of the north European. Secondly, they found that organisational culture differs in terms of shared practices much more than in shared values. The differences in practices mainly resulted from organisational membership, whereas diversity in values was mainly attributed to nationality. The third finding was that the dimensions of national culture are not suitable for use in pointing out differences between organisations within the same country.

2.5.1   Organisation Culture Models

Dauber *et al.* (2012) find that there are several models within the literature that seek to explain the relationship between organisational culture and related organisational structure. A search of recent literature on organisational culture offers six organisational culture models for consideration.

Several organisational culture models have been proposed in various studies. In this literature review the five most prominent are discussed. In addition, a sixth more recently proposed model is reviewed as it builds on two of the existing models. The six models are as follows:

1. Schein's organisational culture model.

2. The cultural web of an organisation.

3. Hatch's model of organisational culture.

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[3] "Units of study were both entire organizations and parts of organisations, where their management was assumed to be reasonably homogeneous culturally (*the research outcome later enabled this assumption to be tested*" (Hofstede *et al*., 2010, p.349).

4. A Configuration model of organisational culture.

5. Manifestations of organisational culture.

6. Six Dimensions of organisational culture.

Each of these models is discussed in detail in the following subsections.

Organisational culture model (Schein)

A number of models have been developed linking IT adoption with organisational culture in the public sector, and which identify the factors/dimensions that may influence the adoption process. In the field of organisational culture, Dauber *et al*. (2012) consider Schein's organisational cultural model as one of the most popular models. Figure 2.3 displays the three layers of Schein's model of organisational culture that describe the degree to which any cultural phenomenon is visible to the viewer. Schein (2004) identifies these layers as artefacts, espoused values, and basic assumptions, depending on their particular degree of visibility and consciousness.
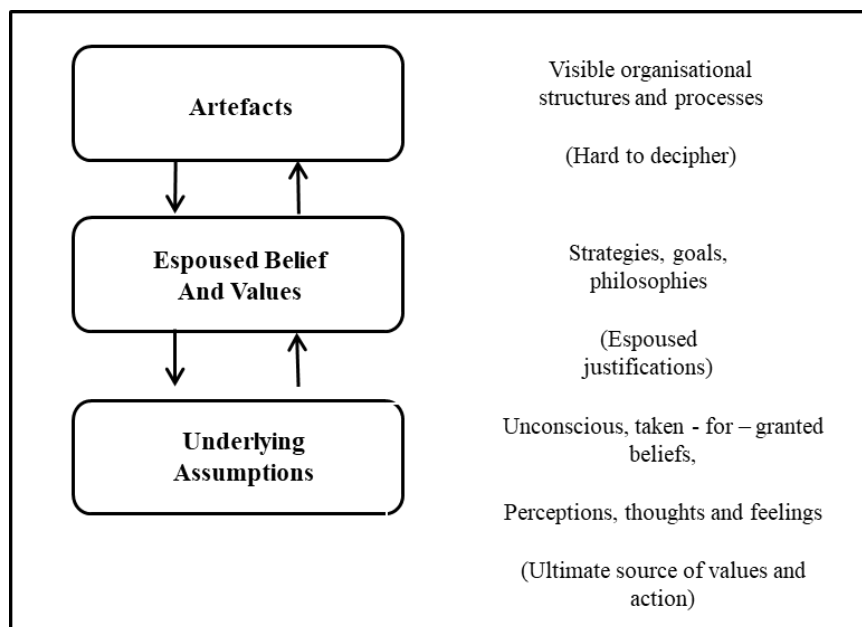
Figure 2.2: The Organisational Culture Model

Source: Schein (2004, p.26)

The first layer, artefacts, describes the cultural phenomena on the surface layer. It identifies the visible structures and processes within the organisation. This layer consists of the organisation's technologies, symbols, language, and architecture. Although difficult to decipher, they are directly observable. The second layer, which is espoused values, includes

shared values and norms. This shows the organisation's philosophies which guide strategies and goals to show what is right and wrong with respect to the organisation's ethical guidelines. From this perspective, the individual's behaviour within the organisation is affected by the values that are considered to be the guiding framework. The third layer, basic assumptions, contains subconscious and taken-for-granted norms and values. This layer is the fundamental one upon which all values and procedures are based. Use of this model supports the higher management of organisations in the consideration of cultural components. It helps managers to examine the relationship between routine business processes and presumptions within the organisational society and facilitates the task of preparing strategies for work development within the organisation.

The Cultural Web of an Organisational Model

Johnson (1992) describes organisational culture as a 'culture web' of interlinking concepts and structures surrounding the basic organisational paradigms. Six dimensions of culture are classified in his model of organisational culture: control systems, power structures, organisational structures, stories and myths, rituals and routines and symbols (see Figure 2.4). Johnson states that organisational managers use such a web model as a reference framework to view and understand their work. In addition, the model classifies behaviours that guide employees as to what is appropriate or inappropriate behaviour in the organisation.
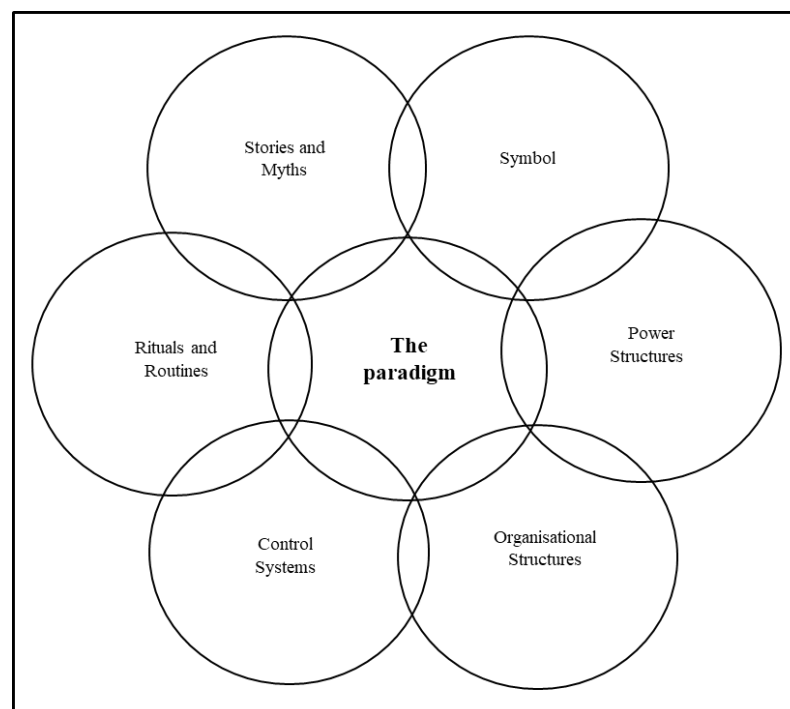
Figure 2.3: The 'cultural web' of an organisation

Source: Johnson (1992, p.31)

The first dimension is concerned with *control systems* and identifies budgets, planning, procedure reporting, objectives, targets, rewards and incentives. These elements are developed to measure the organisation's behaviours and functions of monitoring workflow for rewards due for success, or punishment for failures. The *power structure* dimension describes many facets, such as how things are done, how they should be done and the work environment etc. The *organisational structure* dimension classifies hierarchical and centralised accountability. This dimension is dependent on the power structure dimension, which determines how power is distributed within the organisation. The *stories and myths* dimension tells people what has happened in the past with regard to both the successes and failures of the organisation and individuals in the organisation and in particular about remarkable achievements. Stories, legends and myths enhance organisational history by underlining what is seen as keys to success. These stories reinforce the organisation's history and offer insights to staff, with the aim of stimulating a positive attitude within the organisation. The *rituals and routines* dimension concerns the organisation's daily work and methods that identify the behaviour of employees towards sharing information, and how they communicate with one another. It includes evaluation, promotion and training programmes. Finally, the *symbols* dimension demonstrates the importance of organisational size through the offices and drafting of titles. In addition, as in some operational cultures, it includes the make and model of the company car. It encompasses symbols of power, working styles and how prestigious an organisation is perceived to be.

An organisation's vision of the world is filtered by cultural web models, which reflect their core values and beliefs. The cultural web is a useful tool to make links with the organisation's political, symbolic, and structural aspects and it can guide strategy development. Generally speaking, the cultural web is beneficial to help identify a culture within an organisation. Johnson's (1992) model is useful in determining the high level of performance in organisational departments. However, in this model the organisation's connection with the external world is not clear.

Hatch's Model of Organisational Culture

Hatch (1993) considerably extends Schein's (1985) model, adding a fourth domain called 'symbols'. The model is based on the interaction of a number of elements: artefacts, values, assumptions, and symbols, in a cyclical manner rather than through a layered one as in Schein's model. Hatch (1993) assumes that there are four possible ways in which observable behaviour emerges through the underlying assumptions:

1- Realisations (the relationship between values and artefacts);

2- Manifestation (the relationship between values and assumptions);

3- Interpretations (the relationship between assumptions and symbols); and

4- Symbolisation (the relationship between symbols and artefacts);

These link each domain of the organisational culture structure, providing a better understanding of the connection between domains.
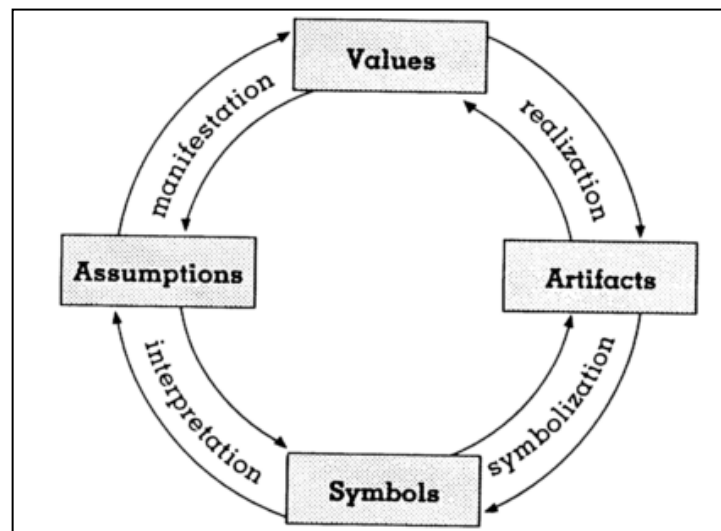
Figure 2.4: Hatch's Organisational Culture Model (1993)

Source: Hatch (1993, p.660)

The process can begin anywhere and moves in a counter-clockwise direction; it then proceeds to realisation, manifestation, interpretation and symbolisation. The dynamic model of organisational culture illustrates all the processes that co-occur in a continuous production and reproduction of culture in both its stable and changing forms and conditions (see Figure 2.5). The models put forward by Schein (1984) and Hatch (1993) offer differing explanations of cultural dynamics. Schein's model focuses strongly on domains of organisational culture, whereas that of Hatch specifies the four processes that link these domains.

A Configuration Model of Organisational Culture

Dauber *at al*. (2012) propose a configuration model of organisational culture based on those put forward by both Schein and Hatch. They argue that a combination of both models provides richer insights into the culture dynamics of organisations. The configuration model aims to provide meaningful explanations for relationships between organisational constructs. Furthermore, they claim that a configuration model of organisational culture consists of

domains and relationships that are rooted in culture and organisational research, thereby establishing a stronger link between the two fields of study.

Dauber, Fink and Yolles' model of organisational culture is based on the interaction of internal and external environments. They explain the internal environment in the context of four domains: organisational culture, strategy, structure, and operations. These domains are linked systematically to one another by the six processes that explain the relationships between domains. Three of these are linked to forward processes: guidance, operationalisation, and patterns of behaviour. The other three processes are associated with organisational change and learning: modification processes, single-loop learning and double-loop learning.

Dauber, Fink and Yolles display the relationships between the internal and external environment, or task and legitimisation environment (see Figure 2.6). This model helps organisations to interact and respond to external environments through two essential processes: actions and legitimisation management.
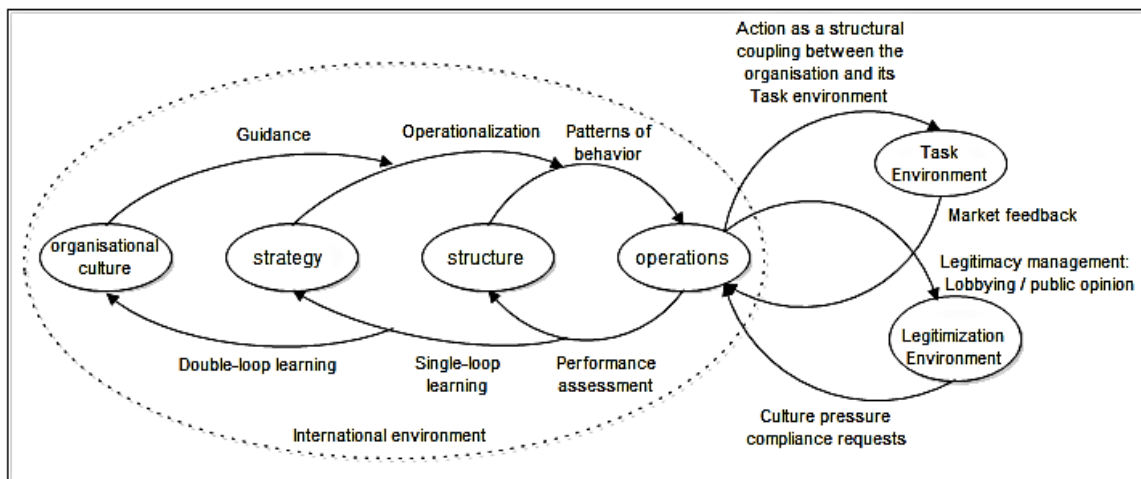
Figure 2.5: A Configuration Model of Organisational Culture

Source: Dauber, Fink and Yolles (2012)

They state that the configuration model of organisational culture demonstrates an important step forward in developing a more holistic and interdisciplinary approach to cultural dynamics within organisations. This approach includes combining basic work in the organisation and culture theories. Moreover, they point out that this model could be utilised to compare diverse parts of an organisation - such as departments, teams, or groups - by using numerous configuration organisational culture models. For instance, the diverse

cultural insights of managers and staff may have a significant influence on organisational performance.

While adding the influence of the external environment's interaction with that of the internal one, the configuration model is a useful approach in examining organisational culture, but it does have some limitations. One major drawback is that the configuration model of organisational culture is complex in comparison to other models (Dauber *et al.* 2012). Needle's definition (2004) of organisational culture points out that members play a fundamental role in configuring the culture in place. Educational background, values, behaviours, and beliefs all contribute to the formation of an organisational culture and strategy.

Manifestations of Organisational Culture

Hofstede *et al.* (1990a) develop the manifestations of organisational culture so that it exists as four elements: values, rituals, symbols, and heroes. These four are critical for organisational managers, as they can affect business or operations to different degrees and in different ways. Figure 2.7 shows the onion diagram model of organisational culture, as developed by Hofstede.
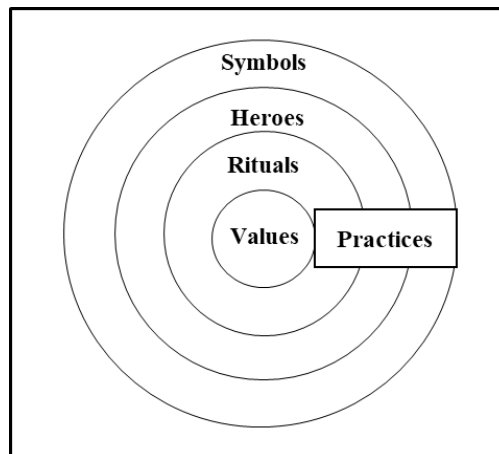
Figure 2.6: Hofstede's levels of organisational culture

Source: Hofstede (1990, p.291)

This model places, first, values as the core element. They are regarded as broad tendencies to transfer certain states to others, reflecting the deepest level of culture. Secondly, rituals are identified as the collective activities that are considered socially essential. Thirdly, the hero element is described as a person who possesses characteristics that are highly prized. This person is often one of the winners or gets on well in general within the organisation; they can be a friend, media star, sportsperson, politician, or deity. The next element is

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concerned with symbols which are the most obvious element of the culture. Symbols can take the form of a picture, words, gestures, or objects and can indicate something specific in the context of the organisational culture. Beshay and Sixsmith (2008) state that *"[S]ymbols, Heroes and Rituals are practices and form the building blocks for an organisation's culture"* (p.84).

Schein's model is more detailed than that of Hofstede. Schein notes that there is more than one single level within organisational culture where the most visible factor/dimension is the symbol, whereas the least visible is 'values'. Theirs consist of many components. That said, Johnson's presents more detail than Hofstede's.

Six Dimensions of Organisational Culture

In the 1990s, Hofstede *et al*. measured organisational culture across 20 organisations and found that employees in the studied organisations share the same perceptions about their organisation's practices which led Hofstede and others to create the six dimensions of practice. His framework of organisational culture is widely accepted, particularly in quantitative research. Hofstede *et al's* six dimensions of organisational culture, are as follows:

1. **Process-Oriented Versus Results-Oriented:** people working in a process-oriented culture are likely to avoid taking risks. They exert the minimal effort needed in their work. They treat each day the same as the previous one, whilst employees in a result-oriented culture are comfortable with working in new situations and they put in their best effort. They view each day as an opportunity to face new challenges.

2. **Employee-Oriented Versus Job-Oriented**: On the one hand, individuals working in an employee-oriented culture assume that their personal problems are considered, and that the organisation is responsible for their welfare. Important decisions are taken collectively. On the other hand, those employed in a job-oriented culture feel that their welfare is secondary to the job, which puts them under huge pressure to complete the job. Moreover, important decisions are made by individuals.

3. **Parochial Versus Professional**: In a parochial culture, staff develop their identity largely from the organisation. They feel that the organisational norms regulate their behaviours at home as well as on the job. They feel that the company takes into account their job competence as well as their social and family background. However, those in professional organisations are identified based on the type of job they perform. They regard their private lives and affairs to be their own business and

that the organisation has hired them solely for their skills. They may also identify with an external professional entity such as an accounting body or an engineering institution.

4. **Open System Versus Closed System**: In an open culture, both the organisation and its staff tolerate outsiders, welcoming anyone into the organisation. New employees can easily fit into the work environment within a few days, whilst employees operating in an organisation with a closed culture are secretive, even with others in the organisation. Staff in such a culture feel that only certain people can fit into the organisation, and new employees require more time to settle themselves into the company.

5. **Loose Versus Tight Control**: People in a loosely controlled environment can feel that no-one cares about costs, schedules are not respected, and people talk lightly about their job. However, those in a tightly controlled environment are very conscious of costs and deadlines. Jokes about the job are rarely told.

6. **Normative Versus Pragmatic**: In a normative culture, organisational procedures, processes and standards of business ethics are more important than results. Within a pragmatic culture, the market is the main goal. Organisations value results more than abiding by processes and procedures.

The six dimensions at organisational level, above, can easily be applied to a project level for the purposes of analysis (Beshay & Sixsmith, 2008). Hofstede's organisational culture framework can easily tackle organisational issues as it is such a useful framework for organisational analyses (Cabrera *et al*., 2001). Cabrera *et al.* (2001) stress that Hofstede's organisational culture framework can easily identify issues which can be effective in managing change.

Researchers such as Berenice (2010) point out that these six organisational culture dimensions put forward by Hofstede cannot be considered sufficient and universally valid for defining cultures in other countries, since these six dimensions were based on just 20 units from two countries. Berenice states that an additional dimension may be required and that some of the six may be less practical. In light of this issue, this study uses an earlier version of the model suggested by Hofstede *et al*. (1990b). This earlier model uses values and practices as variables in order to determine organisational culture. It is an easier model to use, yet includes all the aspects of organisational culture listed in the final model. Ciganek *et al*. (2010) suggest three dimensions that are more appropriate for studies focused on

technology and system usage. These three dimensions are: Results-Oriented (RO), Job-Oriented (JO) and Closed System (CS). For the sake of this study the three relevant dimensions are used in addition to one value-based day mission named Need for Security (NS).

Table 2.6: Comparison between the Six Models of Organisational Culture

Scholars / Dimensions	Schein (1985)	Hofstede (1990a)	Hofstede (1990b)	Johnson (1992)	Hatch (1993)	Dauber, Fink & Yolles (2012)
Values and Beliefs	✓	✓			✓	
Organisational structures and processes/operations	✓	✓		✓	✓	✓
Organisational strategies, goals, and philosophies	✓				✓	✓
Rituals and Routines		✓		✓		
Symbols		✓		✓	✓	
Heroes		✓		✓		
Competencies		✓				
Stories and Myths				✓		
Power Structures				✓		
External Environment						✓
Process-Oriented Versus Results-Oriented			✓			
Employee-Oriented Versus Job-Oriented			✓			
Parochial Versus Professional			✓			
Open System Versus Closed System			✓			
Loose Control Versus Tight Control			✓			
Normative Versus Pragmatic			✓			

Table 2.7 presents a comparison between the six models of 'organisational culture' discussed in this chapter with their set of interwoven factors/dimensions.

As illustrated in Table 2.7, differences exist between the models, with one similarity: all models discuss angles of organisational culture. All models illustrate organisational culture as a combination of important elements. However, the Cultural Web goes further to illustrate that these elements are interrelated. According to Beshay and Sixsmith (2008), the factors/ dimensions from which the six dimensions in the Cultural Web are more easily observed than those of cultural manifestations. Some models solely emphasise the organisation (the

Six Dimensions), whereas others highlight the Manifestations of Culture. The Six Dimensions (Hofstede, 1990) and the Cultural Web (Johnson, 1992) consist of elements that are easily identified within an organisational setting, while the Manifestations of Culture (Hofstede *et al.*, 1990) contain less visible elements (e.g., values and basic underlying assumptions).

Darling and Fogliasso (1999) found that cultural differences emerge due to a variety of factors/dimensions. Some of these cannot be controlled easily, such as individual differences in goals, expectations, values, proposed courses of action and suggestions about how to best handle a situation. Therefore, managing cultural differences is one of the top priorities for success (Kvedaraviciene & Boguslauskas 2010). It is the job of managers to transcend any boundary, such as regional, national, cultural and organisational industrial boundaries in today's global economy. In addition, they must develop flexible and new coping skills to continue progressing and functioning in an efficient way during sometimes unavoidable, seemingly uncontrollable and unsettling events (Ramaprasad & Prakash 2003).

2.6   ICT Implementation and Culture

Peansupap and Walker (2005) argue that ICT and culture are complementary. They add that high ICT diffusion within an organisation involves an open-discussion environment, support from colleagues and supervisors, all of which are influenced by culture. Moreover, Khalil (2011) claims that national culture as a source of acceptable norms and behaviours may influence ICT implementation in the workplaces of public organisations and attitudes towards e-government projects. Taras *et al.* (2011) find that workplace attitudes and behaviour are rooted in national culture values.

The rapid advance of ICT usage has led to changes in organisational strategies in both the public and private sector (Azam & Quaddus, 2013). Earlier researchers investigating ICT adoption, such as Zhu and Augenbroe (2006), focus on the integration of technology and management processes. Peansupap and Walker (2005) emphasise the effect of organisational culture and human factors, for example, the values created by ICT. Stewart and Mohamed (2003) examine the problematic factors in ICT implementation, such as the absence of adequate ICT infrastructure, lack of ICT staff, investment cost, lack of ICT business requirements and unclear benefits of ICT use.

The call for more attention to be paid to cultural beliefs and their impact on ICT implementation increases as they become issues of greater importance in developing

countries (Loch *et al.*, 2003). Cultural factors/dimensions, if not examined, have the potential to place ICT implementation at risk (Albirini, 2006). This is in line with the findings of Kousha and Abdoli's (2004) study which concludes that working on technological strategies and duplicating them from other developed countries without any consideration of local cultural factors/dimensions can lead to problems. Arokiasamy *et al.* (2015) contend that understanding cultural factors/dimensions plays a role in understanding the technological benefits. They conclude that managers who are responsible for adopting and implementing ICT within an organisation must be aware of its national and organisational cultural impact.

Taking into consideration the importance of cultural impact on ICT implementation, there has been a modest increase in interest regarding the role of culture in ICT in the IS research literature. Bankole and Bankole (2017) show that many scholars have investigated cultural issues in IS research as evidenced by the variety of areas covered over the last few decades. Davison and Martinsons (2003) find that one reason for this growth is the fact that many ICT adoption initiatives have failed due to the misfit between ICT and culture or the failure of managers to understand local and/or organisational cultures and how they influence ICT adoption practices. They add that culture becomes important given the adoption of groupware service applications by organisations, which support cross participation at all levels. A systematic review by Leidner and Kayworth (2006) of how culture has been applied in IS research found several distinct themes in literature, including:

Theme 1: Culture and IS development

This theme is concerned with the studies of national and organisational levels of culture which examine the influence of values on the IS development process. Leidner and Kayworth (2006) conclude that more research is needed to examine how the diverse cultural values of team members can complement or contradict one another as the IS development (ISD) process progresses over time.

Theme 2: Culture and IT adoption

The second theme is concerned with the fact that uncertainty avoidance plays a significant role in determining how groups can potentially adopt and diffuse information and communication technologies. Few studies have explicitly examined the relationship between organisational subculture and IT adoption and diffusion. Huang *et al*. (2003) investigate the relationship between organisational inconsistencies and the adoption of IT. They find that there are clashing outcomes which hinder the information sharing and integration process.

From these studies, the fit between culture and IT adoption emerges as relevant to the study of the relationship between cultural values and IT adoption and diffusion.

Theme 3: Culture, IT use and outcomes

The third theme examines the influence of culture on IT use and its outcomes in many studies. Some studies have viewed culture at national level, while others examine it from the organisational level. Robey and Rodriguez-Diaz (1989) contend that closeness of fit between U.S. headquarters and subsidiary cultural values was an important predictor of the implementation success of accounting information systems at two foreign subsidiaries in Panama and Chile (cited in Leidner & Kayworth, 2006).

Theme 4: Culture, IT management and strategy

The fourth theme clarifies the question of how culture influences IT management and strategy. IT management refers to those studies focusing on any aspect of the processes of organisational decision-making, choice, or policy with respect to IT management and strategy.

Theme 5: The influence of IT on culture

Leidner and Kayworth (2006) find from the analytical study that IT has the potential for use in organisational culture reengineering efforts and that different types of technological artefacts may influence certain types of values. Mahomed (2015) claims that the continuous development of new technology has led to many changes taking place in workplace culture and practices globally. The development of new technology brings numerous advantages to organisations: it provides employees within the organisation with direct access to information, thus improving knowledge-sharing. Other advantages include speed and integration of communication with computer technologies.

Theme 6: IT culture itself

IT culture refers to the values attributed to team-members by IT. A finding reported by many researchers is that "*IT is inherently symbolic and values laden*" (cited in Leidner and Kayworth, 2006, p.371). Feldman and March (1981) and Scholz (1990) argue that information is highly symbolic, representing values formed by individual use of IT over time. Leidner and Kayworth (2006) conclude that the concept of IT values should receive attention in the empirical IS literature. The reconciliation between the individual's own values with IT values should be examined.

According to Zeng *et al*. (2009), the success or failure of a certain project based on cultural differences can answer the question of why fully comprehending cultural diversity has become an important task. Their study focuses on identifying cultural difference in R&D projects and concludes that there is a huge variation between Chinese and Western cultures. Bankole and Bankole (2017) also conclude that culture is essential to the study of IS/IT management in the context of ICT innovation. It is their contention that awareness of the cultural impact on technology should be emphasised when making decisions regarding ICT innovation or building ICT artefacts. Müller and Skau (2015) refer to culture as a global phenomenon which therefore influences the implementation of e-government. For example, a recent global study of 55 countries by Zhao *et al*. (2014) highlights the impact of cultural factors/dimensions on e-government implementation which varies across different environments. This is in the same vein as the finding of Moghadam and Assar (2008) who conclude that there can be remarkable differences in people's attitudes toward ICT adoption, despite belonging to the same group.

Several studies have adopted Hofstede's cultural model to investigate the impact of national culture on e-government services. For example, Al-Hujran *et al*. (2011) applied two of Hofstede's cultural dimensions, namely, power distance and uncertainty avoidance to the case study of Jordan. They conclude that these two cultural dimensions had a significant positive indirect correlation with the level of citizen intention to use e-government services. Similarly, in a study of Germany and Slovakia, Cabinakova *et al*. (2013) examine the effect of cultural differences between types of culture. They contend that, unlike the case of the Germans, uncertainty avoidance was highly correlated with adoption level of e-government services reported by Solovakian citizens. Arslan (2009) draws a similar conclusion. On the one hand, he finds that European countries with a higher level of the two national cultural factors/dimensions, power distance and uncertainty avoidance indicates a lower e-government implementation rate. Conversely, European countries with high individualism and/or long-term orientation cultures are more likely to implement e-government than those with a high collective or short-term oriented culture.

Within the Omani context, AlShihi (2006) investigates the effects of cultural and other country-specific factors on the development and diffusion of e-government. To date, AlShihi's study is the only one of this nature conducted in Oman. He adopted a socio-technical framework for adoption detailing the causes and effects of critical factors in the adoption and diffusion of the e-government initiative in Oman. AlShihi decided on a number of factors that contributed to the delayed development of, and improvements in, Oman's e-

government initiative. These factors include: users' lack of IT knowledge, the absence of marketing campaigns, frequent structural changes within ministries, and the fact that the overall e-government project is given neither the high priority nor urgency needed. However, AlShihi does not look thoroughly into the issue of cultural factors/dimensions and barriers. It will be argued in this research that a good understanding of these factors/dimensions can be important for IS success.

This study, therefore, aims to take a broader look at both national and organisational cultures. It assesses the influence of culture on ICT implementation in combination with other variables that have been shown to affect it. Many studies highlight the significance of the adoption of culture within the information system field. The effectiveness and successful implementation of ICT depends upon understanding and integrating both national and organisational cultures in businesses. To promote efficiency and productivity in the workplace and improve performance, every organisation needs to start implementing ICT with consideration of the cultural spheres of organisations.

2.7   Conclusion

It is clear from the review of the literature on the definitions of culture that culture is a complex phenomenon and its impacts on the various aspects of management and organisational behaviour have long been recognised. The chapter has presented a measurement approach in order to identify national and organisational cultures. To understand the main models of measuring national and organisational culture, several models have been developed to describe the relationships between the phenomenon and variables of national and organisational culture. The proposed models for measuring national and organisational culture are based on Hofstede's two models (2010) which contribute to both research and practice. Both provide a foundation of what an organisational IT culture potentially looks like. Finally, the chapter discusses the need for integration between ICT adaption in e-government and culture.

Much research in information systems involves the intersection of two or more academic fields. E-government research is itself the study of interface between government/public administration and ICT. This research is about the intersection of three such fields: culture, e-government and IS success. While the e-government literature contains a small body of work which references either culture or IS success, both of the latter are large fields which need to be examined in their own right. The following chapter discusses the definitions and

models of e-government implementation. It also presents the barriers and challenges that may hinder the successful implementation of e-government.

3.   Literature Review: E-Government

3.1   Introduction

The aim of this chapter is to review relevant components of the e-government literature, and in particular the literature relating to the concept of e-government and its definitions. The chapter presents a list of some models of e-government and explains the services provided by e-government. The chapter identifies features of e-government implementation worldwide, with a focus on the Arab world, and Oman in particular. This is followed by an examination of barriers and challenges which are encountered during e-government implementation and which can hinder its successful implementation. This serves as a solid foundation of the successful implementation of ICT in e-government projects.

3.2   E-Government: An Overview

The history of computing in governmental organisations can be traced back to the beginnings of computer history in 1890, when computers were used for counting the United States population (Zimmermann, 2012). Heeks (2002) points out that some countries have been using ICT in their governmental processes and procedures since the 1950s. The academic literature on ICT in government dates back to the 1970s (Danziger & Andersen, 2002). Although there are papers on technology in government dating back to the early 1960s (Bannister and Gronlund, 2017), e-government was used to imply 'informatisation', which comes from a report by Simon Nora and Alain Minc. This report was presented to the French president in 1979. They describe the use of 'telematics' (a combination of computers and telecommunications) and how it could help build both civil and political societies. They state that this benefit could be achieved through preparation of a long-term plan between governments and business.

Sivarajah *et al*. (2015) note that the environment of e-government had been significantly transformed over the preceding decade. For example, Web 2.0 applications are shifting the web by allowing people to participate, interact and produce information (Al.Kharousi, 2016). Collis and Moonen (2008) regard Web 2.0 as a tool for helping people to share and cooperate effectively. Social Networking tools such as MySpace and Facebook are based on Web 2.0 applications (Kroski, 2007). According to Sivarajah *et al*. (2015), Web 2.0 helps enhance participation, transparency and integration as well as speeding up the pace of innovation.

3.3   E-government Definitions

E-government means different things to different people. Seifert (2003) notes that some researchers define e-government in terms of specific actions, for example using a government kiosk to receive job information, applying for social security benefits through a web site, or creating shared databases for multiple agencies. Others define e-government more generally to include the automation of the delivery of government services.

Yildiz (2007) conducted a review of the literature of e-government and observed that there is no agreed definition of e-government; it can mean different things in different contexts. Some definitions are based on the services delivered via the Internet (and/or the Web) and others on the use of ICT in government.

Table 3.1 lists six definitions of e-government, with some based on a broader conceptualisation of it.

Table 3.1: List of E-government Definitions

Reference	Definition
Deloitte Research (2000, p.1)	*"The use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees".*
Forman (2002) as cited by Seifert & McLoughlin (2008)	*"The use of Internet technology and protocols to transform agency effectiveness, efficiency, and service quality".*
Brown & Brudney (2004, p.96)	*"The use of technology, especially web-based applications, to enhance access to and efficiently deliver government information and services".*
Bekkers & Homburg (2005, p.6)	*"The use of modern information and communication technologies, especially Internet and Web technology, by a public organisation to support or redefine the existing and/or future (information, communication and transaction) relations with stakeholders in their internal and external environment in order to create added value".*
Beynon-Davies (2005, p.3)	*"The use of information and communications technology to change the structures and processes of e-government organisations".*
Grant & Chau (2005, p.9)	*"A broad-based transformation initiative, enabled by leveraging the capabilities of information and communication technology; (1) to develop and deliver high quality, seamless, and integrated public services; (2) to enable effective constituent relationship management; and (3) to support the economic and social development goals of citizens, businesses and civil society at local, state, national and international level".*

Table 3.1 illustrates some of the diversity of definitions; there is no single, consistent and agreed definition. All these definitions of e-government focus on the technical perspective using the Internet and its applications or ICT to help facilitate public services to citizens. These definitions highlight the interaction between different domains of government, including citizens, businesses and other public organisations. In fact, the term *e-government* can be traced to the mid-1980s (Bannister and Grönlund, 2017). As can be seen from the chronological order of e-government definitions in Table 3.1, there has been, as Yildiz (2007) notes, a lot of disagreement about what it means. Broadly, e-government relates to the use of ICT in government and public administration.

The definition from Deloitte Research (2000) is based mainly on public service delivery, with no mention of the transformational role of information technology, or of back office or internal uses (such as policy analysis or tax risk assessment), whereas Forman's (2002) as cited by Seifert and McLoughlin (2008) definition stresses the improvement in the quality of service delivery with an emphasis on the transformational role of information-technology. E-government involves using information technology, and especially the Internet, to provide, electronically, different services to citizens, to businesses and to other organisations. It opens new opportunities for citizens to interact and receive government services. These means of e-communication make service delivery more convenient and less expensive. Similar to the Deloitte's definition (2000), Brown and Brudney's (2004) definition focuses on public service delivery. Bekkers and Homburg's (2005) definition is broad and includes two aspects of e-government: technical and organisational. Grant and Chau's (2005) definition focuses on technological, economic, managerial, organisational and cultural issues. Grant and Chau's definition is based on the role played by transformation initiatives of ICT regarding effectiveness, empowering citizens, access to information and integration of government services. It is worth noting that none of these definitions discusses the legal aspect of e-government.

For the purposes of this dissertation, the definition of e-government is used as follows: E-government involves, amongst other things, the management and delivery of governmental services. This concept encompasses the use of ICT across multiple channels to achieve fast and accessible services, accurate information and transparent processes and interactions with users. Some e-government aims at facilitating participation in decision-making processes, for example, on-line calls for contributions or comments on proposed policies. In order to obtain a good understanding of how e-government is perceived, it is helpful to look at different models of e-government development in different countries of the world.

3.3.1   E-government Adoption

Adoption is a "*decision to make full use of an innovation as the best course of action available*" (Rogers, 2003, p.177). He states that the adoption of innovation is a process that includes the generation, development and implementation of new ideas or behaviours. In term of e-government, Warkentin et al. (2002) define adoption as the intention of citizens to participate in e-government to receive information, to provide information and request services from the government electronically.

E-government offers services to allow other organisations as well as people to do transactions electronically. The services differ according to customers' needs and the capacity of ICT in the country. Over 40 years a large number of different types of applications have been developed to meet those needs (see, for example, UN, 2016). In addition to these e-government implications and requirements, the success of e-government services is dependent on how these services are adopted (Shareef *et al*., 2011).

According to Dimitrova and Chen (2006), Liu *et al*. (2014) and Al-Hujran *et al*. (2015), citizen- adoption of e-government services is the intention and willingness of citizens to use and engage themselves in e-government services. E-government offers users services to transact electronically with the government. These services differ depending on the users' needs and the ICT capacity. Wang and Liao (2008) classify e-government into four interaction categories: Government-to-Government (G2G), Government-to-Citizen (G2C), Government-to-Business (G2B) and Government-to-Employee (G2E).

Government-to-Government (G2G)

Government-to-Government (G2G) refers to the interaction between government organisations one with another on international, national and local levels. Many government processes require collaboration and coordination between different public organisations. G2G represents the backbone of e-government and it involves exchanging data across governmental organisations (Al-Khouri & Bal, 2008). Also, G2G services include transactions between governments and can be used for international relations (Chavan & Rathod 2009).

Kalmo *et al*. (2006) assert that the G2G dimension enables government organisations to offer better services to citizens and businesses, reduces the dispersion of services across different governmental departments and makes the culture a more proactive one. For example, in Oman, business registration forms need approval from several government ministries: the

Ministry of Manpower, the Ministry of Commerce and Industry, the Directorate General of Civil Status, and the Ministry of Regional Municipalities and Water Resources. The government-to-government (G2G) services aim to enhance inter-government organisation processes by streamlining collaboration and coordination (Huang *et al*., 2005). This application serves both internal processes and activities between public organisations themselves, and external ones, also between government organisations' citizens and businesses.

Government-to-Citizen (G2C)

Government-to-Citizen (G2C) refers to the interaction between government and citizens to access information and to facilitate the efficient and effective running of government services. This helps to provide users with different communication channels for government operations. G2C provides complete assistance to citizens (Zaidi & Qteishat, 2012). It also provides citizens with access to, and interaction with government. Governments in the developed countries have taken great steps for G2C by using the web and ICT, such as introducing interactive services, widening local access and increasing citizens' participation (Graham & Aurigi, 1997). There are varied approaches used by governments with regard to handling electronic services. There is no one fixed solution, framework or model. The approach to the provision of e-services depends on many factors such as budget, infrastructure and the experience of the technical team and consultants (Al-Khouri & Bal, 2008). An example of this is the Higher Education Admission Centre (HEAC) in Oman, which is a government online system delivering the applicants admission-offer after they have applied either online or through the mobile application. HEAC is a successful system in e-government designed to serve students' needs and to facilitate the process of their registration in the Higher Education Institutes (Al-azri *et al*., 2010).

Government-to-Business (G2B)

Government-to-Business (G2B) refers to the interaction between government and businesses through the Internet to provide the right regulations and advice. G2B provides services to firms (Zaidi and Qteishat, 2012), and is beneficial for both government and businesses (Jaeger 2003). It involves both the sale of goods to people and the procurement of goods and services. G2B enables a reduction in costs and an increase in competition (Al-Khouri & Bal, 2008; Bonham *et al*. 2001; Seifert & McLoughlin, 2008). G2B has a wide exchange in services between the government and firms, such as policies, rules and regulations. Examples of the services in this regard include renewing licences, obtaining permits and tax payment (Chavan & Rathod, 2009). "*The services offered through G2B transactions also*

assist in business development, and specifically the development of small and medium enterprises" (Chavan & Rathod, 2009, p.73). In Oman, the Ministry of Commerce and Industry introduced a G2B initiative called "Invest Easy". This initiative provided business organisations with a wide number of services such as renewing registrations, licensing, annual reporting, lodging taxes, downloading tenderers' information and integrating with national business.

Government-to-Employee (G2E)

Government-to-Employee (G2E) refers to the interaction between government and employees to empower productivity by allowing employees to access various benefits on-line. In general, G2E helps to channel employees' interaction with senior management inside government organisations. Abramson and Morin (2003) see that G2E is gaining popularity around the world. G2E solutions help empower employees by providing them with services in a more appropriate and convenient way. G2E is perhaps the least adopted service of e-government in Oman, which is an integral part of the information and services offered by government to government, that is G2G. As a matter of fact, G2E requires providing organisations with good intranet service, allowing employees to share data with other organisations and providing them with support and training.

Introducing any e-government system should, if done properly, deliver multiple benefits to citizens and/or organisations and to government itself. Nonetheless, the implementation of e-government systems often face challenges and barriers, both internal and external. Alateyah *et al*. (2012), like many other researchers, state that most common barriers include trust, privacy, security computer and information literacy, culture, authentication, IT infrastructure, availability and e-government adoption. Challenges vary from a context to another across different countries, organisations or departments.

Several studies have investigated the adoption of e-government services. Akkaya *et al*. (2012), for example, investigated the adoption of e-government by citizens in Germany. The study found a number of factors which may have an impact on individuals' engagement to e-government such as data protection, privacy and security, reliability of systems and completeness of information.

In Saudi Arabia, Alshehri and Drew (2010) investigated the challenges of e-government acceptance in the country. They concluded that the social barrier is the most important challenge to citizens' acceptance and adoption of e-government service. They also claimed

cultural differences and the digital divide to be the main social issues which have a crucial impact of e-government acceptance.

Meftah *et al*. (2015) conducted a quantitative study to investigate e-government adoption by citizens in Bahrain. They found that there is a number of factors which may have a positive impact on e-government adoption including trust, awareness and culture.

Another study conducted by Lallmahomed *et al*. (2017) also found that there is a significant negative relationship between resistance to change and computer self-efficacy on the one hand and the acceptance of adopting e-government services on the other. In fact, resistance to change is considered by many researchers to be one of the main factors that hinder the adoption of e-government services (Alomari *et al*., 2014) and cause the failure of new systems (Dwivedi e*t al*., 2015).

Alateyah *et al*. (2012) claim that factors affecting adoption of e-services is one of the important things for governments intending to implement e-government to consider. These need to be studied carefully in order to develop an understanding of citizens' needs and requirements as that would ultimately lead to the successful implementation of e-services (Ozkan & Kanat 2011). In the same vein, Shareef *et al*. (2011) make the rather obvious point that successful implementation of e-government services requires acceptance and adoption of these services by citizens. Understanding the factors that may influence the adoption helps governments in having and understanding of how to proceed with the implementation of e-government.

Notwithstanding advertisement and awareness campaigns on television, newspapers and social media, in practice it is better quality services that are more likely to convince the citizens to adopt e-government systems.

3.3.2 E-government Implementation

Despite many problems (ICT failures are discussed in the next chapter) governments *"have deployed ICT effectively in many areas over the past 20 years"* (Meijer *et al*., 2012, p.6). Through the decades, governments world-wide have increasingly witnessed remarkable advances in their ICT infrastructure to enhance progress (Szopiński & Staniewski, 2017), and have used ICT effectively in many areas (Bannister & Connolly, 2012). ICT investment and innovation can be defined as a process that involve two major phases - the initiation and implementation phases. *"The initiation phase requires the generation of new and useful*

ideas which would be adopted and exploited at the implementation phase" (Williams and McGuire, 2010 cited in Adam & Westlund, 2013, p.66). The effectiveness and efficiency in both ICT diffusion and innovation are influenced by organisational and national cultures (Lee *et al.*, 2013).

Azam and Quaddus (2013) state that in the preceding decades the amount of research looking at ICT from the perspective of a developing country has been limited. The increased popularity of using ICT in government, particularly Internet use, facilitates the motivation to apply ICT in organisations in Arab countries. ICT development addresses the increasing demand for more personalized services that respond to individuals' needs, as well as engage people in the design and in the delivery of services. These new demands change the way the public-sector functions (UN, 2016).

Seri and Zanfei (2012) state that ICT implementation and investment must be combined with a significant effort to improve skills and behaviour in organisations. This might take a considerable time, bearing in mind the complexities of knowledge and information flowing administrations and within individual through them. Corrales and Westhoff (2006) claim that *"technology adoption occurs when adopters enjoy the necessary levels of income to afford the technology, as well as the necessary cognitive skills and technological infrastructure to adopt the technology"* (p.914). The adoption of technology is affected by other factors (strategy, leadership, legal and regulatory frameworks). In addition to the effective planning and implementation of ICTs, governments in general *"may consider enhancing their ICT infrastructure and raise the level of human capital, including improvement of the ICT literacy of citizens, to make use of the new technologies realise the full benefits of [e-services]"* (Solinthone & Rumyantseva, 2016, p.10).

Andersen *et al.* (2010) in their research identify the impacts of ICT on individuals or collectively. The collective level encompasses a range of institutions such as organisations and work groups. They find that it is too complex to measure the impact of e-government on either individual or collective levels precisely. However, they conceptualise impacts in relation to four domains: capabilities, interactions, orientations and value distribution. Andersen *et al.* (2010, p.576) found that *"the impacts of e-government are generally positive – the uses of ICT in the public sector are delivering benefits"*.

This leads to the conclusion that e-government research focuses on the impacts of ICT in the public sector in relation to the four previously mentioned services. The e-government

research helps to identify the various services provided by ICT and thus helps in the achievement of the goals of the e-government projects.

3.3.3   E-government in the Arab World and in Oman

Abdalla (2012) finds that the Arab countries are characterized by large public sectors, centralized governments and a complex regulatory structure in terms of public administration. E-government projects have been widely suggested as a solution to a variety of concerns in public sectors in the Arab countries (Salem & Jarrar, 2011). Abdalla (2012) points out that the Arab leaders have acknowledged the necessity of implementing ICT in their governmental operations. She states that each country stands at a different point in economic development, political stability, ICT infrastructure and ICT utilization. This makes the experience of e-government practices and initiatives unique in each state.

A recent United Nations (UN) E-government Survey of 2016, UN (2016) finds that the trend is continuing towards greater levels of online connectivity around the world which has delivered public information to citizens through websites services. The E-government Survey of 2016 indicated that all 193 Member States now have websites. The number has grown from 91% in 2003 to 100% in 2016. The survey also showed that all of the 193 Member States of the United Nations made continuous efforts to maintain national portals in order to improve the provision of public services and promote transparency and accountability.

Arab countries in the Middle East consist of Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates and Yemen (The Middle East Information Network, 2015). Salem and Jarrar (2011) note that huge investments have been made by the governments of the Arab world in developing, implementing and maintaining e-government portals. However, in most Arab countries e-government is still relatively underdeveloped compared to many Western countries.

In Oman, His Majesty the Sultan of Oman has a long-term vision for Oman to encourage the Omani government to rapidly progress its ICT provision (ITA, 2015). The strategy is designed for the government to lead Oman towards becoming a digital society by providing appropriate ICT education to its citizens, by transforming the traditional government delivery of services into fully automated and online services to improve the efficiency of the public sector. e.Oman, the digital Oman and e-government "*lay the roadmap for the creation*

of a Knowledge Society in Oman by leveraging Information and Communication Technologies to enhance government services, enrich businesses and empower individuals" (ITA, 2018, p.1). Oman initiatives aim to empower the citizens by providing meaningful interaction through e-Services. They also aim to provide better public services to the people. E-Services help engage citizens in the delivery of public services. The e-Services help to truly transform the way citizens interact and transact with the government.

An Information Technology Authority (ITA) was created by a Royal Decree (52/2006) as an independent government agency to plan for and oversee national ICT projects (ITA 2018). These projects include the implementation of e-government services throughout the entire country of Oman. Government units were urged to contact the ITA for technical assistance related to the implementation of e-government. However, they were not bound by explicit laws to follow directions from the ITA. Thus, the ITA does not have the power to enforce implementation standards as they are considered optional requirements. The ITA can only coordinate the efforts of the various government units towards the implementation of e-government (Al-mamari, 2013).

The e.Oman approach focuses on the integration of different layers and elements involving e-government strategies, common technical standards, shared central architecture components, and regulatory and legislative frameworks governing electronic transactions and capacity building. Oman has adopted a 'life-event' strategy for organising and delivering electronic services and is currently developing a national portal as a first gateway for delivering services to citizens and businesses. A number of infrastructure projects have been launched and, at the time of writing, are being implemented (e.g. government network, security architecture) (ITA, 2018). Oman has recently promoted several types of e-application in its government organisations to provide its citizens with direct access to service supporting systems (online services), for example, the higher education admission system, and health care and education portals.

Since Oman invests heavily in providing enhanced services to citizens, it is crucial that the government knows whether these e-applications are meeting the needs of citizens. Specifically, user satisfaction with online service systems is of concern to government organisations and administration authorities particularly, as these systems are intended to improve the provision of services to citizens.

According to the United Nations e-government development survey (2014), Oman has shown improvements between 2012 and 2014: with a global e-government development ranking improving from 64th in 2012 to 48th in 2014, placing Oman among the top 50 countries for the same period (UN, 2014). However, the 2016 United Nations e-government development survey showed that Oman had witnessed a decline from 48th to 66th in the global e-government development ranking.

3.3.4 E-government Survey Online Service Index (OSI)

As displayed in the 2016 United Nations E-government Survey, the Online Service Index (OSI) varies in the Arab countries depending on what their e-governments provide. The following Table 3.3 shows the Online Service Index (OSI) of the Arab countries including the six Gulf ones in bold:

Table 3.2: Arab Countries grouped by level of Online Service Index (OSI)

Adapted from (UN, 2016)

Very High OSI (More than 0.75)		High OSI (Between 0.50 and 0.75)		Middle OSI (Between 0.25 and 0.50)		Low OSI (Less than 0.25)	
Bahrain	**0.8261**	**Kuwait**	**0.6522**	Egypt	0.4710	Algeria	0.0652
United Arab Emirates	**0.8913**	Lebanon	0.5145	Iraq	0.3551	Libya	0.1087
		Morocco	0.7391	Jordan	0.4565	Sudan	0.2174
		Oman	**0.5942**	Syrian Arab Republic	0.3261	Yemen	0.1449
		Qatar	**0.6739**				
		Saudi Arabia	**0.6739**				
		Tunisia	0.7174				

Table 3.3 shows that two Arab Gulf countries are categorised in the highest and high OSI. Bahrain and United Arab Emirates reflect a positive trend towards higher levels of e-government development. Other Arab Gulf countries such as Oman, Kuwait, Qatar and Saudi Arabia are relatively high in OSI. The Arab Gulf countries stand out for many reasons such as adoption and implementation of innovative delivery services to connect the citizens to the public sector.

Table 3.3   Some Countries grouped by Level of Online Service Index (OSI)

Adapted from (UN, 2016)

Country	OSI	OSI Level	Population
New Zealand	0.9420	Very High OSI (More than 0.75)	4,818,180
Croatia	0.7464	High OSI (Between 0.50 and 0.75)	4,154,213
Ireland	0.7246	High OSI (Between 0.50 and 0.75)	4,757,976
Costa Rica	0.6377	High OSI (Between 0.50 and 0.75)	4,947,490
Oman	0.5942	High OSI (Between 0.50 and 0.75)	4,645,256
Liberia	0.2391	Low OSI (Less than 0.25)	4,289,520

Table 3.4 shows the level of online service index of some countries from different regions. These countries are similar to Oman in terms of size and population. As shown in Table 3.4, New Zealand is ranked top, with a very high OSI value. The remaining countries in this table which score High OSI are Croatia, Ireland, Costa Rica and Oman at 0.7464, 0.7246, 0.6377 and 0.5942 respectively. At the other extreme, the lowest EGDI country in this group is Liberia from West Africa. According to the UN (2016), Arab countries showed lower OSI levels compared to European countries, but they were better than south American countries. This may be attributed to the high-income level in some Arab countries which had led to higher levels of online services.

There has been a number of empirical studies of e-government adoption undertaken in different Arab Gulf States: in Kuwait (Alawadhi and Morris, 2009), in Qatar (Al-Shafi & Weerakkody, 2010), in Oman (Al-Mamari, 2013; Al-busaidi, 2012), in Saudi Arabia (Al-Sobhi *et al*., 2010), in United Arab Emirates (AL Athmay *et al*., 2016) in Kuwait, (Alenezi *et al*., 2017), etc. Gulf countries consider the shift to using electronic systems as a means of modernising governments worldwide and of delivering electronic services to citizens in an appropriate form and with the required speed and efficiency wherever they are (UN, 2014).

Al-Mamari (2013) investigates the factors that influenced the implementation of the e-government initiative in Oman. He finds that the driving forces towards e-government in Oman were similar to those in other developing countries. Among these motivating forces were the need to effectively respond to the expected depletion of oil reserves and institutional dynamics imposed by global e-government developments and knowledge-based economy.

Along the same vein, Al-Busaidy and Weerakkod (2013) explore the e-government services in Oman from an employee's perspective and identify ten key factors affecting the e-government initiative. They conclude that issues such as improved accessibility, efficiency and availability of public services are vital for gaining citizens' confidence in relation to e-government adoption in Oman. The study also found that Omani IT employees have an indirect influence on citizens' trust in using e-services. Likewise, Al-Sobhi *et al.* (2010) examine the role of intermediaries in enabling the dissemination of e-government services in Saudi Arabia. They conclude that the adoption of e-services in Saudi Arabia was largely influenced by computer literacy, Internet access, trust and awareness on the part of citizens.

Further study has been conducted by Al-Shafi and Weerakkody (2010) to investigate the adoption of e-government services in the state of Qatar. They found that effort expectancy and social influences determine citizens' behavioural intention towards e-government. Facilitating conditions and behavioural intention determines citizens' use of e-government services in Qatar.

AL Athmay *et al.* (2016) explored the factors influencing e-government adoption in the UAE from the perspective of a citizen. Their study states five main findings. First, the attributes of e-government have direct effects on user satisfaction. Second, it shows the influence of user satisfaction on user intention to use services of e-government. Third, it offers evidence of the direct influences of e-government attributes on intention to use. Fourth, it shows the positive influence (direct and indirect) of e-government attributes on the intention to use the services of e-government. Finally, they found that two attributes (system quality and information quality) have a strong impact on the intention to use e-government services.

In Kuwait, Alenezi *et al.* (2017) has also investigated the factors influencing the adoption of e-government. The study found that there were several factors that can have a positive impact on supporting e-government such as information quality, strategic benefits and institutional values. The study also reveals some drives such as cost saving and customer satisfaction, and some barriers such as nepotism, which hinders the process of improving organisational performance. This has led to several governments becoming increasingly aware of the potential benefits of e-government in enhancing transactions and interactions between government organisations and improving relationships with their citizens.

3.3.5 E-Government Development Index (EGDI) in 2016

For the Gulf Cooperation Council (GCC), which includes six Arab countries, e-government has become a development indicator which measures the promotion of a country. According to e-government ranking (UN, 2016, p.114), "*Bahrain (24th), and the United Arab Emirates (29th) are among the global leaders with Very-High-EGDI levels*". Promoting and developing services in e-government have been emphasised as an end goal in development. To promote information sharing and interaction among the GCC countries, the biennial GCC e-government Awards are made to governments that have achieved excellence in e-services (GCC, 2015 cited in UN, 2016). The following Table 3.4 shows the performance of the Arab countries, including the six Gulf ones in bold:

Table 3.4: Arab Countries grouped by E-Government Development Index (EGDI)

Adapted from: (UN, 2016)

Very High EGDI (More than 0.75)		High EGDI (Between 0.50 and 0.75)		Middle EGDI (Between 0.25 and 0.50)		Low EGDI (Less than 0.25)	
Bahrain	**0.7734**	Jordan	0.5123	Algeria	0.2999	Yemen	0.2248
United Arab Emirates	**0.7515**	**Kuwait**	**0.7080**	Egypt	0.4594		
		Lebanon	0.5646	Iraq	0.3334		
		Morocco	0.5186	Libyan Arab Jamahiriya	0.4322		
		Oman	**0.5962**	Sudan	0.2539		
		Qatar	**0.6699**	Syrian Arab Republic	0.3404		
		Saudi Arabia	**0.6822**				
		Tunisia	0.5682				

Table 3.4 shows that Oman is doing reasonably well in e-government development. The gap between Oman (0.5962) and better performing countries (Bahrain: 0.7734 and UAE: 0.7515) may be attributed to the relatively poor level of ICT infrastructure in Oman. Al-Mamari (2013) stated that poor ICT infrastructure in Oman is due to the geographic nature and settlement patterns which makes it hard for commercial telecommunication companies to invest in those remote areas. In addition to this, there is also a need to improve knowledge, develop technology and build capacities (UN, 2016), which are essential for e-government.

Furthermore, like many developing countries, Oman requires the preparation of technical expertise and the development of well-established and comprehensive e-government strategies (Lee, 2014 cited in UN, 2016, p.119).

The use of ICT in governments can effectively support an integrated and inclusive implementation of e-government to Sustainable Development Goals (SDGs). However, countries like Yemen are low in e-government development index (EGD). This can be attributed to many factors that need to be tackled such as civil war, poverty and corruption all of which hinder people from obtaining the full benefits of utilising EGDs. The low level of e-government uptake may be attributed to other factors: the immaturity of e-government, outdated tools used in assessing the progress of EGD, lack of access to technology and poor public awareness of the benefits of technology. Fixing the last of these is an overarching goal which demands an immediate solution, through the efficient uptake and creation of effective processes for informing and training people in e-services.

> *"ICT infrastructure, improved access to knowledge and technologies as well as building capacities within the public sector and civil society are also crucial to effective delivery of public e-services in support of sustainable development"* (UN, 2016, p.130).

According to the UN, (2016) governments in the Arab world need to provide the necessary tools to enable the synergism of policy integration and programmes across the various sectors and sub-sectors of politics, economics, environment and civil services. Governments can also open opportunities *"to re-engineer existing decision-making processes and information flows"* (UN, 2016, p.20). Thus, e-government has the potential to be the means whereby Arab governments achieve their objectives to serve citizens better. According to the UN (2016), there is a need to integrate and engage the poorest and the uneducated in e-participation. This can be achieved by enabling them to access and use public services.

3.4   Benefits of E-government

E-government aims to provide better services to benefit individuals and organisations. It provides common benefits such as convenient access to public services and prompt service, when compared to traditional ways of providing services. E-government can improve the performance of a government by improving speed of services, increase efficiency, reduce cost, save time for both citizens and public administration and enhance transparency (Carter & Weerakkody, 2008; Bonsón *et al*., 2012; Nguyen, 2016; Wirtz *et al*. 2017).

In terms of enabling ICT tools in the public sector, there are a wide variety of benefits and opportunities available for developed as well as developing countries in relation to e-government implementation (UN, 2014; Wimmer *et al.*, 2007; Solinthone and Rumyantseva, 2016). In Oman, for example, Muscat Municipality is considered to be one of the pioneer organisations in the country which has made significant steps in implementing e-government projects. The online services offered by the Municipality include up-to-date information about building permits, parking offences, rent contracts and municipality licenses. Online payment has also been introduced using the M-Rial as an e-currency for municipality services. The municipality has made agreements with local banks and the Royal Omani Police to apply the e-purse solution (Al-Mamari, 2013).

Another example, the Royal Omani Police (ROP), is also considered to be a success story in the adoption of e-government. People can process visa applications and pay fines associated with driving violations electronically. ROP has also launched an electronic civil status system to collect information about births, deaths, marriages and divorces among residents. The system is supported by a smart multifunction ID card which features biometric recognition and provides instant access to the holder's details. An electronic wallet (e-purse) has also been introduced by ROP for transactions with government and private organisations. Supported by an electronic chip, the card can also be used for linking to other governments and business organisations (Al-Mamari, 2013).

This involves citizens who were previously apathetic. As a result, many governments are following the same steps to enable the use of services and sharing of information to their citizens via the Internet (World Bank Group, 2017; Pedersen, 2017).

A number of researchers have looked at the benefits of e-government. A typical example of the benefits is found in Solinthone and Rumyantseva (2016, p.5):

- Improvement of efficiency of government agencies in data processing.

- Improvement of services through better understanding of users' requirements, thus aiming for seamless online services.

- Sharing information and ideas between all government agencies and departments to build one mega database.

- Assisting in reaching government's economic policy objectives by promoting productivity gains inherent in ICT and e-commerce.

- Improvement in transparency, accuracy and facilitation of information transfer between government and customers.

- Assisting in the building of trust between governments and citizens.

- Using internet-based strategies to involve citizens in the policy process, illustrating government transparency and accountability. This is an essential factor in good governance.

There are other benefits of e-government that are based on involving citizens to improve service-delivery and interactions between citizens and government bodies. Alenezi *et al.* (2017) also pointed out that e-government saves time and cost to citizens.

Another list of benefits of e-government is that of (AlShihi, 2006) displayed in Figure 3.1. The list only includes the most common benefits, which are discussed in the literature of the implementation of e-government:

The Benefits of E-government Implementation

• Improve government efficiency • Increase employee productivity • Cost effectiveness • Better returns on ICT investment • Substantial cost benefits (e.g. reusable data and applications) • Improved data quality, availability and reliability • Reduce time to access • Providing efficient government management of information to the citizen • Improved interactions with business and industry • Increased transparency • Less risk in business planning	• Better service delivery to citizens • Greater choice of delivery channels • Empowerment of the people through access to information • Participation in public policy decision-making. • New opportunities of jobs • Access to view tenders and advertisements • Reduce time to complete export forms and comply with regulations • Revenue growth • Better health and education • Less corruption • Greater convenience

Figure 3.1: The Benefits of E-government

Source: (AlShihi, 2006)

However, regarding the results, e-government suffers from a disparity between expectation and reality (Norris & Reddick, 2012). This may be due to developments that *"focus on outcomes rather than processes of e-government policy"* (Yildiz 2012, p.345). Experts and researchers seek to help government to improve two-way interaction with citizens (Garcia-

Sanchez *et al*., 2013). According to Yildiz, to improve outcomes, governments need to focus on managerial innovation and regulation development rather than on *"a series of quick jumps from one hyper/vision […] to the next"* (Yildiz, 2012, p.345), before removing the barriers and facing the challenges. A note of focus by Bannister and Connolly (2012, p.212), who express similar issues to Yildiz (2012, p.212) that

> *"…older technologies and ideas are downgraded and abandoned in the rush to adopt new technologies or ideas which either do different things or which do not offer obviously better solutions to current problems than existing technologies or ideas".*

Bannister and Connolly (2012) recommend researchers to think holistically and rationally regarding technology mindsets. There is a need for planning and scrutiny of details to avoid limitations and failure of e-government implementation.

3.5 Limitations of E-government Implementation: Barriers and Challenges

Rapid advances in ICT continue to create major challenges for government institutions (Weerakkody *et al*. 2016). The implementation of e-government is expensive and has multiple prerequisites including a stable technical infrastructure, a stable political system, a legal framework in place, and highly skilled people (Alshehri & Drew, 2010; Nurdin *et al.,* 2011). From the government's perspective, e-government is associated with other challenges such as questions of 'security and privacy', 'prioritisation and trust' and accessibility issues in government. Alenezi *et al*. (2017) emphasise that e-government is complex; it covers cultural, political, organisational and technical aspects. It relies heavily on the context in which the e-government strategy is implemented, drawing attention to both the cultural and the social aspects. It is assumed that different cultural values and behaviours determine different goals and objectives and therefore different challenges (Olasina & Mutula 2015; Al-Hujran *et al*. 2015).

According to Tummers and Rocco, (2015) and Wirtz *et al*. (2017), e-government implementation faces various challenges. There are primarily three areas that need to be considered to solve the challenges and to develop e-government: citizens, businesses and government. Rahim and Al Athmay, (2013) attempt to find a link between ICT and governance and identify several challenges. Alenezi *et al*. (2017) describe e-government as being complex as it involves various cultural, political, organisational and technical aspects.

Although e-government implementation is a topic that is under much debate and makes continuous progress, experts and practitioners have been addressing the same common challenges in the past decade. The topic of e-government challenges has recently attracted the interest of several researchers including Khalil (2011); Zhao (2011); Al-hujran *et al.* (2011); Bannister and Connolly (2012); Johana Cabinakova *et al.* (2013); Lee *et al.* (2013); Zhao (2014); Alomari *et al.* (2014); Sarrayrih & Sriram (2015); Nguyen (2016); Kurfali *et al.* (2017).

Al-Shboul *et al.* (2014) note that there are numerous barriers and challenges that hinder and complicate the process of implementing e-government plans in developing countries. E-government barriers for developing countries have been examined and categorised under, for instance, strategy, technology, policy and organisation (Alshehri & Drew 2010). Brown and Thompson (2011), on the other hand, categorise e-government barriers differently i.e. into infrastructure development, digital divide, law and public policy. Al-Shboul *et al.* (2014) conducted a study exploring the challenges and factors affecting the e-government implementation in Jordan. They conclude that the challenges of e-government implementation can arise from the technology, from a country's infrastructure and economic problems, from lack of funding for implementation and from cultural problems.

Pedersen (2017, p.262) identifies five major challenges that he claims are not addressed in the literature concerning the realisation of the benefits across organisational units:

1. Realization requires not just organisational capabilities but also inter-organisational capabilities;

2. Coordination of benefits realization across organisational units, local and central government and across internal organisational levels;

3. Managing benefits realization includes much more than integrating benefits realization practices in IT projects;

4. Different benefits realization practices are needed at central government level, local management level and case worker level;

5. Different uses of technology require different levels of benefits realization capabilities and different practices.

Pedersen (2017) recommends that organisation can realize significant improvements with limited benefits realization capabilities.

The discussion above illustrates the range of challenges facing managers in public organisations who work in e-government. Gil-García and Pardo (2005) say that to be successful in e-government initiatives, managers must be aware of these challenges and use suitable strategies to overcome them in order to achieve success.

Bannister and Connolly (2012) give some recommendations for governments to follow to reduce these challenges. The first is to put in place long term leadership and structures for projects to eliminate the frequent changes caused by discontinuities and disruption when changing leadership. A second is to avoid initiating and setting up mega-projects. A third is to undertake pilot studies to test out ideas before employing them at a national level. A fourth is to be much more rigorous about issuing and endorsing standards. A fifth is to be concerned with the extensive use of open source software. A sixth is to move towards more viable forms of system development. A seventh is to avoid losses early and to identify a problem before it causes a breakdown in the system.

The questions that arise after discussing the challenges above would be concerned with the factors that might determine and make e-service provision distinct and innovative in governments.

3.6   Conclusion

This review of literature on e-government has focused on definitions, services, models, implementation. It has also considered the state of e-government in Arab countries generally and Oman specifically. The multiple definitions and the various services and models reflect the complexity of e-government. The discussion of e-government frameworks, addressing the essential services related to different aspects, helps to identify their interaction when embracing e-government. The review has pointed out that there has been limited research dedicated to developing countries on the implementation of ICT in e-government projects. It has clearly demonstrated the factors behind the failure to improve government efficiency and effectiveness. The next chapter examines the definition of IS. It also defines IS success and presents a number of models of IS success. It explores the factors which contribute to the successful implementation of e-government projects.

4. Literature Review: Information Systems Success

4.1 Introduction

This chapter begins with some broad definitions of information systems, henceforth, IS. It explores two IS success models (the 1992 Delone & Mclean model and the 2003-updated IS success model of DeLone and McLean) that help in understanding the performance of a system. The chapter discusses different sets of critical success factors (CSFs) that different experts argue must be met if an organisation is to avoid an IS failure. Each set is identified in relation to its context. The chapter paves the way to identifying the CSFs for the success of ICT in e-government projects in Oman to help in preventing the failure of future IS projects.

4.2 Information Systems

Heinrich *et al*. (2011) and Orlando (2012) define information systems (IS) as subsystems of an organisational system that provides the whole organisation with better services to support all aspects needed for its activities and operation-management (cited by Geiger *et al*. 2012). Bocij *et al*. (2008) state that information systems form an integral part of the modern business organisations used to provide an improved access for users of services with a high level of automation and high-speed communication. Good IS improve the performance of both organisations and their employees (Dwivedi *et al*., 2015). The information systems on which organisations have become so dependent are typically distributed network systems that consist of components of varying quality that have been integrated to provide services for the organisation, employees and end-users.

With regard to the definitions of IS, there are two perspectives: social and technical. The social perspective of IS success focuses on individuals and human beings as users. The technical perspective of IS success, according to Varajão *et al*., (2017), focuses on aspects which play significant roles in modern organisations such as reducing operational costs, improving the managerial decision-making and gaining competitive advantage.

Unlike computer science and computer engineering, IS is not just concerned with the development of technical competencies and skills or just with its cultural/social relationship with the business environment (Boland and Hirschheim, 1985; Checkland and Scholes, 1990) cited in Dwivedi *et al*. (2012) or even with the social and the technical definitions of IS. IS-phenomena emerge from the interaction between both social and technical

perspectives (Jarrahi & Sawyer, 2013). According to Sawyer and Jarrahi it is important to go beyond the socio and technical system-perspectives on IS and examine their interactions, and how they can serve as a theoretical foundation for IS success.

Two words that appear frequently in discussions about development of IS are 'success' and 'failure'. This chapter is concerned with the success of IS and the identification of the successful factors that improve the performance of organisations.

<u>Defining and Measuring the Success of Information Systems</u>

Despite the efforts and resources allocated to IS development (ISD) and improved development methodologies, the rate of failure of IS projects remains quite high (Rubinstein, 2007).

Information system success is a significant research topic in IS. At the first ICIS conference (International Conference on Information Systems) in 1980, there were questions regarding what IS success is and what determines it (Petter *et al*., 2013). Petter *et al*. (2013, p.10) provide one definition of success as "*achieving the goals that have been established for an undertaking*". Defining 'success' is a challenge for IS because success has a multidimensional meaning that can be measured at various levels such as technical, individual, group and organisational (Molla & Licker, 2001). In the IS literature, an (IS) success model can provide criteria for the assessment and valuation of the performance of different types of IS. Researchers are still trying to find the best measurement of IS success. Two widely discussed models of IS success are discussed in the following section. They are widely used for identifying issues regarding the success of IS (Rana *et al.*, 2013).

4.3   IS Success Models

This section examines two models of IS success: the original Delone and Mclean (1992) model and the updated (Delone & Mclean, 2003). The section ends with an evaluation of the latter.

<u>The 1992 Delone & Mclean Model</u>

Since 1992 many authors have regarded DeLone and McLean's (1992) model of IS success as a major advance in IS research (e.g. Etezadi-amoli and Farhoomand, 1996; Saarinen, 1996; Igbaria, 1997; Rai, Lang, and Welker, 2002). DeLone and McLean reviewed 180 empirical studies (dated from 1981 to 1987) on what constitutes IS success. From these they identified six variables to define IS success: (1) system quality; (2) information quality; (3)

use; (4) user satisfaction; (5) individual impact; and (6) organisational impact (see Figure 4.1).
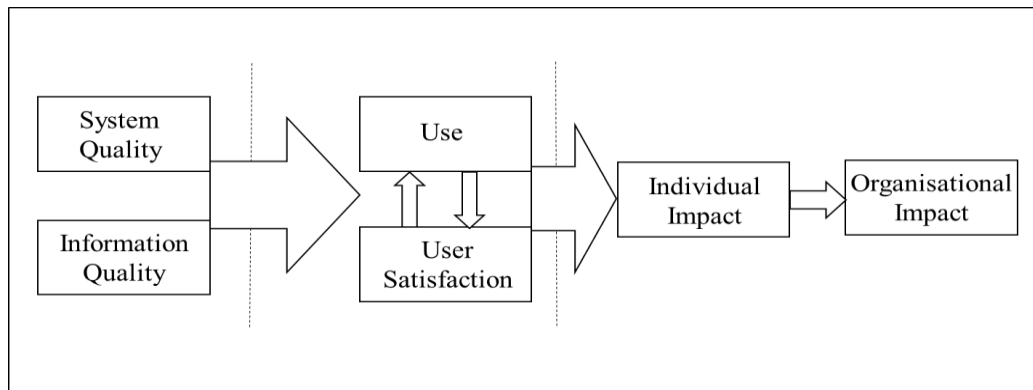
Figure 4.1: IS Success Model

Source: DeLone and McLean Original IS Success Model

This model of IS success is based on measures which have been proposed in the literature. Figure 4.1 suggests that the success of an IS in an organisation depends on the interrelations between the quality of both system and information as well as the degree of use and of user satisfaction. In the years following the publication of the DeLone and McLean success model, some IS experts criticised it and proposed modifications to it. Seddon and Kiew (1996) studied some of the constructs in the model (i.e., system quality, information quality, use, and user satisfaction) used to evaluate IS projects. In their evaluation they modify the construct 'use' and change it to 'usefulness'. Petter *et al*. (2008) also argue that 'usefulness' is a better measure of IS success than 'use' in the mandatory/non-voluntary system in the DeLone and McLean IS success model. Seddon (1997) concludes that the use of information system can lead to success. He also replaces DeLone and McLean (1992) 'IS use' with 'observed efficiency'.

According to Petter *et al*. (2008), some ISs experts find that the DeLone and McLean model lacks an important measure for the success of ISs; namely, service quality. Service quality is a tool sometimes used to measure the performance of an IS. In this research study, it is difficult to adopt the DeLone and McLean model of IS success because constructs such as individual and organisational impacts are too broad to be easily tractable. DeLone and McLean in their model of IS success do not specify the factors which interest both the individuals and the organisation to help in evaluating the IS system.

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The Updated IS Success Model (DeLone & McLean 2003)

In 2003, DeLone and McLean updated their 1992 model and proposed the inclusion of IS service quality. Moreover, they replaced the two constructs (of individual and organisational impacts) with a 'net benefits' construct. They suggested the addition of an 'intention to use' construct that would be concerned with 'attitude' whereas 'use' is related to 'behaviour'. The updated model is shown in Figure 4.2.
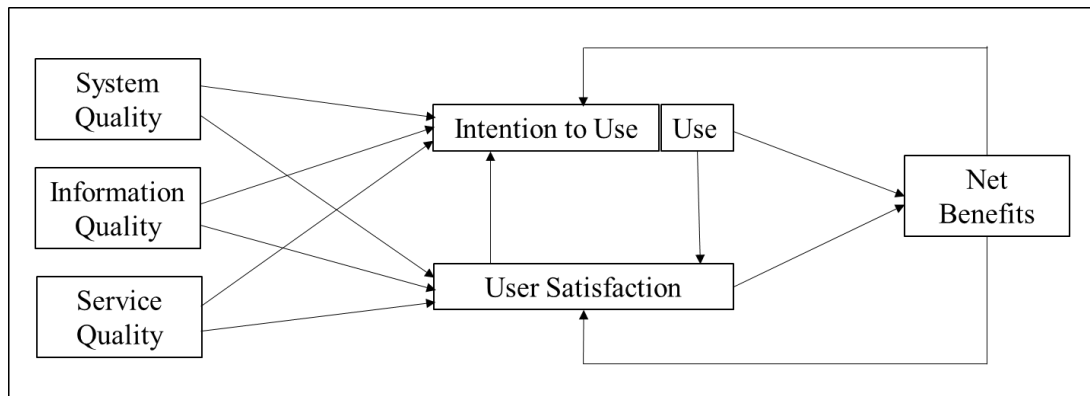
Figure 4.2: Updated IS Success Model

Source: DeLone & McLean updated IS Success Model

Five years later Petter *et al*. (2008) examined the literature review of the studies that applied the Delone and Mclean (2003) model in different types of IS and found that the DeLone and McLean model had been a useful framework for organising IS success measurements. System usage remains a dependent element utilised in many studies and is given a significant status in e-commerce success assessments. DeLone and McLean (2003) stress that the success of an information system is a multidimensional and an interrelated concept; these interrelated concepts for IS success are defined as illustrated in Table 4.1.

Several studies have used IS success models for analysing the use, intention to use and satisfaction in adopting an e-government system (Khani *et al*., 2011; Agourram, 2009; Dwivedi *et al*., 2013; Hung and Chen, 2014; Petter *et al.*, 2013; Rana *et al.*, 2013 and Stefanovic *et al*. 2016).

Table 4.1: Definitions of the Constructs of the Updated IS Success Model

Source : Petter *et al*. (2013, p.11)

Constructs of IS Success	Description
System Quality	The desirable characteristics of an information system. For example: ease of use, system flexibility, system reliability, and ease of learning as well as system features of intuitiveness, sophistication, flexibility, and good response times.
Information Quality	The desirable characteristics of the system outputs; that is, management reports and Web Pages. For example, relevance, accuracy, conciseness, completeness, understandability, currency, timeliness and usability.
Service Quality	The quality of the support that system users receive from the IS department and IT support personnel. For example: responsiveness, accuracy, reliability, technical competence and empathy from the personnel.
System Use	The degree and manner in which staff and customers utilize the capabilities of an information system. For example: amount of use, frequency of use, nature of use, appropriateness of use, extent of use and purpose of use.
Usage	"*Measures everything from a visit to a Web site, to navigation within the site, to information retrieval, to execution of a transaction*"(Delone & McLean, 2003, p.25).
User Satisfaction	Users' level of satisfaction with the information system. For example: single item to measure user satisfaction, semantic differential scales to assess attitudes and satisfaction with the system, multi-attribute scales to measure user information satisfaction.
Net Benefits	The extent to which IS contributes to the success of individuals, groups, organisations, industries and nations. For example: improved decision- making, improved productivity, increased sales, cost reductions, improved profits, market efficiency, consumer welfare, creation of jobs and economic development.

Note: the authors didn't write a definition of "intention to use".

4.3.1 Key IS Success Determinants (Petter *et al*. 2013)

There are many empirical studies that concentrate on factors supporting IS success and preventing IS failure. Petter *et al*. (2013) conducted a qualitative research review of IS success. The result of this detailed study and an analysis using the six dimensions of the DeLone and McLean updated model of IS success (2003) is the identification of a checklist of 15 predictors of IS success. These 15 factors, the authors argue, have consistently been found to influence IS success:

1. Enjoyment,

2. Trust,

3. User Expectations,

4. Extrinsic Motivation,

5. IT Infrastructure,

6. Task Compatibility,

7. Task Difficulty,

8. Attitudes Toward Technology,

9. Organisational Role,

10. User Involvement,

11. Relationship with Developers,

12. Domain Expert Knowledge,

13. Management Support,

14. Management processes and

15. Organisational competence.

Petter *et al.* find that the DeLone and McLean model's six dimensions may positively influence the success of IS and they are described as success determinants. Petter *et al*. (2013) study is based on the principle that an organisation has four major components (project and organisational characteristics, task characteristics, user and social characteristics and technology). Figure 4.3 illustrates these four components.

According to Lagsten and Goldkuhl (2008), the evaluation of IS is a useful exercise that helps people take action to generate change and thus give an organisation a better chance of avoiding failure. Petter *et al.* provide a useful assessment and evaluation of the updated IS success model of DeLone and McLean (2003). Nevertheless, their study does not cover any of the dimensions of culture. Existing information system success models focus on other factors such as systems quality, use and intention of use, while generally ignoring the subtle, but potentially equally important, impact of culture. According to Dwivedi *et al*., (2015) the project management perspective on success also seems to be rather distanced from models of IS success such as DeLone, McLean and Seddon (Delone and McLean, 2003; Petter *et al*. 2008; Seddon, 1997).
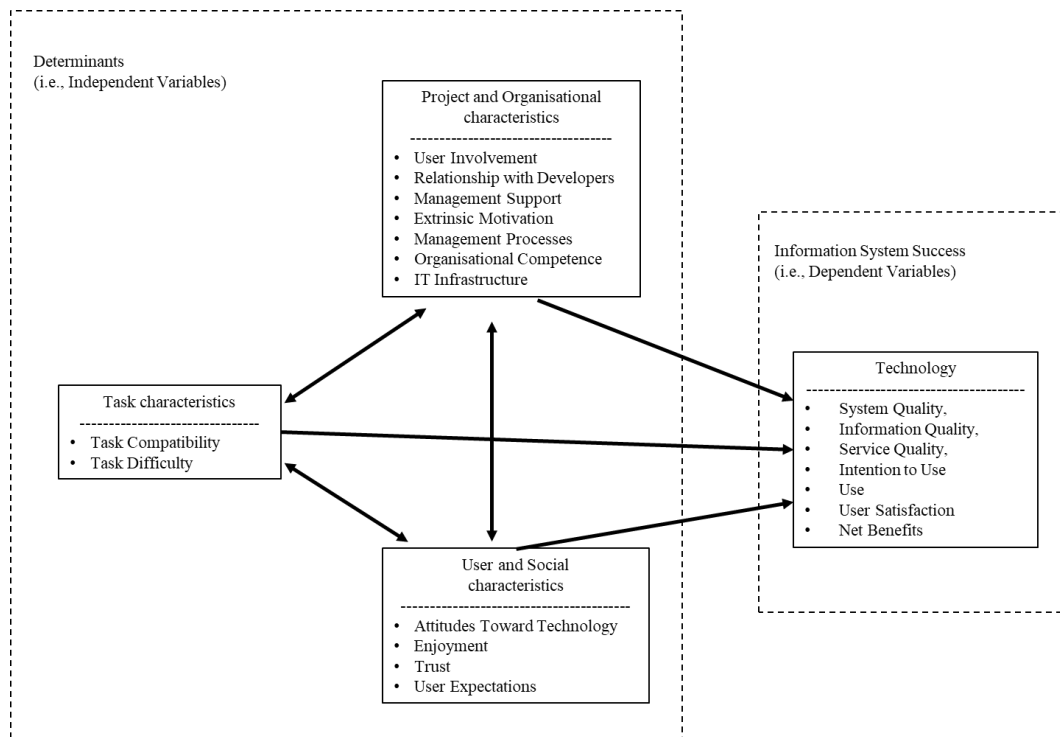
Figure 4.3: Determinants of IS Success

Source: Petter *et al*. (2013)

In their studies of IS success in the context of different corporate cultural types, Bradley, Pridmore and Byrd (2006) examine the inclusion of the IT plan quality construct as an antecedent to information system success. They investigate the relationships between different constructs in the model of IS success in the context of different types of organisational culture. They find that the quality of the IT plan has a greater impact on IS success in organisations that exhibit an 'entrepreneurial organisational culture' than it has in those that exhibit a formal organisational culture. Hoffman and Klepper (2000) point out that the influence of culture is often an ignored or underestimated phenomenon in the success or failure of new technology implementation.

4.4   Information System Failure

As noted in chapter 3, Danziger and Andersen (2002) found that the academic literature on ICT projects in government dates back to the 1960s. Within this literature there has long been a stream which looks at the phenomenon of ICT project failure and/or at its counterpart, success. Over the years, many researchers have pointed out that a large percentage of initiatives to implement e-government around the world have not succeeded in achieving their proposed objectives (Petter *et al*., 2013; Rana *et al*., 2013; Strong & Volkoff, 2010;

Laumer & Eckhardt, 2012; Napitupulu & Sensuse, 2014; Al-Naimat *et al*., 2013; Dwivedi *et al*., 2015; Anthopoulos *et al.,* 2016).

Dwivedi *et al*. (2015) state that there is a need for in-depth studies to understand the factors behind these failures. One of these factors, and one that is often ignored, is culture. Robey and Rodriguez-Diaz (1989) note that culture may hinder ICT implementation efforts because of differences in the ways that ICTs are interpreted. Similarly, Watson *et al*. (1994) in an investigation of the cross-national adoption of Group Support System (GSS), observe that culture shapes the adoption of technology. Culturally compatible features of a technology will be appropriated, and the remaining features will either be reshaped to satisfy cultural norms or ignored. From their cross-national studies of ICT implementations, Zhao *et al*. (2014) conclude that national culture impacts information system design in numerous ways, and that the effects of culture in e-government implementation must be taken into consideration. Without proper consideration of this cultural component, the implementation process may fail (Nurdin et al. 2011). More specifically, the e-government literature contains many accounts and discussions of e-government failures (Beynon-Davies, 1995; Nelson & Ravichandran, 2004; Bannister & Connolly, 2012; Gole & Shinsky, 2013; Anthopoulos *et al*., 2016). Such failures are also reported in Arab countries (Al-Naimat *et al.* 2013). In 2015, the Standish Group CHAOS report found that only 29% of IT projects were successful and 71% failed in terms of time, budget and scope (Zucker, 2016). The Standish Group CHAOS Report has been published every two years since 1994. This report is a summary of research findings of the Standish Group often used to indicate problems in software development projects. Additionally, the research tried to identify the scope of IT project failures (Eveleens & Verhoef, 2010). To achieve this latter goal, Standish defined three project categories, namely:

- *"The scope of software project failures.*

- *The major factors that cause software projects to fail.*

- *The key ingredients that can reduce project failures*" (The Standish Group, 2014, p.2).

Other studies have focused on failed e-government implementation, although some, from a more positive perspective, have sought to identify the factors leading to success (Aueaungkul, 2013; Hung & Chen, 2014; Al-azri *et al*., 2010; Aladwani, 2016).

Al-Gharbi *et al.* (2015) find that the Arab countries such as Oman are facing some key challenges and barriers that may contribute to the failure of e-government implementation. In the literature there is an emphasis on the need for further studies in order to understand the real reasons behind these failures, as many governments in the Arab world have been trying to do, by considering the main problems and barriers to e-government implementation (Ebrahim & Irani, 2005). The past decade has witnessed an increasing interest by researchers in identifying the contextual sources of e-government failure such as in the works of Heeks & Bailur (2007); Müller & Skau (2015); Rana *et al*. (2015); Yildiz (2007, 2012); Zhang *et al*. (2014). The contextual sources refer to the external and internal contexts which can play significant roles in the failure of e-government projects. The failure of e-government projects remains quite common and continues to increase in many developing countries (UN, 2014). Furthermore, some e-government projects continue to show partial failures, or at least, not a high level of success (Colomo-Palacios *et al*. 2014; Liberato *et al.*, 2015; Ribeiro *et al.,* 2013; Rijo *et al*., 2012; Varajão *et al*. 2014).

Nelson (2007) analyses 99 IS projects and points to 36 classic mistakes. He categorizes these mistakes into process, people, product and technology. The first category 'process' involves ICT project management factors; secondly, the category 'people' which is related to people's involvement in a project; the 'product' category, concerns the characteristics of the project such as size and goals. The final category is 'technology', includes those factors contributing to IS failures such as the misuse of modern technology. E-government project failures examined thoroughly by various researchers helped to identify critical factors for the successful implementation in the IS context in different ways.

4.5   Critical Success Factors (CSF)

CSFs were a development of the concept of 'success factors' first put forth by Daniel in the 1960s. Rockart (1979) used Daniel's concept of the 'success factor' to develop his CSFs approach. Rockart suggests that CSFs are the limited number of business areas in which acceptable results ensure successful competitive performance for an organisation. An important (and often overlooked) word in this definition is "limited". These areas should receive constant and specific attention from management. Dickinson *et al*. (1984) a broad definition: "*CSFs are those events, circumstances, conditions, or activities that require special attention of management because of their significance*" (p.32).

CSFs are context dependent. Different studies identified different sets of CSFs according to the country, type of industry, work environment, etc. (Ngai *et al*., 2008). There are still ongoing studies to try to identify the CSFs model that can be holistic and can be applied to many different industries in different countries. Napitupulu and Sensuse (2014, p.24), however, argue that "*CSFs are not a standard set of measures for organisation-wide, but CSFs are specific*". They are specific due to the unique background associated with a country and with an industry. CSFs are the key factors that can guide an organisation towards performing different activities in a way that will achieve its goals (Rockart, 1979). The improvement of an organisation's performance is specifically linked to the organisation's success factors (Napitupulu & Sensuse, 2014).

This section lists some of the numerous CSFs that have been proposed for the e-government implementation. There is a general agreement upon the concepts of CSFs. However, not surprisingly, there are variations among the CSF models. There are several different sets of CSFs to be found in the literature. The following are some of these:

Bullen and Rockart (1981) identify seven CSFs in a computer company: market understanding, insightful/competitive analysis, technological 'leadership', developing an image, developing a more effective corporate marketing staff, quality people and service, and stability. The seven CSFs raise awareness of some critical issues in relation to the success of the computer industry in a well-established market. This list cannot be used for other organisations where markets do not play a vital role. This list is not complete; it lacks factors such as 'user impact' and 'organisational impact'.

More recently, Ziemba *et al*. (2016) conducted research into CSFs for e-government. Their study provides a methodology for identifying CSFs. The methodology used by Ziemba *et al*. is a multistep methodology. The steps of this methodology research are: review of literature, definitions of the CSFs, verification of the CSFs, evaluation of CSFs, creation of the draft survey questionnaire, creation of the final survey questionnaire, definition of the sample and the sample size, collection of data, and analysis of the collected data. They conducted their research in Poland and they ended up by identifying eight critical success factors for e-government. The eight factors are as follows:

1. public outlay on hardware networks, and telecommunication (economic factor);

2. financial situation of e-government units (economic factor);

3. ICT competences of e-government employees (technological factor);

4. integration of front-office and back-office information systems (technological factor);

5. information security in e-government units (technological factor);

6. state standardization of solutions for e-government (organisational factor);

7. top management support (organisational factor); and

8. electronic communication between government units (organisational factor).

The outcome of these eight factors seem common to other factors mentioned earlier. However, this list of eight factors has its limitations. This list lacks many factors such as 'user consultation', 'fit to work-requirement', 'legacy system', 'socio-culture', etc. Because of these limitations, while these eight factors may or may not be important for Poland, it might be questioned whether or not they can be equally important to different countries.

In a further study conducted in Jordan to examine the critical success factors for e-government implementation, AL Naimat *et al.* (2013) maintain that there are three main factors that influence the success of e-government implementation in Jordan: organisation factors, technology factors and people factors. Among these three main factors, they identify 10 critical success factors that are listed as follows:

1. Funding: To implement the on-going initiatives of the e-government projects around the world, funding is indispensable in delivering excellent services to citizens.

2. IT Infrastructure: This is the means through which the delivery of services takes place. It strengthens the implementation of e-government services which are reliable on the infrastructure applications of security, data and content management tools, application development tools, operating systems and hardware. These IT infrastructures are the basis for the success of e-government implementation.

3. Policy and Legal Issues: The implementation of e-government requires the development of new laws and policies through a series of legislative changes, since e-government is a new and recent idea.

4. Awareness: Raising awareness of e-government in the aggressive markets of services and benefits is one of the methods to avoid resistance and augment the growth of e-government to success.

5. Top Management Support (Political Support): To provide and distribute sufficient resources efficiently, support from senior management is needed to spur employees to work harder and to be innovative.

6. User Computer Efficacy: To enable users to adapt and utilise new technologies such as access to the Internet, certain skills need to be developed: (1) skills to obtain e-government services and information literacy and (2) technology skills to solve problems, to make decisions and to diffuse information.

7. Reward System: In order to provide incentives for stakeholder to support new systems and to help employees exert more efforts towards e-government initiatives, top management should recognise and appreciate the work of employees by establishing a reward system.

8. Resistance to Change: To recognise the new ideas and procedures users must not fear these new ideas and technologies and must understand their contributions in an organisation.

9. Vision and Strategy: To implement successful e-government requires a clear vision and strategy to direct and enable successful processes of implementation to achieve e-government goals.

10. Training: To encourage employees to use e-government, training is needed to help them use computers and internet applications. This increases the diffusion of e-government services into societies and influences the rate of adoption of e-government by the employees.

This list of 10 factors is common in e-government implementation in Jordan, but it has some limitations. Some of these factors are questionable CSFs, and particularly, Resistance to Change and Reward System. Resistance to Change is not a CSF, and AL Naimat *et al*. actually mean the opposite, that is, the absence of Resistance to Change. Other factors are plausible and generally regarded as CSFs such as Top Management Support and User Computer Efficacy. The list lacks essential factors to ensure a successful implementation of IS in e-governments projects such as Information Security in e-government, Project Management Standards and Peer Influence. AL Naimat *et al*. do not show an understanding of what a CSF is.

The above studies on the CSFs and other studies examining CSFs discussed in this section are summarised in Table 4.3 (the factors highlighted in bold are discussed in more detail in

Chapter 5). This shows that there is considerable confusion in the recent literature as to what a CSF is. For instance, referring back to Rockart's (1979) definition of a success factor, many factors suggested in the list do not fit the definition and some of them are not even close to achieving a competitive performance of an organisation. Take, for example, Careful Change Management, which is a requirement of the theory of change management and it is not a CSF. Some other factors are commonly accepted as CSFs and have been highlighted in bold in the above table. The fact that various factors in Table 4.3 are listed as success factors but lack a source or empirical support does little to resolve the confusion. It is obvious that there is a lack of clarity and understanding of what a CSF is.

Table 4.2: Studies Examining Critical Success Factors for E-government

Study	Area	Factors
Alawadhi and Morris (2008)	E-government	Performance Expectancy, Effort Expectancy, **Peer Influence,** Facilitating Conditions.
Al-kaabi (2010)		Share Information, BPR, Marketing & Strategy, Identify Req, Process Mapping, Capacity Building, Leadership, Vision & Strategy, IT Standards.
Petter, Delone and Mclean (2013)	E-government	Task Compatibility, Task Difficulty, Task Significance, Attitudes Toward Technology, Enjoyment **Self-Efficacy**, Trust, User Expectations, Technology Experience, Organisational Role, Subjective Norms, Technology Acceptance, User Involvement, Relationship with Developers, Domain Expert Knowledge, **Management Support**, Management Processes, Extrinsic Motivation, Organisational Competence, IT Infrastructure.
Al- Naimat *et a.l* (2013)	E-government	Funding, IT Infrastructure, Policy and Legal Issues, Awareness, **Top Management Support**, Reward System, Resistance to Change, Vision & strategy, Training, **User Computer Efficacy.**
Tarhini *et al.* (2015)	ERP	**Top Management Support** and Commitment, Training and Education, **Project Management**, Clear Vision and Objectives of the ERP System, Careful Change Management, **Interdepartmental Communication.**
Ziemba *et al.* (2016)	E-government	Public Outlay on Hardware Networks and Telecommunication, Financial Situation of E-government Units, ICT Competences of E-government Employees, Integration of front-office and back-office Information Systems, Information Security in E-government Units, State Standardization of Solutions for E-government, **Top Management Support**, Electronic Communication between Government Units.

CSFs are not a standard list of factors which can ensure success in the implementation of a system in an organisation. Rather, they are factors discovered from studies of how to avoid

failure in its implementation. They are critical factors because they are specific to a certain country, industry, circumstances, at a given time. From the review of the studies listed in the table above, it can be seen that there are many CSFs that might contribute to the success of ICT implementation within organisations. As many organisations still have problems when implementing ICT, more research on the CSFs of ICT implementation is required to increase the success rate of e-government implementation. A vast number of candidate CSFs have been identified, but few are influential and different combinations may apply in different circumstances. Al-hadidi (2010, p.86), states that

> "*the nurture of the organisation and the particular goals in mind determine which of the acknowledged CSFs assume prominence in any given mission, and it could be that the same organisation could find different CSFs assuming greater importance according to the specific change envisaged at the time*".

According to Ismyrlis and Moschidis (2015) a number of experts suggest a variety of CSF sets according to their background, certifications and work experience. This might be secondary to their methodology in their targeted population or data collection. Thus, in any organisation specific factors will be critical to the success of that organisation (Morrison, 2012).

The previous research efforts do not consider other factors which could potentially be important for e-government implementation. For example, there are only a few studies of project management or project management standard factors in the e-government literature. This may be due to the fact that many projects in government organisations have been outsourced to the private sector or offshore. Good project management (PM) is an important area for many organisations in the software industry. It is so because several projects still fail due to a lack of proper management, leading to problems related to unaccomplished deadlines, budget overrun, or scope coverage (The Standish Group, 2013). Moreover, these studies do not explicitly address the issue of culture in e-government research. Culture is a key factor that organisations should focus on in order to be successful (United Nations 2014).

Critical success factors are essential aspects to consider for a successful strategy. In order to use CSFs productively in an organisation it is necessary to make sure that the understanding of the organisation's activity as a factor is important, and that it will always be relevant. Specifying these factors will ensure that the institute's demands are met according to its capacity or determine whether or not the organisation is able to reach the specifications of

CSFs. There are particular factors that will be important to the organisation's success, which means that if these factors are addressed properly then the organisation is likely to go into decline. Each critical success factor should be linked to a specific goal.

The literature review in this chapter identifies a small number of key areas as being true CSFs that are pertinent to this research. These include IT legacy systems, communication, top management support, peer influence, self-efficacy, project management standard and resistance to change. As stated earlier in this chapter, there have been some attempts to propose models which are universal and can be applied to different countries. There are always variations among these models as studies have proved that CSFs are context-specific.

Taking into consideration the critiques of the CSFs in a number of studies, the current study adopted a list of CSFs which are relevant to the Omani context. Some of the factors in the literature are suitable for a certain country or industry. Some of them are not suitable for the purpose of the study. On the other hand, some other factors are commonly accepted CSFs though others are suitable only for similar contexts such as the Arab countries. For this reason, the research model for the current study was developed using a number of cultural dimensions and workplace factors which may have an impact on the ICT implementation in the Omani public sector. The model will be utilised to investigate the applicability of these factors or otherwise to the four case studies of e-government systems in Oman.

4.6   Conclusion

Many early studies focused on causes of failure and how to avoid it and many have been done to identify the factors that contribute to or determine the success of IS. This chapter has examined two models of IS success. The chapter also discussed different sets of CSFs identified in relation to their different qualifications, backgrounds, and different methods of study and work experiences. Despite the enormous research aimed at identifying CSFs, there is no standard or definitive set of CSFs that an organisation must meet with to achieve success in e-government projects. Senior management must be aware of the relevant CSFs that may play a major role within the organisation to achieve the vital success in e-government implementation.

Indeed, one could argue that there are no standards or predetermined CSFs for organisations to follow in the implementation of IS. However, there are a few that are common to any situation. The analysis of these CSFs is helpful in providing guidelines for the improvement of perceptions of IS success and for initiating management policies to avoid failure. This

means that the success or failure of the organisation depends on identifying the key areas in CSFs which are context specific for a given organisation.

The three previous chapters which covered the literature review provide the foundations for the research model which is discussed in the following chapter. The research model consists of three components: national culture, organisation culture and workplace factors.

5.   The Research Model

5.1   Introduction

This chapter introduces the research model used as the basis for understanding the cultural factors influencing successful ICT project implementation in e-government and forms the basis of the response to the research questions. The factors used in this model are based on a combination of Hofstede's cultural theory and the IS success factors discussed in the previous chapters. The model is made up of three components: national culture, organisation culture and workplace factors. It is worth noting that workplace factors include factors taken from IT professionals at governmental agencies through the informal investigation and from e-government development survey 2014. The workplace factors were discussed in the two previous chapters (Three and Four) of the literature review. The elements of these three domains are discussed in the following sections.

5.2   The Research Model

A research model can provide "*a theoretical overview of intended research and order within that process*" (Leshem & Trafford 2007, p.96). The research questions emerged from a review of the literature. The research findings can then be presented in terms of a research model which may be used by government to guide both its project decisions and its long-term plan for development. From the literature, a set of factors were identified for investigation in this study as shown below in Figure 5.1. The three main groups are regarded as the main factors of the research model and were used in its development to investigate the factors influencing successful ICT implementation in public organisations. The research model addresses the primary question of this study.

"How, and to what extent, do cultural factors influence the successful implementation of ICT in Omani public administration?"

It also considers the secondary questions which help map each stage of the research model, as illustrated in Figure 5.1. These secondary research questions are as follows:

1. What are the cultural factors that support or hinder the successful implementation of ICT projects in Omani public organisations?

2. To what extent does Omani national culture interact with other factors in the workplace? How does this interaction support or hinder the successful implementation of ICT?

3. To what extent does organisational culture interlink with other factors in the workplace? How does this interlink influence successful ICT implementation?
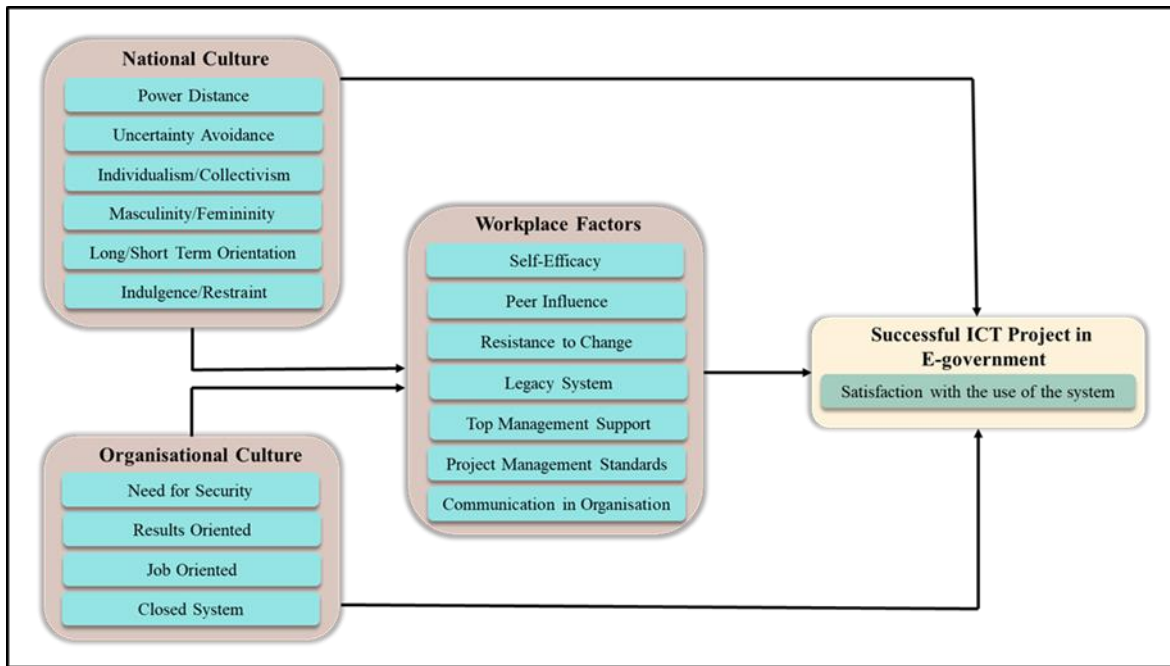
Figure 5.1: The Initial Research Model

This model examines three components which are presented in Figure 5.1, above. In this model:

1. National culture is comprised of six dimensions,

2. Organisational culture deals with four dimensions; and

3. The workplace component of the model is comprised of seven factors.

ICT success is measured using customer satisfaction as a proxy.

As illustrated in the above figure, the two components, national culture and organisational culture, both affect workplace component. Each of the three components affect success of ICT implementation in e-government projects.

In addressing these questions, it is hoped to contribute by assisting public organisations in enhancing technology performance in e-government services. This research is expected to

give a rich and deep understanding of the impact of cultural factors on the successful implementation of ICT in public organisations in Oman.

The Success of ICT Project: User Satisfaction

Krishnan and Sreehari (2016) note that the success of e-government projects largely depends on issues related to user satisfaction, such as the users' attitude and their satisfaction level. They add that "*user satisfaction is a crucial factor for evaluating the continual usage of e-Government services and for the success or failure of its various projects including the information systems*" (p.1551). User satisfaction is easy to define, but hard to measure. It can be measured in relation to the user's level of satisfaction with their use of the ICT system. Diegmann *et al.* (2017, p.95) point out that 'user-satisfaction *"is the uppermost criterion of IS projects-success*".

Choosing satisfaction as a proxy carries some risks; users may be satisfied with a system even though that system has failed to meet its design objectives. User satisfaction could, for example, arise from a feeling of increased power or reduced workload, neither of which are related to the effective functioning of the system. Notwithstanding these risks, this study argues that 'satisfaction' with the use of an ICT system can be a determining factor in IS success. A large body of research is dedicated to examining user satisfaction. Delone and McLean (1992) argue that the relationship between system usage and user satisfaction is reciprocal; as one affects the other. Empirical studies have found that IS usage is positively and functionally linked to user satisfaction (Anandarajan *et al*., 2002). In the Arab world, a few empirical studies have found a correlation between IS usage and user satisfaction in the workplace context (Al-Gahtani, 2004).

According to Maldonado and Sierra (2013), a system where user satisfaction is low is less likely to be employed or to produce favourable results to the organisation. The success or failure of IS in terms of user satisfaction can shed light on the significant factors of the three components in the research model (national culture, organisational culture and workplace factors). The following sub-sections discuss the seventeen factors of the three components.

5.2.1 National Culture

Based upon the literature review, a research question was developed to test the impact of national culture in terms of Hofstede's theory.

Power Distance (PD)

Power distance (PD) refers to "*the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally*". (Hofstede *et al*., 2010, p.61). Institutions such as families, schools and communities are the basic elements of society, while organisations are the places in which people work (Hofstede *et al*., 2010). High PD leads to more hierarchical organisations, while low PD produces more egalitarian ones (Hofstede *et al*., 1989). Warkentin *et al.* (2002) contend that power distance affects e-government adoption. People with high power distance are more likely to adopt e-government than people experiencing low power distance. In contrast, Zakour (2004) states that individuals in low power distance cultures are more receptive towards ICT than those in high power distance scenarios. The rationale is that ICT poses a threat to hierarchy in high power distance cultures, while individuals in low power distance environments are interdependent regardless of their ranks within the hierarchy, so they are more likely to be in favour of ICT usage. This difference between Warkentin *et al.* and Zakour shows that either there are cultural differences in the effect of PD in different national or organisational cultures or that at least some of the research is flawed. Either way, it points to the need for more research into this phenomenon.

According to Zhao's (2013) empirical study, PD is negatively correlated with e-government development. Low power distance contributes to greater e-government development. Al-hujran, *et al.* (2011) report that power distance has a positive significant impact on the intention of citizens in relation to adopting e-government. However, some recent findings contradict these results. Bankole and Bankole (2017) note that power distance has a negative significant relationship with the behavioural intention to use mobile banking services. (Nguyen 2016) concludes that power distance has no significant relationship with e-service levels. The latter findings concur with Zhao *et al*. (2014) whose results find that power distance does not have an effect on e-government diffusion in either richer or poorer nations. These contradictory findings in the literature suggest that either power distance differs from one culture to another, with either a negative or positive impact on e-government adoption or that there are problems or inconsistencies in the research such as a failure to take account of confounding variables.

Uncertainty Avoidance (UA)

Uncertainty Avoidance (UA) is *"the extent to which the members of a culture feel threatened by uncertain or unknown situations"* (Hofstede *et al*. 2010, p.191). Hofstede adds that societies that embrace strong uncertainty avoidance maintain rigid codes of belief and

behaviour and are intolerant towards deviant persons and ideas. Societies maintain where UA is weak have a more relaxed atmosphere in which practice counts more than principles and where deviance is more tolerated. Individuals in cultures characterised by low uncertainty avoidance are more inclined to adopt innovation because they exhibit a greater tolerance for risk (Yeniyurt & Townsend, 2003).

According to Straub (1994), organisations in countries with high uncertainty avoidance, such as Japan, are less likely to adopt email. Downing *et al*. (2003) argue that nations with high uncertainty avoidance are likely to adopt more information-rich, socially present forms of media such as fax, phone and face-to-face conversations. On the other hand, there is a greater chance of countries with low uncertainty avoidance adopting leaner forms of electronic media, such as email or text.

Several researchers agree that cultures with high UA are typically late adopters of technology (Straub 1994; Garfield & Watson, 1997); Keil *et al*. 2000). Garfield and Watson (1997) explain that high UA hampers the development of technology infrastructure. Nguyen (2016) found higher uncertainty avoidance translates into greater e-government project success. The same is true with the study undertaken by Al-hujran *et al*. (2011) which suggests that higher uncertainty avoidance has positive relationships with the intention of citizens to adopt e-government strategies. These findings contradict those of Erumban and de Jong (2006) who report that countries with low levels of UA show high rates of ICT adoption.

These findings contradict other studies that find UA to be insignificant. For example, Capece *et al.* (2013) suggest that UA has no significant effect on the diffusion of e-commerce. Bankole and Bankole (2017) show a positive relationship with mobile banking usage.

Individualism/Collectivism (I/C)

According to Hofstede *et al*. (2010), individualism characterises a society in which the ties between individuals are loose. This means that everyone is expected to look after their own interests. Collectivism characterises a society in which groups of people experience strong group interrelationships. These groups will throughout their lifetime continue to protect these ties with (often) unquestioning loyalty, e.g. people who are members of sports clubs or political parties.

Erumban and de Jong (2006) add that countries with a high level of individualism live in an environment that fosters free expression of individual ideas. This, in turn, encourages them to be more innovative and to be early adopters of new ideas. Hofstede *et al*. (2010) believe

that the Internet and email have higher usage in an individualist-oriented culture than in a collectivist-oriented one. On the other hand, in a study on e-government adoption in Jordan, Alhujran *et al*. (2015) found that individualism has no discernible impact. This shows that IT tools are more easily, frequently and eagerly adopted in individualist than collectivist societies. Another important finding comes from the study of Lee *et al*. (2013) who examined the impact of cultural differences on technology adoption. Their findings imply that within individualistic cultures, people seek information on their own from direct and formal sources, whereas in collectivistic cultures, they tend to use other individuals' subjective evaluation of an innovation. Abdulrab (2011) found a correlation between individualism and IT adoption in Yemeni Universities. A recent study by Bankole and Bankole (2017) suggests that individualism is correlated with the utility expectancy of mobile banking usage.

Masculinity/Femininity (MF)

Hofstede *et al*. (2010, p.140) refer to the level at which traditional gender roles act differently. Men tend to be "*assertive, tough, and focused on material success, whereas women are supposed to be more modest, tender, and concerned with the quality of life*". This means that there is a gap between the values and roles attributed to men and women. Thowfeek and Jaafar (2010) believe that masculine cultures are characterised by achievement and success. Whereas feminine cultures emphasise on solidarity, equality, consensus seeking and are concerned with social relationship. Thowfeek and Jaafar (2010) concluded that countries exhibiting high masculinity culture score tend to focus more on reaching their goals and achieving higher rate ICT. According to Hofstede *et al*. (2010), organisations with masculine culture are concerned with rewards, training and improvements of employees. In contrast, McCoy *et al.* (2007) found that masculinity individuals possess a higher level of self-confidence but low level of usability of technology.

Studies that use the masculinity/femininity dimension from the national culture framework include: Straub *et al*. (1997) who tested workplace email adoption in three countries (the US, Switzerland and Japan); Huang (2003) whose study examined email acceptance among people in China; the work of Al-Sukkar (2005) looked at Internet banking adoption among bank managers in Jordan; On the other hand, a recent study by Al-hujran *et al*. (2011) found that masculinity has no impact on the intention of citizens to adopt e-government.

Long-Term and Short-Term Orientation (L/STO)

This dimension examines the importance attached by society to the future versus the past and present. Societies that have a long-term orientation are more positive toward adopting and using ICTs and more innovative than cultures that are short-term oriented. ST oriented cultures focus on the past and tradition, whereas those that embrace a long-term outlook look forward to the future (Hofstede *et al*. 2010). For Arslan (2009), a culture with a low long-term orientation places priority on tradition, so may not be open (or may be less open) to creativity and innovation. In a similar way, Hofstede *et al*. (2010) expand the definition of long-term orientation (LTO) to include features focused on future reward (e.g. 'perseverance and thrift'). In contrast, short-term orientation (STO) includes features related to the past and present, in particular, "*respect for tradition, preservation of 'face' and fulfilling social obligations*" (p.239).

Khalil (2011) arrives at a similar conclusion in relation to (L/STO) term strategies. A long-term culture has a positive impact on e-service strategic planning. Similarly, in a study conducted on e-government service delivery, Nguyen (2016) found that long-term orientated culture has a high rate of e-service. These findings are in line with those of Zhao (2013) who concludes that long-term orientation is associated with e-government development. In modelling the effects of cultural dimension on ICT acceptance in Indonesia, Sriwindono and Yahya (2012) found that long-term orientation has a significant influence on perceived usefulness. However, Al-hujran *et al.* (2011) found that long-term orientation has no significant effect on the intention of citizens to use e-government services.

It is evident that most empirical studies have found that long-term orientation positively enhances ICT implementation and the acceptance of new technological concepts. Conversely, short term orientation has no effect on ICT implementation, as (STO) embraces the traditional concepts more so than creative and innovative ones.

Indulgence/Restraint (I/R)

The sixth dimension, indulgence/restraint, was derived from Minkov (2007) who points out that happiness is associated with a perception of life control, which is described as a source of freedom/leisure. Drawing on this idea, Hofstede *et al*. (2010, p.281) describe indulgence as the characteristic of *"a society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun"*. Its counterpart, restraint, is described as follows: *"a society that suppresses gratification of needs and regulates this by means of strict social norms"* (Hofstede *et al*, p.281). Indulgence is valued in a society wherein people cannot delay gratification and show generosity through both money and favours. On the

other hand, restraint is esteemed in a society where individuals control/delay such gratification and feel less able to enjoy their lives (Minkov, 2007). This implies that a society where people enjoy high-indulgency levels tend to be less serious towards work compared to one with greater restraint. However, high indulgence groups are found to be more inclined to show a positive attitude towards innovation (Hofstede *et al.* 2010). Didero *et al.* (2008) give examples of some of the positive attitudes found in high indulgence cultures, such as readiness to adopt change, receptivity to new information and a positive attitude towards science.

According to Hofstede *et al.* (2010), cultures with a high indulgence score use email and the Internet for private communication, while this cannot be said to be the case for the more restrained group. Similar findings are found in the study by Mahomed (2015) who reports a positive correlation in using emails between indulgence and 'perceived ease of use'. Even studies after 2010, such as those by Ebrahimi *et al.* (2010), Al-smadi (2012), and Sriwindono and Yahya (2012), undermine the dimension of (I/R) and use only the five original ones. This could be due to limitations in the composition of the questionnaire (Lažnjak 2011). However, a general study undertaken by Zardosht *et al.* (2011) suggests that indulgence has a positive correlation with e-commerce. However, a more recent finding by Nguyen (2016) concludes that indulgence is not significantly correlated with e-service. There is not enough empirical research to prove the (I/R) dimension which was added by Hofstede in 2010. Li and Yeh (2010) recommend that more researchers include this dimension as part of the measurement model for future research on technology adoption.

5.2.2 Organisational Culture

To examine organisational culture, Hofstede *et al.* (1990) proposed a six-dimension model as discussed in Section 2.5.1. This model considers 'values' as an element that can be used to classify organisational culture. Three of these are more suitable for technology-related studies (Ciganek, 2010). Accordingly, the model included in this study uses the following three: Results-Oriented (RO), Job-Oriented (JO) and Closed System (CS). In this research, a fourth dimension is added which is not included in Hofstede's 1990 model but suggested by Ciganek (2010). This added fourth dimension is Need for Security (NS).

Results-Oriented Versus Process Oriented

Cabrera *et al.* (2001) maintain that process-oriented organisations concentrate on the methods and regulations to which staff must adhere in order to execute a task. Results-

oriented organisations mainly focus on the completion of the task or achievement of the goal. Organisations that take risks are typically result-oriented, while bureaucratic entities that have many rules and regulations are considered to be process-oriented. The former are geared towards taking risks and tend to support innovation and creativity in order that the organisation can survive longer and grow (Hofstede *et al.*, 1990).

Results-oriented organisations are more motivated to adopt new technologies. Ruppel and Harrington (2001) maintain that organisations that foster innovativeness and explore new ideas among employees are highly fit to adopt new technologies. Ciganek *et al.* (2010) state that workers in process-oriented organisations are more likely to perceive new technology as being a threat and are less likely to embrace it as a practical tool. The opposite is true of result-oriented organisations where employees tend to be more experienced in using technology creatively. Additionally, staff can select any technology that helps them to achieve their targets or goals. They tend to pay less attention or regard to formalities (Ciganek *et al.*, 2010).

The implication is that results-oriented organisations are more likely to adopt and use ICT than process-oriented environments. Mahomed (2015) suggests that there is a significant positive relationship between results-oriented and perceived ease of email use in Malaysian universities.

Job–Oriented Versus Employee–Oriented

It is the dimension which considers whether the welfare of the employees or the completion of the job is primary consideration (Hofstede *et al.,* 2010). Take is an active part in employee welfare the top-management is engaged the ideas in employee-oriented organisation is responsible for the employees' welfare and decisions are usually the remit of groups or committees in employee-oriented cultures. On the other hand, employees in job-oriented culture feel that their welfare is secondary to the completion of the job. This places them under a huge pressure to get the job completed. Moreover, a single individual makes important decisions. Ruppel and Harrington (2001) suggest that job-oriented organisations are less likely to adopt an innovation or system than employee-oriented counterparts.

Closed/Open System

In this dimension, the flow of information is measured to determine whether it flows freely or is tightly controlled. It can be assumed that a closed system is in place if information tends to be maintained secretively (Cabrera *et al.* 2001). Ciganek *et al.* (2010) stress that open-

system organisations are more likely to be ready to accept new technology than those operating closed systems. Organisations with open system-culture assists in the sharing of experience and promotion of cooperation (Ciganek *et al.*, 2010). In contrast, closed-system organisations are less likely to concentrate on knowledge or experience sharing, thus reducing the adoption of new technology. Mahomed (2015) found that there is a significant negative relationship between closed systems and perceived ease of email use in Malaysian universities.

Low/High Need for Security (NS)

The Need for Security represents an organisational culture wherein individuals require constant assurance of security for their actions. Ciganek *et al.* (2010) state that the degree of acceptance of a technology is dependent on how many staff can rely upon, disclose and integrate information disclosed by co-workers using it. Those with a higher need for security prefer to use secure communication channels. On the other hand, individuals in organisations with a lower need for security favour e-mail despite the risk involved. It is widely established that using email brings with it several risks. Brake (2004) points out that it is possible to retrieve deleted emails and restore them on the network server. Some organisations commit staff to sign email policies giving management the legal ground to check their email (Udo, 2001).

Legally speaking, most email content is the property of the employer rather than the sender (Eunson, 2012). Thus, many workers feel hesitant to use email because management has legal access to emails without needing to obtain the worker's consent (or even knowledge). The work environment of ICT must provide a secure environment in which employees feel at ease and thus perform productively and innovate. Mahomed (2015) found that need for security has a negative relationship with perceived ease of use in the context of email usage. On the other hand, there is no significant relationship between the need for security and perceived worth of email usage.

5.2.3 Workplace Factors

Bresnahan and Yin (2017, p.95) state: *"Today, a new wave of […] ICTs is moving into the workplace, both replacing and complementing existing technologies"*. This section discusses the important workplace factors derived from previous studies that might affect successful ICT implementation.

<u>Self-Efficacy</u>

Self-Efficacy (SE), in the context of ICT, is defined as *"an individual's perceptions of his or her ability to use computers in the accomplishment of a task rather than reflecting simple component skills"* (Compeau & Higgins 1995, p.192). ICT self-efficacy means having confidence in managing basic and advanced computer and Internet-related tasks (Rohatgi et al. 2016). Marakas *et al.* (1998) categorised SE into two types: the first is known as 'general computer self-efficacy', while the second is referred to as 'task-specific computer self-efficacy'. Several studies have found self-efficacy to be an important factor that influences the user's behavioural intention to use technology (Tarhini *et al.*, 2017; Hernández-Encuentra *et al.*, 2009; Chang & Tung 2008).

In terms of high and low self-efficacy, it was found that older people have low self-efficacy in using technology (Czaja et al., 2006). This can be attributed to the fact that older people often feel that they are too old to learn how to use new technology (Turner *et al*., 2007).

<u>Peer Influence</u>

Intuition suggests the influence of peers is likely to be significant in an organisation. Peer influence is measured by the relationship among employees against the organisational culture. There are many factors which play significant roles in making positive or negative peer-influence. Less demographic differences can create homogeneous groups where the peer influence is positive (Chattopadhyay, 1999). The findings of Al-Awadhi and Morris (2012) reveal that peer influence was significant for students on intention to use e-government services. It is therefore important that government bodies ensure that users have a successful experience while using e-services. In contrast, the findings of Chau and Hu (2001) found that a limited and/or poor experience may negatively influence their peers and others who are important to them. Suki and Ramayah (2010) indicate that the influence of peers/colleagues/friends is a great source of support to employees in using e-government systems instead of other alternative tools. Tarhini *et al.* (2016) found that students with high uncertainty avoidance will be highly influenced by their peers to use system as they are more likely to be cautious towards technology. Also, they found that for more collectivist users the opinions of others such as peers play greater roles in the decision to adopt technology.

<u>Resistance to Change</u>

Resistance to change refers to employees' reaction to show resistance to a new idea or change that can cause work disruption. Resistance to change is an important issue in current change management (Kuipers *et al.*, 2014). Change management involves a change in the

procedures established within an organisation. A change in the internal and external environment triggers change management in the organisational performance. According to Veenstra *et al*. (2011), the action of change is not straight forward, and it is more difficult in large complex organisations.

Resistance to change is commonly encountered when e-government (or any technology) introduces changes into an organisation. Luke (1982) found that employees resisted change when something disrupted their routine. Wargin & Dobiey (2001) and Lallmahomed *et al*. (2017) listed many reasons that could contribute to 'resistance to change, such as lack of understanding of the positive benefits of e-government services in terms of performance, a change in authority or power and the lack of skills required to use new technology, etc.

Dent and Goldberg (1999) contend that employees normally resist the loss of position, pay, or power rather than change itself. Ho and Ni (2004) point out that innovative individuals are positive towards accepting new ideas and are more likely to adapt to change. Resistance to change is one factor amongst many that can hinder the adoption of e-government services and lead to the failure to adopt new systems (Dwivedi *et al*., 2015). However, there is a notable lack of research in terms of resistance to change in the e-government context (Alomari *et al.*, 2014).

Resistance can be considered as feedback that can be an important means to improve the quality and clarity of the strategies of a change proposal. It can also "*enhance the prospects for successful implementation*" (Ford & Ford, 2009, p.3). Kim and Kankanhalli (2009) found a negative relationship between organisational support and resistance to change. Al-Rashidi (2010) found that employee resistance to change can lead to the failure of new systems. All too often, change meets with resistance due to a fear of the new (Schwester, 2009; Al-Naimat, 2013).

<u>Legacy systems</u>

The term 'legacy systems' refers to outdated computer systems, programming languages or application software (Techopedia 2018) or "*of, relating to, or being a previous or outdated computer system*" (Merriam-Webster 2018). Brodie and Stonebraker (1995) describe it as a system which is significantly difficult to modify. Legacy systems are mostly written in programming languages such as COBOL, RPG, PL1, FORTRAN, BASIC, PASCAL, C, etc. (Jha *et al.*, 2014). "*all software becomes legacy as soon as it's written*" (Hunt and Thomas, 1999 cited in Furnweger *et al.*, 2016, p.414).

According to Srinivas *et al*. (2016, p.293), "*legacy system is embedded with all the daily routines of the organisation*". For instance, a legacy system processes the business data through computer systems and generates information, which helps the management to achieve objectives of an organisation. Legacy system can provide critical business functionality of an organisation in a smooth manner and can afford long-term benefits to user (Srinivas *et al*., 2016).

Legacy software applications were not created to cope with current business requirements (Srinivas *et al*., 2016). A consequence is that legacy applications face many challenges, such as a lack of up-to-date documentation, the requirement for high levels of skilled manpower to maintain them, the shortage of resource availability and high maintenance costs (Srinivas *et al*. 2016). Most organisations have legacy systems to some extent. A legacy system may be problematic, due to compatibility issues, obsoleteness, lack of security support (Bisbal *et al.,* 1999; Jha *et al*., 2014). Srinivas *et al*. (2016, p.293) point out that "*it is difficult to modify and replace these software applications with latest technologies*". Consequently, a legacy system might provide insufficient information to the users as a legacy system is not user friendly.

Legacy system-software is large and complex as it consists of the software applications developed (Jha *et al.,* 2014). Though it is almost inevitably necessary at some stage, replacing a legacy system, or even updating it, is a risky strategic business move for many reasons:

- Replacing and maintaining legacy software systems are costly and time-consuming.

- There is no straightforward way of configuring the new specifications to emerge with identical functions to the original system. There is a need for "formal techniques for the rejuvenation of legacy embedded software, concentrating on control components" Schuts et al. (2016 p.1).

- New software development is itself risky, so there may be unexpected problems with users who are stuck when using a new system.

- Rules of organisation within the workplace may only be documented in the legacy system. This means that such a legacy system can therefore represent a high risk when changes are required (Cutting, 2016), as these rules may be lost due to the lack of documentation of these same rules elsewhere.

It is important for decision-makers not to jump to upgrade a legacy system without a thorough scrutiny of the existing system. Upgrading a Legacy System might not solve the existing problems but could instead risk interrupting services as the new systems are debugged. To manage legacy systems, and particularly to change to or modify a new one, is a big challenge for many organisations (Huijgens *et al*., 2016). This could be attributed partly to the legacy software system of the organisation which is built and linked in certain ways to improve workplace satisfaction, thus enhancing employee retention and fuelling productivity. This would strengthen the organisation's functionality to run its business processes with ease (Shatat & Dana, 2016).

Gartner (2016) listed some key problems when using a legacy system:

- Legacy systems are often run on obsolete hardware that is slow and expensive to maintain.

- The maintenance of software is generally expensive, since finding failures is a slow and expensive process due to the lack of documentation. This situation becomes more serious for legacy systems because generally there is no complete understanding of the system's internal functioning.

- Integration efforts with the new system are usually hindered by the lack of clear interfaces.

- Finally, legacy systems are very difficult or even impossible to widen.

Managing a legacy system and linking it to the building of new software is a big challenge for an organisation (Huijgens *et al*., 2016). Software (legacy system) evolution is one of the challenging issues in today's business environment. It is necessary for an organisation which uses ICT to align their business to compete with global business (Srinivas *et al*., 2016).

Top management support

'Top management support' includes the support of all managers who have authority in establishing and enforcing policies and guidelines (Altameem, 2007). It is defined in relation to the level of commitment of senior managers who can allocate valuable organisational resources (Holland & Light, 1999). Top management support is considered to be the most prominent CSF in ICT implementation (Al-Naimat *et al*., 2013) that directly affects IS success (Sabherwal *et al*., 2006). There is considerable evidence of the effect of top management support on IS success in all related studies. For example, Elbanna (2012)

considered top management support to be one of the critical successful factors contributing to the successful implementation of ICT projects. Indeed, lack of top management support is the number one risk to the successful implementation of an ICT project (Liu *et al*., 2010; Peter, 2013).

Al-Naimat *et al*. (2013), Tarhini (2015), and Napitupulu and Sensuse (2014) found that top management provides and allocates sufficient resources for e-government implementation. Alshehri and Drew (2010) found that top managers are concerned about the significance of successful implementation of ICT. Thus, achieving top management support is an important step that must be fully considered and scrutinised in advance of ICT implementation in e-government (Calder & Moir, 2009).

Project Management Standards

Project management standards are an important means to improve and enhance project management performance (Papke-Shields *et al*., 2010). However, to date, there is only limited evidence on the usage of standards (Varajão *et al*., 2017).

The most familiar standards are ISO and ANSI assigned to project management associations all over the world in order to promote industry-specific standards. For example, ISO, which stands for International Organisation for Standardisation (2004), defines standards as a ''*document ... established by consensus and approved by a recognised body*'' (p.1). This implies that the selection of standards, such as ISO to ensure better project management standards, is a complex process. Another definition of standard is offered by Varajão *et al.* (2017) who describe it as "*a formal document that describes established norms, methods, processes, and practices*" (p.3). ISO 38500 can be appropriate for any organisational project, regardless of size (Sylvester, 2011). ISO may push organisations to use the correct standards for effective governance of IT which helps in providing guidance about the effective integration of information technology. Other important standards are PRINCE 2 and PMBOK. PRINCE2 stands for PRrojects IN Controlled Environments, it can help improve the effectiveness of project management (Ghosh *et al*., 2012). PMBOK, meanwhile, stands for Project Management Body of Knowledge. Enhancing PMBOK can improve project management discipline (Ghosh *et al*., 2012).

Communication in Organisation

Myers and Myers (1982, p.34) say of organisational communication that it is "*the central binding force that permits coordination among people and thus allows for organised*

behaviour". Richmond and McCroskey (2005) introduce a definition of organisational communication which holds that it is the process by which employees stimulate meaning in the minds of other employees either verbally or nonverbally within an organisation. Kaplan and Norton (2001) observe that communication can ensure organisational achievement.

In the 21st Century, the pace of advance and innovation in communication technology is already fast and will become ever faster. Cowan (2017) offers a new definition for organisational communication in the 21st Century. Human communication has evolved from face-to-face to online communication. Communication aims at not only imparting ideas and information, but also extending our field "*to connect with each other, to create positive participation and change*" (Cowan, 2017 p.12).

Communication in organisation is commonly described as being horizontal or vertical. Delerue and Sicotte (2017) refers to horizontal communication within organisational setting as occurring when employees and managers working within the same hierarchy share information with one another. Delerue and Hélène (2017) also suggests that horizontal communication is an indispensable means which helps to save time and facilitate coordination. It plays an important role in promoting learning and innovation (Daft, 2010). Galbraith (1977) found that in order to achieve vertical communication in an organisation, the following are required: "*there are five structural devices, namely hierarchical referral, rules, plans and formal management information systems*" (cited by Mahomed, 2015, p.32). Communication is a reciprocal process; it involves both information and understanding between managers and employees and vice versa. Communication acts in many beneficial ways within an organisation: disseminating information among employees and motivating them to improve their performance, rationalising and verbalising feelings and emotions, and bargaining and compromising on conflicting opinions to enable better decision-making. Communication is the backbone of any organisation and helps internally with the ongoing flow of information. It is the bridge to achieving external channels of communication (Liebel *et al.,* 2016).

Communication is interwoven into organisational structure on a daily basis. In this manner, organisational communication is not only concerned with the continuous flow of information but is also interrelated in the organisational structure of different departments (Hatch, 2018).

5.3 Conclusion

The combination of national and organisational culture with workplace factors is used as the basis for a theoretical model of the factors that influence the successful implementation of ICT. The incorporation of Hofstede's cultural theory with other factors has resulted in an integrative research model of successful ICT projects in e-government and the proposition of several research questions. The justifications for the constructs of this research model were discussed in detail.

The following chapter discusses the research methods used to examine the proposed research model and presents in detail the empirical phase of the research which uses a mixed method approach of a survey and semi-structured interviews.

6. Research Philosophy and Methodology

6.1 Introduction

This chapter presents the philosophies and approaches underlying this research. Myers and Avison (2002) observed that research of all types, qualitative or quantitative or both, is based on certain underpinning assumptions about what constitutes valid research. Thus, the use of appropriate methodology to achieve research objectives is essential to ensure the credibility of the findings. The choice of methodology is related to the research aims and the research problem. The research question is mainly about identifying the three study components (national culture, organisational culture and workplace) that affect the successful implementation of ICT in the public sector in Oman.

Researchers should acquire a good understanding of alternative research methodologies and be able to justify the choice of their selected method(s). This chapter presents the research methodology chosen for this study. The epistemological position of this research is pragmatic combining elements of both positivism and interpretivism. The research uses a mixed method approach: quantitative research derived from a questionnaire and qualitative research derived from personal semi-structured interviews to key actors and public managers involved in the four case studies (HEAC, EDUP, HR and SH). This provides the core part of analysis in this study.

6.2 Research Philosophies

The research philosophy adopted by a researcher can be thought of as the assumptions underlying the way in which (s)he views the world. Such assumptions underpin the choice of research strategy and the methods used (Saunders *et al*., 2012). These philosophical assumptions have been called *'worldviews'* (Creswell, 2009). The research philosophy provides the grounding for any research assumptions that can guide the different choices made during the research process. There are three sets of assumptions essential to any research procedure, namely ontological, epistemological, and methodological (Saunders et al. 2012).

Ontology is associated with the nature of reality (Floridi, 2003). It is concerned with how a researcher views the world and whether s/he considers that the world is changing constantly

or dependent on the dynamics of the social system (Bhattacherjee, 2012). According to Antwi and Hamza (2016) there are two fundamental philosophical stances on ontology encountered in social science research: objectivism and constructivism. Objectivism assumes the independent and external existence of reality while constructivism portrays reality as a social construction.

Epistemology examines what is the best way to study the world and a subjective or objective approach can be used to study social reality. Batteau and Trainor (2014) state that the term 'epistemology' comes from the Greek word 'episteme' (meaning knowledge and science). Epistemology refers to the field of philosophy concerned with analysing the nature and scope of knowledge. This philosophical stance is applied through various research paradigms Saunders *et al.* (2009), three of which are relevant to the current study. These are the positivism, interpretivism, and pragmatism:

1. **Positivism:** According to Kuhn (2012) the positivist approach is based on the belief that a single reality exists. Wilson (2014) states that positivism takes an objective view while research is being conducted; the positivist is viewed as an external observer to what is involved in the study. By its nature, positivist research is normally associated with quantitative rather than qualitative research. In quantitative studies, researchers build relationships among variables and form them into questions or hypotheses to test the validity and reliability of questions (Creswell, 2009).

2. **Interpretivism:** According to Bryman and Bell (2011), interpretivism involves access to reality which is only available through social constructions such as language and shared meanings. Interpretivism is generally associated with a qualitative research approach that attempts to understand phenomena via the meanings assigned to them by participants (Walsham, 2006; Thanh & Thanh, 2015). Agosta (2010) states that the use of interpretive research has increased in popularity in social science fields such as organisational studies and information systems. Walsham (1993) described interpretivism research in terms of "aiming at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context" (p.4).

3. **Pragmatism:** Pragmatism adopts the philosophical assumption that there are many ways of looking at the world and that there is no single view that can describe the entire picture (Saunders et al., 2012). According to Dudovskiy (2018, p.45),

"pragmatics can combine both, positivist and interpretivism positions within the scope of a single research according to the nature of research question". Creswell and Plano Clark (2007, p.173) suggests that "pragmatism is the overarching paradigm for mixed methods research". Tashakkori and Teddlie (2010) argue that pragmatists consider the research questions more so than the methods of investigation and add that such an approach offers the best chance to obtain useful answers. According to Feilzer, (2010); Creswell, (2009); Saunders et al., (2009), there is an increased growth of the use of mixed methods research in IS which highlights the practical relevance of another philosophical model identified as pragmatism.

Methodology that is concerned with which research methods and techniques are appropriate for the gathering of data for a given research project. The choice of research method depends upon both the researcher's philosophical perspective and the nature of the research problem.

6.2.1 The Research Philosophy of this Thesis

The ontological stance of this thesis is predominantly objective but also combines some constructivist characteristics. The primary focus of this research is to investigate from an objective approach, the effects of cultural dimensions on the successful implementation of ICT in Omani public organisations. It is assumed that national and organisational cultural dimensions exist and can be objectively investigated and measured using indicators drawn from the literature and from validated research instruments already in widespread use. These included, for example, Hofstede's Values Survey Module (VSM) questionnaire, (see section 6.4). However, given that culture is fundamentally a non-tangible phenomenon that is socially constructed at a variety of levels, it is also important to incorporate a constructivist dimension within the ontological approach of the study. This acknowledges that some aspects of culture and their impact on ICT implementations might not be directly measurable using quantitative indicators. Instead, insights into these can best be obtained by exploring the individual perspectives and experiences of those directly involved, using interpretive research methods. This research therefore also adopts a constructivist approach based on constructing meanings of the qualitative data.

The epistemological position of this research is therefore pragmatic combining the characteristics of positivism and interpretivism. This research consists of two distinct phases: quantitative followed by qualitative. The quantitative phase provides an initial examination

of the cultural dimensions which influence the successful implementation of ICT. The qualitative phase is based on interpretivism that aims at exploring participants' views in more depth.

This research adopts a pragmatic research paradigm. This paradigm is designed to address the specific research questions of the study, rather than being rigidly focused on a particular epistemological approach. A researcher from a pragmatic stance aims to find a middle ground of philosophical considerations between positivism and interpretivism. Therefore, this research advocates pragmatism and uses a mixed methods approach (Johnson & Onwuegbuzie, 2004).

The research follows a mixed methods sequential explanatory research design. This guides the direction of the collection of the data, the analysis of data, and the mixture of quantitative and qualitative data in multiple case studies. The mixed methods approach is adopted to gain a deeper understanding of the phenomenon under investigation, i.e. effects of cultural dimensions on the successful implementation of ICT in Omani public organisations.

6.3   Research Methodology Overview

When choosing a research methodology, a number of factors must be considered. As Yin (2011) states, the characteristics of the research will inform the research strategy. These include the research topic, objectives, research questions, and nature of the research problem. Other pertinent factors to be considered are the time available to conduct the study, access to the research sites, and the researcher's experience and skills.

6.3.1   Mixed Methods Approach

Creswell (2014, p.11) states that in a mixed methods approach, *"investigators use both qualitative and quantitative because they provide the best understanding of a research problem"*. Mixed methods research requires that researchers develop a broad set of skills that span both quantitative and qualitative research approaches (Bryman, 2007).

There are significant challenges, to conducting a mixed methods study (Fetters & Freshwater, 2015). It is perceived that a mixed methods study requires more work, more financial resources, and more time to conduct (Niglas, 2004).

In spite of these challenges, Johnson and Onwuegbuzie (2004) suggest that "*mixed methods-research can help bridge the schism 'gap' between quantitative and qualitative research*" (p.15), and that it is better than using just qualitative or quantitative research alone. One of the benefits of using the mixed methods approach is that the combination provides a greater understanding of research problems.

It is worth identifying and discussing the quantitative approach used before describing the qualitative phase of this research. The quantitative approach uses numeric data. It is used to measure 'how much' or 'how many (Nau, 1995). Creswell (2003) claims that it is most useful when the problem requires the identification of factors that impact outcomes, understanding the predictors of results, or learning about the usefulness of an intervention. The quantitative approach allows for generalisation from a sample to a population by the act of reasoning which is based on drawing inferences from the results (Polit & Beck, 2010). There are other advantages to using the quantitative approach. One of these is that it requires a shorter period of time for data collection (Johnson & Onwuegbuzie, 2004). For example, researchers may use a questionnaire to collect data from a large number of people in a relatively short period of time, especially if technology is used to enhance this.

Saunders *et al.* (2012, p.141) state that *"Qualitative is often used as a synonym for any data collection method (such as an interview) or data analysis procedure (such as categorising data) that generates non-numerical data"*. Qualitative data can be collected in different ways, such as interviews, observing individuals and from the minutes of meetings.

The choice of the mixed methods approach was made for many reasons. The mixed methods approach helps bridge the gap between quantitative and qualitative research, ensuring that a research issue is examined in different ways to provide a more understanding. In particular, quantitative methods allow for the identification of relationships between variables, such as dimensions of culture on the success of ICT implementations and measurement of the strength of these relationships. In contrast, qualitative methods such as interviews can be used to provide more in-depth insights into the possible reasons and explanations for the quantitative findings and any identified relationships. Additional methods such as analysis of documentary evidence can also help ensure that the research questions are addressed from a variety of perspectives and that there are no 'gaps' in the information/data collected. Using a variety of forms of data collection helps improve the validity of the study by confirming

the findings using different sources of information, a point which is further discussed later in the chapter (see Section 6.5).

According to Creswell (2009), three strategies can underpin the mixed methods approach adopted by a researcher:

Concurrent mixed methods

The first strategy centres around concurrent mixed methods in which the researcher employs both quantitative and qualitative research to provide an analysis of the research problem. The researcher collects both forms of data simultaneously and then analyses both to obtain the overall results.

Transformative mixed methods

The second strategy is transformative of mixed methods which employs both quantitative and qualitative methods that best assist a theoretical perspective. This theoretical perspective *"provides a framework for topics of interest, methods for collecting data, and outcomes or changes anticipated by the study"* (Creswell, 2009, p.15).

Sequential mixed methods

The sequential mixed methods, in which the *"procedures are those in which researchers seek to elaborate on or expand on the findings of one method with another method"* (Creswell, 2009, p.14). This research adopted a sequential explanatory strategy (see Figure 6.1). The quantitative data were collected and analysed in the first phase of the research (survey). In the second phase, the research emphasis lay on collecting and analysing the qualitative data (semi-structured interviews). This strategy is particularly useful when unexpected findings emerge from the first phase of quantitative research as the researcher can investigate these in more detail by conducting the second phase of the data collection, the qualitative stage (Morse, 2000). The rationale for this approach is that collecting various data types provides a complete understanding of research problems and explains participant views in more depth than is possible with either quantitative or qualitative data alone (Creswell, 2014).
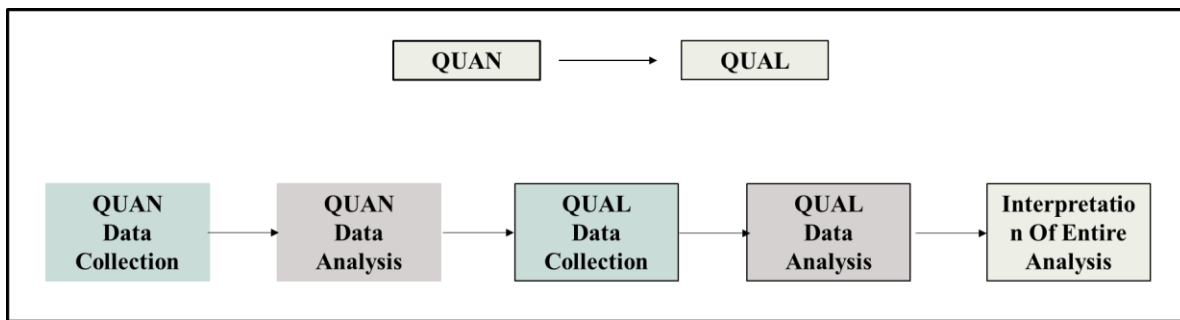
Figure 6.1: Sequential Explanatory Designs

Adapted from Creswell (2009)

The entire analysis and discussion of both the quantitative and qualitative data help in developing a set of recommendations for a successful ICT project in e-government.

For this study, the quantitative phase was conducted by a combination of paper-based and on-line questionnaires (the latter using Survey Monkey) with employees at public organisations to test Hofstede's cultural theories and workplace factors.

The qualitative phase of this research involved semi-structured interviews. These were conducted in order to seek clarification on issues that arose from an analysis of the quantitative study data. The interviews also gave employees a chance to talk about their experiences in the business process of using ICT. The interviews with top-level management were used to seek information about the planning and delivery of the business process through ICT activities. The objective of using mixed methods is to obtain a rich data set surrounding the specific research issues.

6.3.2 Research Strategy

Saunders *et al.* (2012) define strategy as a plan of action to achieve a goal and how the researcher will go about answering the research questions; it can include experiments, case studies, archival research, ethnography, surveys, the grounded theory method, action research, or narrative inquiries. Yin (2014) also suggests five main research strategies when conducting a social research namely case studies, experiments, surveys, histories and analyses of archival information.

The choice of research strategy depends upon three conditions: the type of question being researched, the control the researcher has over behavioural events, and the focus on current

as opposed to historical events. Table 6.2 displays these three conditions and shows how each relates to the five major research strategies. Case study research is useful for the study of the phenomenon in its natural context (Yin, 2014). This research is conducted using a multiple case study strategy.

Table 6.1: Research Strategies

Source: Yin (2014, p.9)

Research strategy	Question Type	Control of behaviour	Focus on contemporary events
Case study	How, why & what, where, when & who.	No	Yes
Experiment	How & why	Yes	Yes
Survey	Who, what, where, how much & how many	No	Yes/No
Archival analysis	Who, what, where, how much & how many	No	Yes/ No
History	How & why (and who & where etc.)	No	No

Case Study

Robson (2002, p.178) defines the case study as *"a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real-life context using multiple sources of evidence"*. Case study begins with identifying the research questions and continues until case closure (Eisenhardt, 2016). Case study attempts to learn about a complex situation through extensive descriptions and contextual analysis (Kohlbacher, 2006).

McNeill and Chapman (2005) offer a similar definition by stating that a case study offers an in-depth study of a single example using multiple methods. Gall *et al.* (1996, p.549) define the three purposes of case studies as follows: *"to produce detailed descriptions of the phenomenon, to develop possible explanations of it, or to evaluate the phenomenon"*. According to Orlikowski and Baroudi (1991) and Myers and Avison (2002), a case study is one of the primary research designs for IS research. In 2004, Chen and Hirschheim found that 36% of researchers use a case study or case studies in their research (Chen & Hirschheim, 2004).

Saunders *et al.* (2012) argue that the case study strategy has a significant ability to create answers to the question 'why?', as well as the 'what?' and 'how?' questions. In addition, a

well-constructed case study strategy can allow researchers to challenge an existing theory and also offer a source of new research questions (Saunders *et al,.* 2012). For this purpose, Yin (2009) classifies the case study strategy as explanatory, exploratory, or descriptive. The exploratory case study is the most prominent type, while the descriptive case study is among the most common. Explanatory case studies are the most difficult to undertake and are frequently challenged since they seek to explain how and why a series of events occurred and reflect a cause and effect relationship.

According to Yin (2014), a case study can involve multiple or single case designs (see Figure 6.2). A single case study can provide valuable information about the research question from a single organisational perspective as it provides rich descriptions of the organisational context. Previously it had been suggested that multiple case studies can strengthen the end results by replicating pattern-matching (Yin, 1994). The implicit reason for the choice of multiple case studies is that it either predicts similar results or produces different results for predictable reasons (Yin, 2014).
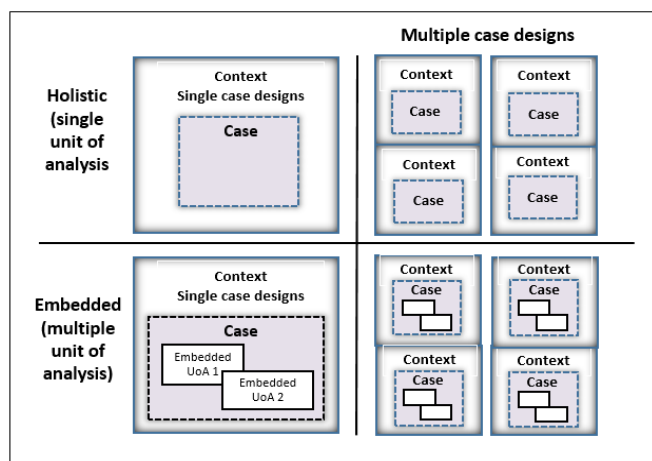
Figure 6.2: Basic Types of Design for Case Studies

Source: Yin (2014, p.50)

The case study format is an effective research method for information systems research as it can be used in a number of different ways that accommodate the complexity that is often an inherent part of the IS research process (Remenyi *et al*., 2000). It is particularly suitable for learning more about a poorly understood situation or process, such as the IS management process. The reason for this is that it allows the researcher to develop a deeper exploration of the characteristics of real-life events, such as the IS management process or the

organisation-wide rollout of a new strategic management system (Remenyi *et al*., 2000). Benbasat, Goldstein and Mead (1987, p.382) conclude in their research regarding the study of information systems that:

> *"[T]he case strategy is particularly well-suited to IS research because the technology is relatively new, and interest has shifted to organizational rather than technical issues. For example, case studies have been helpful in identifying the causal chain that led to the success or failure of an information system by revealing in chronological fashion the various actors and events that influenced the final outcome"*.

From the discussion above, the case study as a strategic research methodology is expected to help in gaining an understanding of the e-government phenomenon in its natural setting. Therefore, the case study has been deemed an appropriate strategy in this research for the following reasons:

1. There are numerous challenges and complex issues facing successful ICT implementation in e-government projects in the public sector. This study provides an in-depth examination of the effects of cultural dimensions on the success of ICT implementation in Oman

2. An in-depth examination of the nature and context of the environment related to e-government is required. This in depth-examination helps to explain the role of the cultural dimensions that shape the success of ICT implementation in e-government projects in the Omani context.

3. The case study approach allows the author to go beyond the data, recognise new ideas, understand the concepts to link the patterns and themes. This can greatly help the successful implementation of e-government.

This study uses multiple case studies as the research strategy method to investigate the research questions posed. Under this approach, the real-life context (in this study, the organisations in the public sector) is the backdrop and specific instances (one or a few cases) are chosen to illustrate how cultural dimensions influence the success of ICT implementation in Omani public administration. In this multiple case study strategy, a mixed methods approach will be employed. The mixed methods approach asks insightful questions about 'how' and 'why' rather than just addressing questions of frequency.

These multiple case studies cover four public organisations in the Sultanate of Oman by examining the cultural environment of a specific IT system in each one. Two of these organisations have implemented a successful IT system, while the other two systems have been less successful.

6.3.3 Choice of Case Studies

The central government of Oman is comprised of 23 ministries and a number of other agencies. Amongst these ministries are the Ministry of Higher Education (MOHE), the Ministry of Education (MOE), the Ministry of the Civil Service (MOCS) and the Ministry of Health (HOH). Each ministry is headed by a minister appointed by, and reporting directly to, His Majesty, the Sultan.

Each of the four cases used in this research is a major system in one of the above four ministries. The systems are respectively: Admission System (HEAC), Education Portal (EDUP), Al-Mawred System (HR) and A-Shifa System (SH). These systems are among the first systems implemented by the government as part of e-government initiatives in Oman. This section presents a brief overview of the role and function of each ministry and the background to and function/purpose of the relevant system as well as the rationale for the choice of these four systems.

It is worth noting here that all Ministries in the Public sector in Oman follow the same administrative and financial systems set by the Ministry of Civil Service and the Ministry of Finance. However, one of the major challenges in the public sector in Oman is related to the funding system for projects and initiatives. A recent study revealed that "*There is currently a lack of systematic processes for internal budgeting, coding and reporting at a level that would allow system leaders to identify the financial cost and efficiency of their decisions and initiatives*" (Ministry of Education, 2015, p153). Although this study was conducted in the Ministry of Education, this finding applies to all government bodies in Oman since they follow the same system of financing and budgeting. Therefore, no precise information is available with regards to the overall costs and budgets for these systems.

The following sections provide some details about these four systems as well as the rationale for using them for the current study.

Case Study One (HEAC)

The Ministry of Higher Education in Oman is responsible for regulating the higher education in the Sultanate in public and private universities and colleges as well as providing recognition of certificates issued by educational institutions abroad. It is responsible for providing local and international scholarships for students.

The Higher Education Admission Centre (HEAC) is an e-government project which was established by the Ministry in 2006 to ensure that higher education opportunities are distributed equally to all eligible students who desire to apply through the electronic system for seats in higher education institutions inside and outside the Sultanate. The main aim of this project is to transform the way applications to Higher Education Institutions (HEIs) are submitted and processed, application forms were submitted traditionally in paper. This process was found to be slow, taking much time and effort and, was regarded to be relatively less transparent. Students used to travel thousands of kilometres to submit their application to the Ministry and other individual HELs (HEAC, 2009). With the new HEAC, all applications to HEIs are submitted and processed online at a 'one-stop shop'.

The system has been designed to allocate places to students according to their exam results and their program preferences, and to do so with great accuracy, equity and transparency. Students can apply for up to 40 programs they are eligible for and order them according to their preferences. The system allows students to complete registration and other admission procedures online. Every year, the system provides its services to over 40,000 new school graduates.

The HEAC has witnessed a rapid progress in the last 10 years. There has been a number of updates and developments during this period. In 2007, the system was developed by adding some additional features and services such as an e-portal and SMS services. In 2009, the HE Statistics component was added to the system to collect and disseminate data about higher education institutions and students. Postgraduate scholarships and Mobile Application services were added to the system in 2011 and in 2013 respectively.

HEAC end users include IT personnel, admission staff, the scholarships department, admission and registrar personnel at universities and colleges, career guidance specialists in schools, students and parents. Some of the main tasks undertaken in the HEAC were as follows:

- Participating in setting the plans related to the admission policies in coordination with Higher Education Institutions.
- Establishing a database for all applicants to Higher Education Institutions and supplying the government planning organisations with statistical data in coordination with Higher Education Statistical System (HESS).
- Running media awareness campaigns of all academic programs to explain the admission operations in HESS.
- Researching international experiences on admission policies to develop procedures of HEAC.

The high calibre of the HEAC system was verified when it received the World Summit Award from Vienna with the collaboration of UNESCO for the best electronic product in 2007.

Staff management and leadership within the centre were governed by a regulatory mandate. This is consistent with other public sector departments, which operate on the basis of explicit laws and mandates (Al-Mamari, 2013).

Case Study Two (EDUP)

The Ministry of Education in Oman is responsible for the administration and management of the school education system in the Sultanate. The ministry's functions include setting curricula, ensuring that there are school places for all Omani children, running state examinations, building new schools and setting education policy.

The Ministry of Education (MOE) in Oman launched an educational portal (EDUP) in December 2007. EDUP offers two types of services. It provides free access services for all visitors such as, newsletters, general information, search services, advertising, guides, articles and news. It also provides services for registered users such as staff, parents and students. These services include a school administrative system, a learning management system, students' reports of attendance, evaluation reports, discussion forums and chatting, digital and e-books, e-learning resources, and students' performance reports.

EDUP has been developed in three main phases. The first phase (2006-2008) focused on automating school business and having all the educational operation and services related to students, teachers and parents transferred from the traditional way to electronic form using

the School Management System (SMS). It was adopted initially in two out of the eleven educational zones. The second phase (2009-2013) focused on gradually adapting the portal for the other educational zones. This phase also involved automating the administrative work related to the employees, building e-content, launching the Learning Management System (LMS) and launching the Document Archives System (DMS). The third phase (2014 – 2016) focused on improving the e-financial system in the portal, integrating the Ministry with the Oman financial and administrative systems and integrating the Ministry with other governments unities. This system has received local and international awards.

EDUP is a vital government project laying down one important infrastructure brick for teachers and students. The education portal is not limited to serving general education at schools. Rather, it is an important capacity building atmosphere that leads the e-learning throughout the country. Students are connected from schools in all governorates in all urban or rural areas. In addition, the development of this project was based on collaboration between government stakeholders and the private sector.

Case Study Three (HR)

The Ministry of Civil Services (MOCS) Oman is responsible for all matters relating to government employees under the civil service system such as recruitment, promotion and retirement. Currently, there are 39 public sector-organisations under the civil service system.

Al-Mawred (HR) is a national project in the Ministry of Civil Service in the Sultanate of Oman. It was launched in 1996 by the Ministry of Civil Service in order to have a central human resource database for all public-sector employees in government organisations. The system stores employees' data on their recruitment, promotion, retirement and vacation entitlements.

The idea of introducing the system started in 1992 when the Ministry of Civil Service did consultancy work in cooperation with the World Bank to transfer work in the Human Resource system (recruitment and training) from manual work into an electronic one. The main outcome of this consultancy was introducing the HR system. This was first introduced, as mentioned earlier, in 1996. It was further developed in 2006 by building a question bank consisting of over 3,000 questions in various fields. The Ministry started to use the upgraded system in 2007. The system was applied in all government zones (regions) in 2008. Training was separated from recruitment in the Human Resource system. In terms of training, the

ministry introduced distance training which was then upgraded in 2006. With regards to recruitment, the Ministry conducts recruitment procedures electronically. Recruitment tests are now done electronically, and the results are announced immediately. No human intervention is necessary in the recruitment process. This system won the 2011 UNPSA award in preventing and combating corruption in the public service category. It has also won the 2012 prestigious national "Sultan Qaboos Award for Excellence in E-Government" in the Best e-Services G2G category.

The HR system consists of two parts. The first one is the Administrative part which includes services such as exchange of information, advertising job vacancies, appointment of staff and processing retirement procedures. The second one is the financial part which includes services such as salaries, allowances and wages. The system allows employees from all ministries to access a wide range of services such as viewing their personal information and reports and applying for leave. They can also update their personal data in the system such as the information related to qualifications and training courses.

The end users of the system include IT personnel in all government civil service organisations, personnel affairs departments, administrative and financial affairs departments, staff in those organisations and job seekers. The system allows users to submit their feedback and suggestions for the improvement and updates of the system.

Case Study Four (SH)

The Ministry of Health (MOH) in Oman is responsible for the provision, coordination and stewardship of the health sector in the Sultanate. The Ministry is required to ensure overall development of the health services provided by the government and the private sector.

The adoption of IT in public healthcare in Oman was first recognised in 1987 with a project which aimed at shifting towards an IT based healthcare information system HIS management. There was, however, no clear vision, predefined strategy nor clear objectives for the project. In 1994, the Ministry of Health initiated a pilot system for the management of healthcare services at a primary healthcare centre in a small and remote healthcare centre of Wadi Al-Jahawer, Wilayat Al-Suwaiq. The system was developed in-house in three years. The pilot project resulted in having a standalone primary healthcare services management system suitable for all healthcare centres under the supervision of MOH. In 1999, the system became mandatory for all new healthcare centres. The system was implemented gradually

in secondary level hospitals in the main cities in Oman between 1997 and 2006. The initial vision of the system was approved in 2004 when the project was, for the first time, labelled Al- Shifa. It aimed at developing a national unified management information system for all public healthcare services. In 2008, MOH upgraded the system to Al-Shifa 3plus. Throughout the course of this study, this system is referred to as Al-Shifa (SH).

SH is used in 219 healthcare organisations throughout the country. It is used in all the MOH tertiary, secondary and primary health care facilities, which are linked together. The system captures all aspects of clinically significant information for the patient. The end users of the system include IT personnel, admin support staff, x-ray and laboratory specialists, doctors, nurses and pharmacists.

SH is based on automating most processes of healthcare delivery in MOH hospitals and health centres to the extent of almost making them paperless. The system benefits around 85% of public healthcare seekers in Oman. The success of the system in government hospitals encouraged the decision-makers of the non MOH governmental healthcare providers to also adopt the system (MOH, 2012). With regard to healthcare industry standards, the system uses several sets of internationally recognized standards. The system has been designed in compliance with the main elements of e-security: confidentiality, integrity and availability.

SH provides a complete solution for a healthcare facility management which range from electronic medical records to assets, Inventory, and HR management. The system captures all aspects of patient information that has clinical significance, from a patient referral/walk-in to the healthcare facility, to the discharge from the facility after the required care is delivered to the patient through a set of inpatient and outpatient services. A completely integrated computer based order entry system (CPOE) is used to integrate all service departments to provide systematic and coordinated care delivery. This makes it possible to computerize hospitals, and integrate and review all information relating to patient care and operations (Al-Gharbi *et al*., 2015).

The rationale for the choice of case studies

The rationale underlying the choice of case study organisations is based on generic selection criteria found in the literature and recommendations of a number of academics and experts

who are currently involved in e-government implementation in Oman. This selection is based on the six factors which are outlined in Table 6.3.

1. **Valuable data and information**: The selection of organisations can provide views and insights regarding e-strategies, policies, drivers and barriers. The staff can describe in detail the current situation and have clear ideas about how things should work in the future. This information was written in the form of words, phrases, or text. It was considered that there existed a satisfactory amount of documentary data available in presentations and reports.

2. **History of ICT experience:** It is important to examine the research problem within organisations having a record of ICT use. All of the organisations selected have varying degrees of experience in using technology. Each organisation had undergone the experience of implementing ICT projects.

3. **Ease of Access:** The Omani government encourages scientific research. Priority was given to organisations that have rich experience in introducing new projects. The professional relationships and network of the researcher significantly facilitated access to most organisations due to her work in the public sector.

4. **Size of Organisation:** This research depended on selecting large organisations in the Muscat governorate. This ensured effective examination of the organisational management, technical issues in the work environment and cultural dimensions that can influence the success of ICT implementation in the Omani public sector.

5. **Other Opinions:** Many discussions were held with academics and practitioners in Oman about the identity of organisations that should be investigated. Their opinions and recommendations have been valuable. They directed this study to choose organisations with different levels of success and various periods of implementation.

6. **Representative**: The four cases are chosen as being representative of large scale successful projects of e-government initiatives in Oman:

- There are 26 ministries in Oman. As each case study belongs to a different ministry, the four case studies chosen to represent 15 percent of the country's ministries.

- The services of these organisations target a large percentage of the population, if not the whole population. (The total Omani population is approximately four million).

- These organisations provide essential and basic services for citizens: education, civil services and healthcare.

Table 6.2: The Criteria Applied in the Four Organisations

Organisation/ System Criteria	Ministry of Higher Education	Ministry of Education	Ministry of Civil Services	Ministry of Health
	Admission System (HEAC)	Education Portal (EDUP)	Al-Mawred System (HR)	A-Shifa System (SH)
Valuable Data and Information	Expert people and available documents	Expert people and available documents	Expert people and available documents	Expert people and available documents, presentations, studies
ICT Experience	12 years	15 years	22 years	30 years
Ease of Access	Access was facilitated by the professional relationships and network of the researcher			
Size of Organisation	800 employees	3,000 employees	1,500 employees	3,000 employees
Local, Regional and International Awards	All four organisations have received local, regional, and international awards for ICT implementation of the (HEAC, EDUP, HR and SH) systems			
Representative	The four cases are chosen as being representative of large scale successful projects of e-government initiatives in Oman			

To achieve the aim of this research, four case studies were conducted to examine the various workplaces of ICT projects in the public sector. These multiple case studies cover four public organisations in the Sultanate of Oman, namely the Ministry of Higher Education, Ministry of Education, Ministry of the Civil Service and Ministry of Health. These four organisations use the following fours systems respectively: Admission System (HEAC), Education Portal (EDUP), Al-Mawred System (HR) and A-Shifa System (SH). These systems are among the first systems implemented by the government as part of the e-government initiatives in Oman.

According to Rosenberg and Yates (2007), the use of multiple methods adds rigour to case study research. However, before talking about research design, some ethical principles need to be considered.

6.3.4 Ethical Considerations

Ethical approval was sought from the School of Computer Science and Statistics, Trinity College Dublin (TCD). Denscombe (2002) states that ethical principles are associated with the idea of morality, through which the rights and interests of research participants are acknowledged and protected. The following ethical principles were applied throughout the data collection stages (Table 6.4):

Table 6.3: The Ethical Principles

Ethical principles	Description
Access and acceptance	Obtain access and acceptance from the potential organisations for this study. This will be undertaken before starting the data collection.
Informed consent	Informed consent of the participants to give the right to accept or refuse participation on a voluntary basis (Cohen *et al*., 2000). Participants gave informed consent before completing the questionnaires and interviews.
Anonymity of participants	All data (both questionnaires and interviews) will be dealt with anonymously without reference to a particular participant.
Confidentiality	Another ethical consideration is the concern about participant confidentiality (Denscombe, 2002). Thus, the data will be kept strictly confidential and used only for research purposes.
Avoidance of harm	The data that will be collected from participants should by no means affect their career positions or relations between one another.

These considerations are of importance in the context of Oman where cultural influences require certain modes of behaviour and the socio-political concerns could cause participants to worry about how 'what they say' is being recorded and reported. For these reasons, the above described ethical principles have important implications for the researcher in establishing the required degree of trust. Appendix A describes the ethical considerations raised by this study and how these were addressed. The request for ethical approval was submitted to and approved by the Research Ethics Committee, School of Computer Science and Statistics, Trinity College Dublin.

6.4   Research Design

Yin (2014) defines a research design as the logic that links collected data to the research question. Every empirical study has an implicit, if not explicit, research design (Yin, 2014). Nachmias and Nachmias (1992, p.77) defined a research design as:

"A plan that guides the investigator in the process of collecting, analysing and interpreting observations. It is a logical model of proof that allows the researcher to draw inferences concerning causal relations among the variables under investigation".

This definition expands that of Yin (2014) who argues that a research design is much more than a work plan. The research design helps to avoid the situation wherein the evidence does not address the initial research questions. In this sense, it deals with a logical problem rather than a logistical one (Yin, 2014).

The literature identifies many methods for data collection. These methods are known as 'sources of evidence' and can lead to more robust results and conclusions. These include documents, interviews, archival records, direct observations, field notes and physical artefacts. To meet the objectives of the study, primary and secondary data were collected from four organisations within the public sector in Oman. Primary data were obtained through the fieldwork and collected using a questionnaire and interviews. Secondary data were obtained from organisational statistics, documents, official publications of the Omani government and dissertations written by other researchers in the field.

6.4.1   The Questionnaire

Questionnaire design is the first stage in the survey process. Questionnaires are used for collecting data related to user opinions about, or perceptions of, a specific system. They can be used to measure the satisfaction and predilections of users, amongst other things (Holzinger, 2005). Even though there are a lot of different ways for measuring information system success as discussed in Section 4.3.1, this research uses 'user satisfaction'. This measure is commonly used in IS research as a proxy for measuring IS success. Many researchers have recognized user satisfaction as a critical determinant of the success of IS (Bailey & Pearson, 1983; DeLone & McLean, 1992; Doll & Torkzadeh, 1988; Igbaria & Tan, 1997; Kuang Hou, 2012; Tiago Oliveira, 2016). As described in Section 4.3.1, DeLone and McLean have proposed a model which shows six interrelated dimensions of IS success, user satisfaction is one of these dimensions. User satisfaction is one of the most frequently measured aspects of IS success (Khaled A. Alshare, 2011; Montesdioca and Macada, 2015; Isaac *et al*., 2017) This is the measure adopted in this study.

As a method of gathering data, particularly in social situations, questionnaires have a number of limitations. These are associated with the type of data they generate (see Table 6.5). For instance, questionnaires do not provide an opportunity for probing or clarifying answers (Frankfort-Nachmias & Nachmias, 2000). Dörnyei (2003) notes that questionnaires should be kept simple and straightforward in order to be clear to respondents. This may limit the depth of the investigation. The use of interviews, as will be described in section 6.4.2, helps to offset these limitations. Table 6.5 shows the advantages and disadvantages of using questionnaires. The advantages provide the rationale for choosing this research instrument.

Table 6.4: Survey Advantages and Disadvantages

Adapted from Frankfort-Nachmias & Nachmias (2000) and Dörnyei (2003)

Advantages	Disadvantages
• Relatively easy to administer. • Can be developed in less time (compared to other data collection methods). • Cost-effective, but cost depends on survey mode. • Can be administered remotely online via mobile devices, e-mail, kiosk, or telephone. • Can be conducted remotely, which reduces or prevents geographical dependence. • Capable of collecting data from a large number of respondents. • Numerous questions can be asked about a subject, resulting in extensive flexibility in data analysis. • With survey software, advanced statistical techniques can be utilised to analyse survey data to determine validity, reliability and statistical significance, including the ability to analyse multiple variables. • A broad range of data can be collected (e.g., attitudes, opinions, beliefs, values, behaviour, factual).	• Respondents may not feel encouraged to provide accurate, honest answers. • Respondents may not feel comfortable providing answers that present them in an unfavourable manner. • Respondents may not be fully aware of their reasons for any given answer because of lack of memory on the subject, or even boredom. • Surveys with closed-ended questions may have a lower validity rate than other question types. • Data errors due to non-responses may exist. The views of respondents who choose to respond to a survey question may be different from those who decide not to respond, thus creating bias. • Survey answer options could lead to unclear data because certain options may be interpreted differently by respondents. For example, the answer option "somewhat agree" may represent different things to different subjects and have its own meaning to each individual respondent. 'Yes' or 'no' answer options can also be problematic. Respondents may answer 'no' if the option 'only once' is not available.

Hair *et al.* (2010) indicate that researchers use several methods to collect quantitative data, including self-completion questionnaires, interviewer-completion questionnaires and observation. In this research, the questionnaire was divided into five main sections according

to the issues being investigated the impact of culture on the successful implementation of ICT. At the end of the last three sections, participants were asked to add, if they wanted, any additional comments or views.

The statements contained in the questionnaire came mainly from two sources based on the initial conceptual framework developed earlier (see Figure 5.1). The third section about workplace factors drawn from several sources (UN, 2014; Al-adaileh, 2009; Aueaungkul, 2013; Dwivedi *et al*., 2013; Matavire *et al*., 2010). The forth section in the questionnaire came from Hofstede's model of the organisational cultural theory. The fifth section was based on Hofstede's model of the national cultural theory, which has been previously adopted in information systems (IS) research. Hofstede's work has been widely cited in earlier studies (e.g., Al-hujran *et al*., 2011; Alshare *et al*., 2011; Carson *et al.,* 2014; Rai *et al.,* 2009). Hofstede's model of the cultural theory was employed to investigate the national culture by using the Values Survey Module (VSM) questionnaire (Hofstede, 2010). The questionnaire is presented in Appendix D. The design of the research questionnaire is described in the following paragraphs.

The questionnaire was designed according to the four practical guidelines suggested by (Leedy, 1997), as follows:

1. using clear language;
2. meeting research aims;
3. planning development, sample distribution and collection;
4. creating a solid cover letter.

Saunders *et al.* (2012) point out that most types of questionnaire consist of a combination of open and closed questions. Open questions, sometimes referred to as open-ended questions (Dillman, 2007), allow respondents to give answers in their own way (Fink, 2003). Closed questions, sometimes referred to as closed-ended questions (Dillman, 2007), make it easier to compare responses since they have been pre-determined (Saunders *et al*., 2012). Likewise, it is easier and quicker for respondents to answer such questions since the responses require minimal writing (Saunders et al., 2012).

In this study, the questionnaire was designed as a list of questions, offering respondents a selection of responses, any of which they could choose. The response categories included binary choices such as: 'yes/no', 'agree/disagree' and Likert scales. A yes/no option was

chosen to measure a users' satisfaction with the use of the system. Using a dichotomous question forces respondent to choose one of two possible answers. According to Molenaar and Smjt (1996), this question type is popular in measuring user, client or customer satisfaction across different fields and disciplines. This has the advantage of simplifying data coding and analysis. They also require a relatively short period of respondents' time and they provide definite and short answers. The problem with such questions is that life is rarely yes-no simple. Dichotomous questions are appropriate only where provide a clear "either-or" option that makes sense to respondents (Treadwell, 2011).

Before completing the questionnaire, respondents were given an information sheet that describes to participants the research objectives, the questionnaire format and content, approximate completion time, confidentiality provisions for information collected and contact information and questionnaire instrument. In order to ensure a high response rate, the questionnaire used clear and simple wording. The questionnaire began with demographic information. Such questions were aimed at creating interest to encourage respondents to enjoy and complete the questionnaire. The language of data collection of the original versions of the questionnaire was constructed in English for the purposes of checking these with experts. The questionnaire was then translated into the Arabic language by a bilingual expert. It was divided into different sections for easy reading and completion and was accompanied by a short, simple and informative cover letter that informed respondents about the aims and importance of the research. The questionnaire was written carefully using clear language to encourage participants to provide honest and unbiased information and emphasise the privacy and confidentiality measures put in place. Respondents could choose between the English and Arabic versions.

The questionnaire consisted of the following sections:

Sections One and Two: The first section of the questionnaire sought demographic information regarding gender, age, level of education, the name of organisation, occupation and citizenship of participants. The second section was concerned with the computer experience of participants.

*Section Three***:** The third section focused on measuring the workplace variables, which included questions asking respondents about the workplace factors that can influence successful ICT implementation in e-government projects.

*Sections Four and Five***:** The fourth section and fifth sections the statements contained in section four came from Hofstede theories of organisational culture adapted from Rai *et al*. (2009) and Mahomed (2015). The statements of section five came from Hofstede's theory of national culture adapted from the same authors. This was followed to investigate and to measure how and to what extent national and organisational culture dimensions influenced the successful implementation of ICT projects in Omani e-government. Some open-ended questions were used to elicit more detailed information from respondents.

The definitions related to the 18 constructs in the questions of both national and organisational cultures and workplace are given in Chapter 5 which describes the research model. Each construct was measured used a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree) as shown in Table 6.7. The Likert scale is regarded as an *"excellent means of gathering opinions and attitudes"* (Anderson & Arsenault 1998, p.175). Participants were asked about the extent to which they agree or disagree with the statements presented. The Likert scale is widely used by scholars in the IS and social science fields in general and in investigating national cultural dimensions, organisational cultural dimensions and workplace factors in particular (Hofstede, 2010; Rai *et al*., 2009; Mohmed, 2015; Tarhini, 2013).

Table 6.5: An Example of the 5-Point Likert Scale

1.1	I have the necessary skills to use new computerised systems.	Strongly disagree	1	2	3	4	5	Strongly agree

6.4.2   Questionnaire Pilot Study

A pilot study is defined as a small-scale precursor to research that collects data from respondents similar to those to be used in the full study (Zikmund *et al.*, 2013). The purpose of the pilot test is to refine the questionnaire so that respondents will not encounter problems in answering the questions. In addition, a pilot study enables the researcher to obtain some assessment of the validity of questions and reliability of the data that will be collected (Saunders *et al*., 2012). It is also used to detect any potential problems with the questionnaire regarding the structure, time to complete and wording (Creswell, 2014). This is important, as the design of a questionnaire is crucial in obtaining the required information. The feedback

from this pilot round was then used to modify the questionnaire – where needed – before releasing it to the wider target of participants.

Sheatsley (1983, p.226) proposes that, *"It usually takes no more than 12–25 cases to reveal the major difficulties and weaknesses in a test questionnaire"*. Therefore, 18 pilot participants were randomly selected from the sample that would be used in the actual survey.

The questionnaire underwent two further steps before producing the final version. In the first step, the researcher sought the help of academics (expert knowledge) in order to ensure content validity. Two academic supervisors from the School of Computer Science and Statistics in Trinity College and two lecturers from the Sultan Qaboos University in Oman reviewed the questionnaire items. They provided constructive feedback and suggestions such as to delete certain questions, to generate additional items and to check the relevancy and accuracy of the item scales.

In the second step, a small group of 14 people known to the researcher were used for the pilot study. Respondents were asked to provide feedback on the ease of understanding the questions, use and importance of the different variables, the overall design of the questionnaire, and any other comments that would improve the questionnaire and ensure better answers from respondents. They assessed the questionnaire to ensure its clarity, reliability and validity. Fourteen respondents were chosen to pilot the questionnaire, along with senior employees from Oman to provide an expert view. The pilot sample consisted of five IT department employees, four from top management from Oman, and five college students from Trinity College.

After completing the questionnaire, all respondents were asked for their comments, such as time to complete the survey and how difficult the found it. A copy of the comments sheet provided to respondents is shown in Appendix B. The questionnaire data were analysed to assess how questions were answered and if any response categories were not used. This analysis also gave an indication of whether individual questions and scales were working as intended. Further changes were made to the questionnaire based on the findings from the pilot study. The following changes were made:

- Two statements were found to be redundant and are was removed: ("Support and encourage the use of the new system for my work" and "Support and encourage employees to adopt the new system").

- The sections about demographic information and computer experience were moved to the beginning of the questionnaire to encourage employees to respond to the questionnaire.

- The questionnaire was further developed based on the feedback received. This helped to produce a short and concise questionnaire and eliminated some irrelevant questions.

6.4.3 Interviews

The research interview has been defined by Kvale and Brinkmann (2009, p.2) as *"an interchange of views between two persons conversing about a theme of mutual interest"*. Similarly, Creswell (2009) suggests that the interview is an evolving face-to-face conversation between two persons talking about common themes of interest. Kvale and Brinkmann (2009) point out that the interview seeks to understand the world from the point of view of the subjects to explain the meaning of their experiences and to apply scientific explanations to these experiences. Saunders *et al.* (2012) state that the research interview provides a way to ask purposeful questions and the opportunity to listen carefully and attentively to the answers. Its aim is to empower respondents and give a voice to respondents' experiences. According to Saunders *et al.* (2012), they categorise interviews using a common typology which is based on the degree of structure used to collect data. These include structured, unstructured in-depth and semi-structured interviews. This study employs semi-structured interviews.

A semi-structured interview is a form of the interview which Kvale and Brinkmann (2009) defined as having the purpose of obtaining descriptions of the lifeworld of the interviewee in order to interpret the meaning of the described phenomena. In this type of interview, the researcher usually has a list of themes and questions and asks the participant to respond to these specific open-ended questions (Saunders *et al.,* 2012). The questions are split into sections.

Semi-structured interviews offer flexibility and allow the interviewer to add or abandon questions during the interview depending on the progress of the interview. The data generated during the interview should ideally be recorded (Saunders *et al.,* 2012). The participant has ample freedom to respond to the questions and the researcher has a schedule in order to keep the participants on track with the subjects that are of interest to the researcher. The interview is normally transcribed and the written text and sound recording together constitute the materials for the following analysis stage (Kvale & Brinkmann, 2009).

In this research, semi-structured interviews were used at the end of the quantitative study to gain further insights into the participants' perceptions of the cultural dimensions and workplace factors that influence successful ICT implementation in the public sector. The design of interviews started with a general description of the study as well as the aims and objectives. General questions were then asked, which relate to the workplace, national and organisational culture variables and their effects on the successful implementation of ICT.

The interview questions were generated from the initial draft of the questionnaire-results. The interview questions were structured using the 'Initial conceptual framework' (see Chapter 5, Figure 5.1) by taking into account the following theories: the Hofstede's theory of culture (Hofstede 1991), organisational culture theory (work practices) and workplace factors (UN, 2014) for qualitative data collection (see Appendix D). The interviews were conducted face-to-face in Oman during the period April and May 2016. The necessary arrangements for getting approval for conducting the interviews as well as working out the interview schedule with the Ministries began in March 2016.

Next, each participant was asked to give some general information about demographics including gender, age, organisation and position details, education level and computer experience presents a list of the semi-structured interview questions. During the interviews, any reference to the results received from the quantitative analysis was avoided in order to avoid any bias that could affect the interviewee's opinion.

6.5   Data Collection Process

6.5.1   Stage One (Questionnaires)

In the first stage, contact with the person in charge of a given organisation was made either directly via the phone or via email, giving a general background to the research and the type of questions. The questionnaires, both paper-based and electronic were distributed to all employees participating in the study. Following the return of the questionnaires, an initial analysis was conducted to identify key issues to be further investigated at the interview stage. The questionnaires were distributed between December 2015 and March 2016. The final versions of the questionnaire can be found in (Appendix B). The following section provides an overview of the considerations used in determining the sample size.

Questionnaire Sample

Correct sample design and size are essential to provide a representative sample (Cavana *et al,.* 2001; Zikmund, 2003). However, involving a large number of participants in a survey can be costly and time-consuming. The sampling sizes used by previous relevant studies were used to inform the choice of sample size.

In choosing an efficient and reasonable sample, this study considers the seven-stage sampling procedures developed by Zikmund (2003). The seven stages are undertaken as follows: First, define the target population: in this study, they are Omani public-sector employees who are aged 18 or above. Second, select sampling frame: public organisations in Muscat governorate. Third, determine the sampling technique to be used in the study: it is a purposive sampling technique employed to assist in selecting the respondents. Purposive or judgemental sampling allows a researcher to make a judgment in the selection of cases that enable an employee to answer the research questions and to meet to the objective (Saunders *et al.,* 2012). This is determined by selecting participants. The reason for the purposive sampling was to gather data from IT departments and affected business client departments rather than more general ICT application users. The fourth and fifth stages are about planning for sample size and time resources: the sample size was about 1,000 and the time allowed for answering a questionnaire was 10-15 minutes. After conducting the pilot study, it becomes easy to determine how long it would take a respondent to fill in a questionnaire. Sixth, select sampling units: the units are four public organisations in the

Sultanate of Oman (Higher Education, Civil Services, Education, and Health Ministries). The rationale for choosing these four public organisations is explained in Section 6.3.2. Finally, conduct fieldwork: the questionnaire was distributed within IT departments and to business clients in the four organisations.

It is worth noting that the number of target employees for the study is about 1000. The rationale behind determining this number is based the complicated path model used in this study in the four organisations as illustrated in Table 6.3. The actual total number of the questionnaire distributed paper-based and electronic survey was 1,032. The number of completed questionnaires returned was (857) a response rate of (83%) as shown in Table 6.9 below. This high response rate is due to many factors. First, the data collection was conducted when most people were available at work before they would leave for summer holidays. Second, the researcher kept moving around the four Ministries to talk to people and explain to them the significance of the research. Third, the researcher arranged meetings with key personnel at the Ministries to follow up the process of questionnaire distribution. Fourth, research participants were given the opportunity to choose whether to use the electronic or paper version of the questionnaire. Fifth, the questions were designed to be easy to answer. It is worth to note that a majority of the participants preferred the paper-based questionnaire; a few answered the questionnaire electronically. Finally, the questionnaire is conducted with politeness and with thank from both the managers and in the cover letter of the questionnaire.

Table 6.6: Number of Distribution and Participation on Questionnaire

Case	N. Distribution	Respondents	Response rate %
HEAC	50	44	88.00
EDUP	450	369	82.00
HR	232	157	67.67
SH	300	287	95.67
Total	**1032**	**857**	**83.04**

The respondents of the questionnaire are employees from IT departments such as designers and developers who run the IT system or employees from the departments of business clients such as official employees using one of the four systems in the different departments of the four public organisations. Other users are nurses and doctors in SH and teachers in EDUP. Table (6.9) shows the responses rates for the questionnaire.

6.5.2 Stage two (Interviews)

In the second stage, the interview participants from the four organisations were chosen from top-management in IT departments, business client departments and experts as discussed later in this section. They were then contacted to arrange the interviews. The time of the interviews was between April 2016 and June 2016. The list of participants was prepared along with details about the job titles, places of work and timings for the interviews. All the participants were asked for their consent to record the interviews. At the beginning of each interview, participants were asked to introduce themselves. They were also given a brief idea about the issues being investigated and the approximate length of the interviews.

All the interviews were semi-structured which aimed at seeking clarifications on issues arising from the questionnaires as well as giving employees a chance to express themselves and talk about their experiences on implementing ICT in their work environment. The open-ended nature of the questions gave respondents the freedom to define their beliefs and feelings about the effects of culture on the successful implementation of ICT in their organisation, both positive and negative.

Selection of Interviewees

A total of 41 people was interviewed in their work-place. The selection of interviewees was achieved by using purposive sampling strategy. This method is useful to ensure diversity of participants, especially for small groups. The targeted population of the current studies (who are concerned with administration and IT) was relatively small in each of the four organisations. Therefore, interviewees were chosen carefully to ensure that they serve the purpose of this study. They were all key staff in the administration and IT in their organisations. They were selected based on their experience, job title and responsibilities related to the implementation of IT in the organisations. The sample included Ministers, Under-secretaries, Directors General, Deputy Directors General, Directors, Deputy Directors and Experts from the administration and IT departments in the four public organisations in Oman. There were also some other concerned government officials who were involved in the interviews. The following Table (6.10) shows the coded number of the interviewees in relation to their roles in the workplace.

Table 6.7: Types of interviewee

Organisation	Role of interviews	Coding	Number of interviews
O1 **HEAC**	Minister (M1, N=1) General Director (GDO1, N=2) Director (D, N= 2) Deputy Director (DD, N=3) Expert (E, N=2)	T1 A1 -A9	10
O2 **EDUP**	Minister (M2, N=1) General Director (GD, N=1) Deputy General Director (DGD, N=2) Director (D, N= 3) Deputy Director (DD, N= 1) Expert (E, N=1) Teacher (T, N=1)	T2 – T5 A10 – A15	10
O3 **HR**	Minister (M3, N=1) General Director (GD, N=3) Deputy General Director (DGD, N=1) Director (D, N=1) Deputy Director (DD, N= 1)	T6 – T9 A16 – A18	7
O4 **SH**	General Director (GD, N=3) Deputy General Director (DGD, N=1) Director (D, N=1) Doctor (DR, N=1)	T10 – T11 A19 – A22	6
IT Experts	ET, (N=5)	ET1 – ET5	5
Administration Experts	EA, (N= 3)	EA1 – EA3	3
Total			**41**

Appendix (E) is available for the full index of interviews.

6.5.3 Documents

The advantages of using documents is that they are stable and can be reviewed repeatedly. Therefore, the researcher was keen to collect all available reports and documents. These included white papers, studies, minutes of meetings, policies and strategies, presentations, reports, project plans and reference materials available on the Internet. The list of documents collected at the national and organisational level includes IT strategy of Oman, IT strategy for each ministry, e-readiness of each ministry and a brief description about each system. This material was important to both support and compensate for the omission that may exist in the interviews as well as to cross-validate the data gathered in the interviews.

6.6   Administration

The following two sections describe how the questionnaires and interviews were administered.

6.6.1   Questionnaire Administration

The questionnaires were administered from December 2015 to March 2016. The time given to finish answering the questionnaire was from 10-15 minutes. The questionnaires were administered by contacting the general directors of the four organisations by e-mail or by phone. The general directors informed the employees about participating in the questionnaire. Before distributing the questionnaire to employees of the four organisations, an explanation of both the importance of this research itself and the questionnaire was presented to the directors. The directors supervised the whole process for distribution and collection. The general directors were personally thanked.

6.6.2   Interview Administration

All interviews were conducted face to face. Prior to each interview, initial contact was made either directly via telephone or via the secretary's office, giving a general background to the research and the type of questions and information needed. Before starting the interview, a covering letter was handed to the interviewee. The letter included the researcher's background which briefly explains the aim of the research. The letter also guaranteed that all information provided would be completely confidential and the interviewees would remain anonymous. Permission was asked to record the interviews, but the recorder was switched off whenever requested. Each interview was followed up by thanking the participants.

6.7   Data Analysis

In this research, the data were analysed using thematic and content analysis in order to identify similarities and differences between the four public organisations. Both content and thematic analysis approaches are suitable for answering questions (Polit & Beck 2010). Braun and Clarke (2006) state that if the researcher is conducting exploratory work in an area where not much is known, content analysis may be appropriate for the simple reporting of common problems found in the data. Thematic analysis as an independent qualitative

descriptive approach is mainly described as *'a method for identifying, analysing and reporting patterns (themes) within data'* (Braun & Clarke 2006, p.79). According to Guest *et al.* (2011), thematic analysis is the most commonly used method of analysis in qualitative research analysis. The thematic analysis identifies common threads and allows for an extended interview or set of interviews (DeSantis & Ugarriza, 2000). The content analysis uses a descriptive approach in the case of coding the data and the interpretation of the codes (Krippendorff ,2012).

The selection of data analysis methods must be appropriate given the chosen data collection methods (Yin, 2014). For this reason, in this study, interview data were analysed thematically (Vaismoradi *et al.*, 2016). Questionnaire data were analysed statistically (Saunders *et al.* 2012).

6.7.1 Questionnaires

The questionnaires were coded by giving each of them a unique number from 1 to 857. The data from the closed statements was entered into the Statistical Package for the Social Science (SPSS) version 23. Each statement was coded separately showing the section and the statement number. The data entry from open-ended questions was transferred into the computer using the word processor and organised in tabular format displaying themes of different respondents. This helps in understanding the data and cross-referencing themes and respondents.

Prior to the process of analysing the quantitative data, error-checking was undertaken to check the accuracy of the data entered. This error-checking helped in generating tables of frequencies for all questions and the output was examined particularly the maximum and the minimum values.

The questionnaire data represents the core of the data analysis in this research. The analysis of the questionnaire was initially produced to design the interview questions. As the interviews aimed at in-depth investigation of the issues from the questionnaire, the data generated from them was used to support and to clarify those issues throughout the analysis process of the quantitative findings.

The quantitative data from the questionnaires were analysed using SPSS. All the data were recorded as numbers. Several statistical techniques were applied. Cronbach's Alpha was used

to measure the reliability of the different scales. The mean values for continuous variables were compared using t-tests. Cross-tabulations and correlation analysis were also used to examine relationships between item scales.

6.7.2 Interviews

The interviews were in Arabic. Each interview lasted between 60 to 90 minutes. The interviews were then transcribed in Arabic. The interviews were then read several times for overall understanding of the content. The themes and the sub-themes were organised for each organisation. The interviews were then translated into English by a professional translator.

In this research study, the manual method was used for data analysis to understand the relationship between the answers of the 41 interviews. The forty-one interviews with employees and officials were coded and transcribed. To guarantee analytical accuracy when analysing the interview data, the guidelines suggested by Creswell (2009) were followed to analyse the data from the interviews in this research:

1. **Preparing Data for Analysis**: This involves transcribing interviews, translating them into English, categorising the data into different and important themes and preparing tables according to the pre-coded set of factors.

2. **Reading through the Data**: This involves going through the whole data and writing general ideas about participants' views and thoughts.

3. **Coding**: This involves using the prepared tables and fitting the themes into the predefined codes by gathering all data relevant to each potential theme.

4. **Describing Themes**: This involves checking if the themes work in relation to the coded extracts of the data and generating a thematic diagram of the analysis.

5. **Interconnecting Themes**: This involves refining the specifics of each theme, and the overall qualitative narrative by interconnecting themes to develop a theoretical model.

6. **Interpreting or Meaning of data**: This involves selection of vivid extract examples, analysing them and relating them to the research questions and literature to produce a scholarly presentation.

Transcribing interviews and note-keeping on initial thoughts on the data was done to help identify key issues and themes. Following Qu and Dumay (2011), who stated that the importance of looking at the data as originally recorded would let the data speak for itself, a closer examination and re-examination of the interview data was made afterwards in order to develop a thorough understanding of the content. All interviews were brought together into one document for each organisation and were translated into English. The data were classified and coded in tables by themes. This process allowed to refer to the data easily for further interpretation and analysis (Kvale & Brinkmann, 2009).

Thematic analysis was adopted to identify, tabulate, code and categorise the primary patterns in the data. In qualitative coding, researchers develop coding categories that represent important themes in the data. To generate the codes, different colour highlighters and multiple folders were used. In addition, multiple readings of the transcripts were undertaken to allow the development of the principles and the constructs regarding potential codes. In terms of interview analysis, there are two methods that can be used to generate codes and themes: the manual and computer assisted methods. There are several software packages that can be used to analyse qualitative data. Yin (2014) lists a number of purposes for using the software in the analysis of qualitative data, such as making notes, transcribing field notes, editing, coding, storage, searching and data linking.

6.8   Validity and Reliability

The quality of empirical social research can be challenged if certain precautions are not taken to ensure its academic rigour. In this respect, researchers seek to use strong designs to strengthen the validity of their studies and to ensure that the data to be collected properly address the research topic being studied (Yin, 2011).

6.8.1   Evaluating Quantitative Research: Questionnaire

<u>Validity</u>

Validity refers to the extent to which the research instrument measures what it is supposed to measure (Neuman, 2003). In order to minimize any risk to the validity of the research instrument, a pre-existing questionnaire was adopted. The questionnaire was further developed to suit the context of the study. Different drafts of the questionnaire were

discussed with the supervisors of this study. It was also presented to the employees from MOHE in Oman.

The measure of the intended items must correspond to their underlying constructs. Karahanna (1993) proposes that content validity can be justified by examining how these scales were derived and were validated in prior studies. To ensure content validity of the scales, both the definitions and items of the constructs in this study are revised from prior studies. Minor changes were made on the text which did not change the meaning of the original statements and should not affect the content validity (see Appendix H).

Reliability

Reliability refers to whether the data collection techniques and the analytic procedures produce consistent and stable findings if repeated on another occasion or if replicated by a different researcher. Saunders *et al.* (2012) suggest that there are two different methods to measure reliability: a test/re-test, an internal consistency check. This research utilises an internal consistency check by Cronbach's coefficient (α) alpha (1951). This statistical measure is usually used to measure the internal consistency of the responses to a set of questions to measure a specific concept (Saunders *et al*., 2012).

Reliability estimate 0.70 or higher suggests 'good reliability', whereas reliability between 0.60 and 0.70 may be acceptable, provided that, the other indicators of a model's construct validity are good. Table 6.11 summarises the rule of thumb for Cronbach's coefficient (α).

Table 6.8: Rules of Thumb for Cronbach's Coefficient (α)

Adapted from Hair *et al.* (2003, p.172)

Strength of Association	Alpha Coefficient Range
Poor	< 0.60
Moderate	0.60 to 0.70
Good	0.70 to 0.80
Very Good	0.80 to 0.90
Excellent	>0.90

Reliability relates to the operations of a study, such as data collection procedures, which can be repeated if replicated by a different researcher with the same findings (Yin, 2014). Yin (2014) argues that the focus when searching for reliability in a case should be applied on repeating of the same case and not on trying to replicate the results of one case. The goal of reliability is to reduce the errors and bias in a study. Yin (2014) clarifies two strategies which can be used to overcome the reliability test of the case study: protocol and database.

To enhance the reliability of the questionnaire, the researcher considered the issues of clarity of statement and avoided using ambiguous words that might result in misunderstanding. In addition, problems related to clarity, avoidance of leading questions and power influence must be measured when conducting interviews. The reliability test results are detailed in the next section.

Result of Reliability and Validation of the questionnaire

In this study, the reliability of the constructs was checked using Cronbach's Alpha (Cronbach, 1951). SPSS was used to compute the reliability tests which are presented in Table 6.9. The results showed that the constructs had adequate reliability. The average value of alpha for scale is 0.83, which is considered a reasonably high value. This indicates a good internal consistency of the items in the scale. The scales have scores ranging from 0.760 for the organisational culture to 0.904 for workplace factors for the sample. This indicates that the items are valid as illustrated in the following tables:

Table 6.9: Summary of reliability for all study domain

Domains	Number of items	Test of reliability by Cronbach's alpha reliability coefficient
Workplace Factors	34	0.904
Organisational culture	15	0.760
National culture	28	0.828

- Reliability for Workplace Factors:

Table 6.10: Reliability and Validation for Workplace Factors

Factors	Original Studies	Cronbach's Alpha	N of Items
Self-efficacy (Tarhini, 2013)	0.891	.755	4
peer influence (AlKhatib, 2013)	0.80	.693	4
Resistance to change (Rastekenari *et al.,* 2013)	0.798	.555	5
Legacy system upgrade (Somers and Nelson, 2003)	0.773	.709	6
Top management support Ahmed *et al.,* 2014)	0.97	.861	5
Project management standards (Unger *et al.,* 2012)	0.56	.806	4
Communication (Ahmed, *et al.,* 2014)	0.92	.684	6

Table 6.10 shows the value of reliability for all workplace factors ranging from 0.555 to 0.861.

- Organisational Cultural Dimensions:

Table 6.11: Reliability and validation for Organisational Culture Dimensions

Dimensions	Original Studies	Cronbach's Alpha	N of Items
Need for Security		0.795	5
Results-Oriented Hofstede *et al.* (1990)	0.858	0.707	3
Job-Oriented Hofstede *et al.* (1990)	0.766	0.656	3
Closed System Hofstede *et al.* (1990)	0.606	0.710	4

The above table 6.11 confirms that the value of reliability for all organisational cultural dimensions are ranging from 0.656 to 0.795.

- National Cultural Dimensions:

Table 6.12: Reliability and Validation for National Culture Dimensions

Dimensions	Original Studies	Cronbach's Alpha	N of Items
Power Distance (Hofstede, 1980)	0.842	0.782	5
Uncertainty Avoidance (Hofstede, 1980)	0.715	0.595	5
Masculinity/Femininity (Hofstede, 1980)	0.760	0.814	6
Individualism/Collectivism (Hofstede, 1980)	0.770	0.676	5
Long /Short Term Orientation (Hofstede, 2010)	0.57	0.323	3
Indulgence/Restraint (Hofstede, 2010)	0.79	0.618	4

The above table shows the value of reliability for all national culture dimensions ranging from 0.323 to 0.814. It is clear from the table that the dimensions of Long/Short Term Orientation had poor reliability (0.323) compared to the other dimensions.

6.8.2   Evaluating Qualitative Research: Interviews

The interviews conducted for this study were regarded as being complementary to the questionnaire results. Reliability and validity are related to concepts of trustworthiness, rigour and quality in qualitative research. In literature, there are different approaches concerning criteria of validity in qualitative research. Specific criteria for qualitative research have certain weaknesses. For this reason, several authors call for an adaptation of the established criteria to qualitative research. This study follows Wrona's (2006) criteria of validity that includes reliability, internal validity, external validity and objectivity.

<u>Internal Validity</u>

According to Weis and Willems (2017, p.14), "*Internal Validity is concerned with the question of operationalization and examines the extent to which data actually measure what should be measured*". Emphasising the need to get at the "truth" (as experienced by the interviewees), two procedures were followed in order to heighten the validity of the interviews:

Construct validity: interview guides were followed (see Appendix D). The interview structure was pre-tested to ensure clarity and to avoid any misunderstanding. Pre-testing was done by reviewing the interview questions with a number of academic experts and amending the questions according to their suggestions. The use of the semi-structured interviews was helpful as they allow for clarifying the questions and directing the interviewees when they strayed from answering the interview questions.

Triangulation is defined as "*a validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study*" (Creswell & Miller 2000, p.126). The data of this research is taken from both quantitative and qualitative sources.

Silverman (2005, p.211) refers to 'anecdotalism' as another element of the interview data's validity. Anecdotalism measures the extent to which the interview extracts embody all the data and not only the chosen set of examples. In this chapter, section 6.5.2 provides a detailed account of how the interview data was handled, organised and analysed. To ensure consistency and minimise bias, the interview data was organised in tabular form.

External Validity:

Johnson and Christensen (2000, p.200) define external validity as *"the extent to which the results of a study can be generalized to and across populations, settings, and time*s". Generalisability refers to drawing some general conclusions about a whole group which are based on the collected information taken from a representative sample of that group (Denscombe, 2002). This study involved employees from four different organisations in the public sector. The results may be generalised to other public organisations in Oman, but not necessarily those of other countries or cultures. According to Shenton (2004), there are factors to be considered before attempting generalisation:

1. *the number of organisations taking part in this study and where they are based;*

2. *any restrictions on the type of people who contributed to the data;*

3. *the number of participants involved in the fieldwork;*

4. *the data collection methods that were employed;*

5. *the number and length of the data collection sessions;*

6. *the time period over which the data was collected* (p.70).

All the above factors are discussed in detail in this chapter.

Reliability

In qualitative research, reliability is measured by the consistency of different approaches in different projects. In the current study, biases between respondents were minimised as all interviews were carried out by the researcher. To improve reliability as suggested by Creswell (2009), a number of procedures were followed in the interview to minimise bias:

- Going through all interviews to check on their consistency by following the same criteria and protocol of the semi-structured interview.

- All the interviews were recorded, transcribed and then translated into English. Both the recordings and transcriptions were double checked to ensure that mistakes were not made during transcription.

- Consistent coding categories that represent important themes in the data were created.

- Consistent connections of different themes were done. This approach uses coding based on arranging the themes in a way that explains every single theme representing multiple worldviews and the connections between various themes. It was perceived that participants would express a number of different opinions regarding similar subjects.

Objectivity

In qualitative research, a researcher must attempt to avoid being subjective and adopt a neutral position in conducting and interpreting interviews. A researcher must be able to eliminate any subjective/personal biases: a priori involvement in the topic investigated, having emotional/attitudinal influence on the way the interviews were conducted (Maxwell, 2005). It is important for researchers to follow procedures to report biases (Creswell, 2009). In this research, the researcher is familiar with some of the interviewees who work in the Ministry of Higher Education due to her work background. However, while conducting interviews, the researcher tried to be objective and detached from any subjective perspective. The interviewees were made aware of the aim of the interview and they were encouraged to contribute willingly and generously to enrich the data.

6.9   Conclusion

For any research study, it is important to develop a conceptual framework to undertake research (survey methodology complemented by interviews). This chapter argues that survey methodology was the most appropriate and efficient approach to study the influencing cultural dimensions on the successful implementation of ICT in the public sector, complemented by interviews to provide rich descriptive insight into the findings. To get valid and reliable responses to the research questions, a mixed method approach was used in this study. This was backed up by a close examination of the previous studies in the literature.

The chapter provides justification for the procedures and techniques adopted for collection and analysis of both survey and interview data were outlined. The limitations of the research were discussed and evaluated in terms of the implications for achieving the research objectives. The following chapter presents the findings and analyses of this research. It explores the correlation between the dimensions of the national, organisational, and the

factors of the workplace in relation to the implementation of ICT projects in public organisations in Oman.

7. Findings

7.1 Introduction

This chapter presents the analysis of the main findings with regard to the main question: 'How, and to what extent do cultural factors influence the successful implementation of ICT in Omani public administrations?'. The chapter begins by providing some background-information about the four organisations used as case studies in this thesis. It proceeds to examine the demographic data and discusses the background of the participants in four organisations. The sections that follow give a descriptive analysis of three areas: Omani national culture, organisational culture and workplace factors in the four case studies. Both the quantitative and qualitative data analyses are based on the questionnaires and the semi-structured interviews with employees and Ministry officials. Section 7.3 gives the justification for the choice of the four systems (HEAC, EDUP, HR and SH). Section 7.4 explores the interactions between (the national and organisational cultures) and workplace factors. This is followed by an analysis examining the relationship between these three areas and employee perceptions of the level of satisfaction with using the four systems.

7.2 Demographic Data

Table 7.1 shows descriptive statistics for the four surveyed organisations, gender, age group, education level, name of organisation, occupation and nationality of respondents (Q1.1 to Q1.6). Respondents' experiences with using computers are also described (Q2.1 to Q2.4). The first two sections in the questionnaire provide basic information about the questionnaire respondents. (see full questionnaire in Appendix B).

Table 7.1: Summary of Demographic Data (n= 857) of Survey Respondents

Variables	Group/Categorization	Frequency	Percent (%)
System	HEAC	44	5
	EDUP	369	43
	HR	157	18
	SH	287	33
Gender	Male	330	39
	Female	527	61
Age Group	18 to 28	178	21
	29 to 39	498	58
	40 to 50	158	18
	51 to 60	17	2
	60 + older	6	1
Education Level	Education Diploma	125	15
	Undergraduate degree	518	60
	Masters	16	2
	Ph.D.	92	11
	Second level	106	12
Occupation	Executive Top Management	8	1
	Director	42	5
	Assistant Director	33	4
	IT Professional	217	25
	Administrative	254	30
	Other staff4	303	35
Nationality	Omani	823	96
	Non-Omani	34	4

Gender: A majority of the respondents is female, though for one organisation, HEAC, there was a slightly larger number of male than female respondents. Chart 7.1 shows the gender breakdown for each of the organisations.
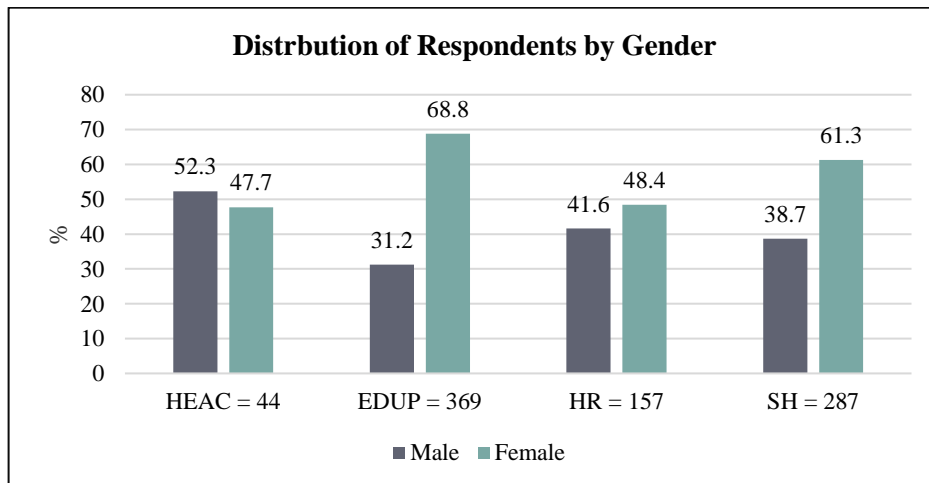
Chart 7.1: Distribution of Respondents by Gender

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4 This group includes various staff such as nurses, doctors and teachers from different organisations.

The reason that there are higher proportions of females in EDUP and SH is that the EDUP system is used mainly by teachers while the SH system is used by both doctors and nurses; most teachers, especially in cycle 1 (elementary) and nurses are females.

Age: is divided into five categories: (18 to 28), (29 to 39), (40 to 50), (51 to 60) and (60 + older).

Distribution of Participants by Age

	18 to 28	29 to 39	40 to 50	51 to 60	60 + older
■ HEAC = 44	23%	59%	16%	0%	2%
■ EDUP = 369	14%	59%	25%	2%	0%
■ HR = 157	31%	52%	15%	2%	0%
■ SH = 287	23%	60%	13%	3%	1%

■ HEAC = 44   ■ EDUP = 369   ■ HR = 157   ■ SH = 287
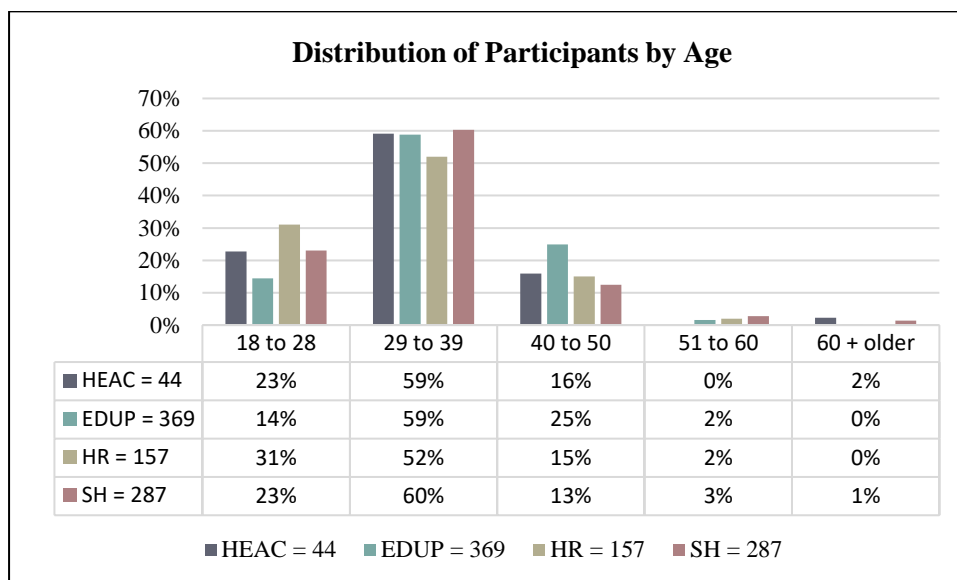
Chart 7.2: Distribution of Participants by Age

Chart 7.2 shows that the highest proportion of respondents for all organisations is in the 29 to 39 age bracket, whereas the lowest percentage of respondents is in the 60 and older age bracket. A notable feature of the responses is that nearly 80% of respondents are aged under 40. The age distribution is similar for all four public organisations. This high proportion of young people may reflect the fact that 30 percent of the total Omani population are aged between 15 and 29 years-old (Oman, 2017). Between 2011 and 2014, the government had a target to employ over 45,600 young individuals (Ministry of Civil Service, 2017).

Education level: Table 7.1 above shows that a majority (60%) of the participants have been educated to undergraduate degree level. Chart 7.3 shows the percentage of the education-level broken down for the four organisation.
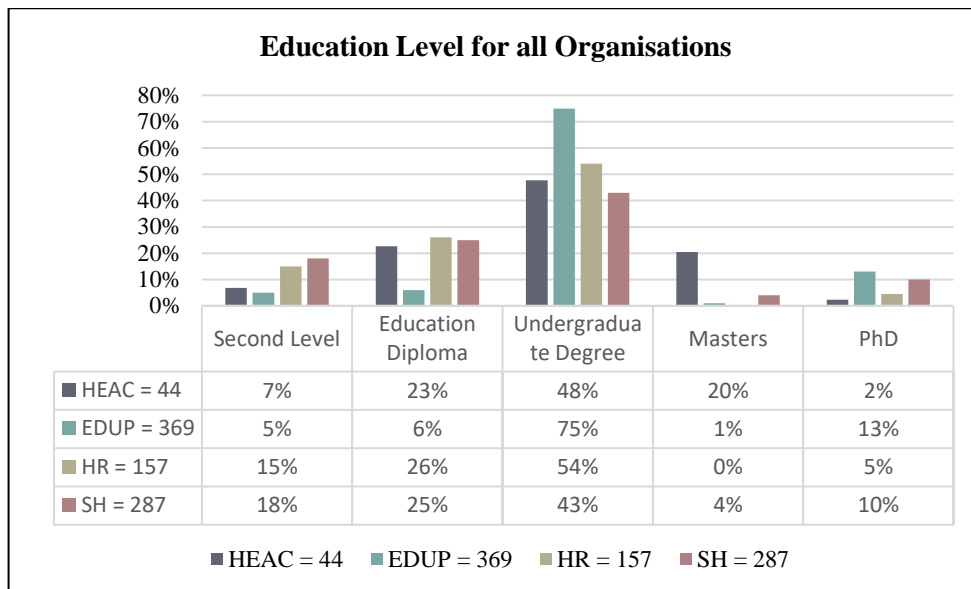
Chart 7.3: Education-Levels for all Organisations

Chart 7.3 shows that a majority of the respondents have undergraduate degrees. EDUP has a higher proportion of respondents with an undergraduate degree. This could be attributed to the fact that the MOE tends to transfer school-teachers, who are undergraduates, to occupy vacant positions at the Ministry.

Occupation: The occupation level of the respondents in the four organisations is shown in Chart 7.4.
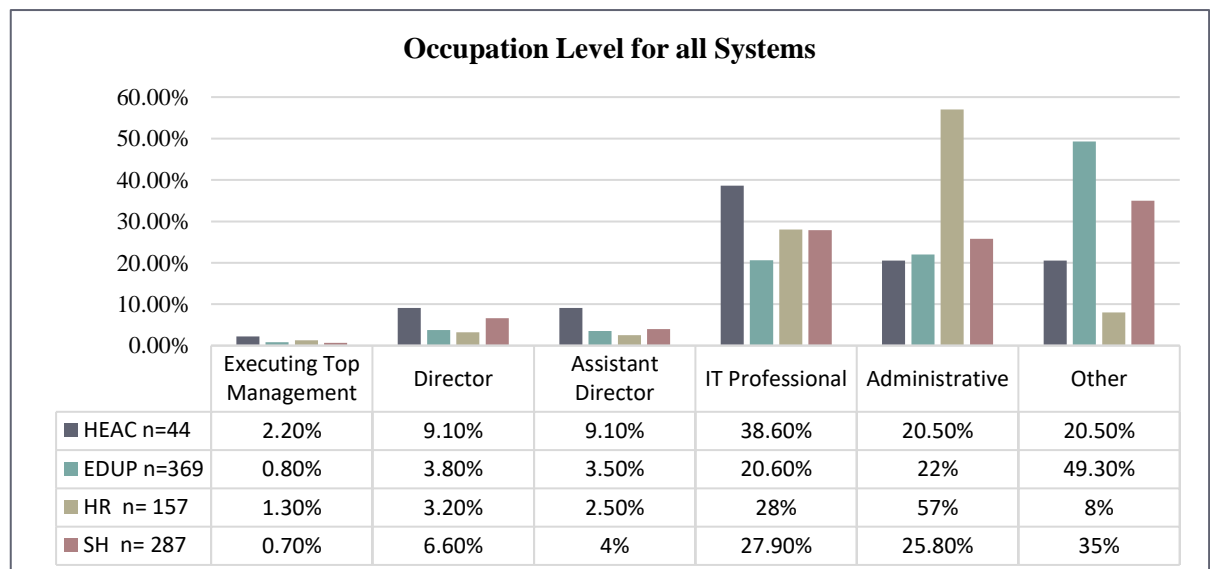
Chart 7.4: Occupation Level for all Organisations

Chart 7.4 shows that most respondents (39%) from HEAC are IT Professionals. This is because the HEAC system requires a large number of IT professionals to run the systems. However, a majority of respondents from HR (57%) are administrative staff. This is because the HR system is mainly used by administrative staff from the Human Resource Department and Personnel Affairs.

Nationality: Table 7.1 above shows that (4%) of respondents are non-Omani employees. One reason for this low proportion is that the government of Oman stipulates that government jobs should be for Omani people.

7.3 Descriptive Analysis of Study Areas

7.3.1 National Cultural Dimensions

The study examines the importance of national culture in relation to the successful implementation of ICT. As described in Section 5.2.1, there are six national cultural dimensions: Power Distance, Uncertainty/Avoidance, Masculinity/Femininity, Individualism/Collectivism, Long/Short-Term Orientation, and Indulgence/Restraint. Each of these dimensions was measured on a multiple items questionnaire using a 5-point Likert scale (1=strongly disagree; 5=strongly agree). Questionnaire-respondents were requested to demonstrate their levels of agreement or disagreement with each of the given statements. Table 7.2 shows the mean scores and the standard deviations for each of the six dimensions.

Table 7.2: National Cultural Dimensions Descriptive Results (n=857)

Factors	Score		Mean	Std. Dev.
	1 ⟷ 5			
Power Distance (PD)	Small-PD	Large-PD	2.39	0.88
Uncertainty Avoidance (UA)	Low-UA	High-UA	3.78	0.68
Masculinity/Femininity (MAS/F)	High-F	High-M	2.89	0.97
Collectivism/Individualism (C/I)	High-I	High-C	3.61	0.75
Long-term/Short term orientation (L/STO)	High-STO	High-LTO	3.09	0.82
Indulgence/Restraint (I/R)	Low-R	High-I	3.97	0.70

The above table shows that the highest mean score is 3.97 for Indulgence/Restraint while Power Distance has the lowest mean score at 2.39. The scale is collapsed into three groups disagree (points 1 and 2), neutral (point 3) and agree (points 4 and 5) for ease of interpretation. The following sections present further analysis of each of these dimensions.

Power Distance (PD): Power distance refers to the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally. Chart 7.5 below shows the level of agreement or disagreement of respondents with the five Power Distance related statements. The respondents were asked to express their agreement or disagreement with these statements.
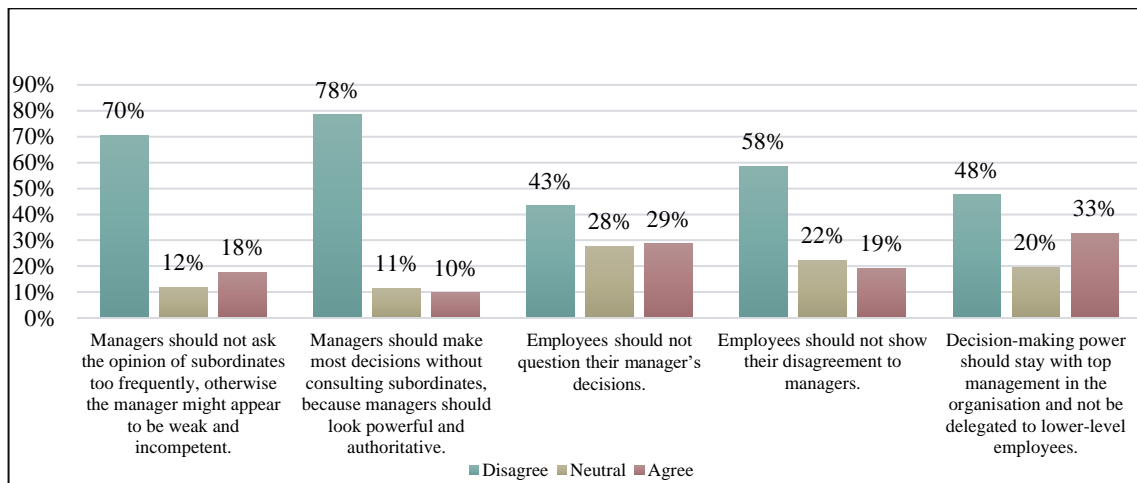
Chart 7.5: Power Distance Factors

Chart 7.5 suggests that a majority of respondents (78%). Less than one-third of the respondents (29%) agreed with the statement "Employees should not question their manager's decisions". (33%) of the respondents agreed that decision making should stay with top-management.

The subsequent interviews give some further insights into the power Distance relationships. Most of the responses stressed the fact that employees should be asked about their opinions in the process of decision making:

> *"Closer distance between the senior and junior staff provides a better ground for high-pace IT projects that require quick decision taking. If the gap is bigger between the decision makers or one who sets the project plan and the one who applies such plan or decision, it will require a considerable time to reach to a decision or for a piece of information to reach correctly to the decision maker." ET1.*

> *"If the gap is small, the matter will be clearer and more accurate in terms of requirements, execution, and work mechanisms. Even if there are some challenges,*

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it will be easier to deal with them because the distance between the execution and decision-making is short and the matter is more highlighted." EA3.

Reducing the Power Distance between employees and top managers is recommended by the interviewees. In the view of several respondents, a reduced power distance is found to be effective in the environment of e-government:

"[...] cooperation and affinity between the top officials and the employees will fill the gap and will reinforce such attitude. It will boost their self-confidence to accept such technology since they find that the head of the unit has adopted it, followed up with its progress and evaluated the staff performance. You will find the staff highly motivated due to the high affinity and closeness." EA4.

Respondents believed that low Power Distance plays an important role in motivating the employees to be more creative and participative in the vision and mission of an organisation:

"Yes, it has a profound influence since the top management has a particular vision and the staff at the bottom of the pyramid do not grasp this vision. Junior staff have programmes and plans to realize the vision. [....] There should be continuous meetings and feedback between junior staff and the management." EA1.

"Closer distance between the senior management and staff means having a clearer access to the goals and requirements for system upgrade." A21.

Above all, an emphasis on periodical and regular meetings between top-managers and employees was shown:

"We have a strong affinity in the Ministry of Health as directors general, we meet every Monday with the under-secretary to discuss whatever we are interested in terms of planning and training. A huge part of our discussion is about IT development." A19.

Taking into consideration all the employees' responses in the qualitative interviews, reducing Power Distance by encouraging the contribution of the employees has more advantages than disadvantages in the ICT field. The respondents to the survey also indicated that consultation with their subordinates is needed for making a better decision.

Uncertainty Avoidance (UA): Uncertainty Avoidance measures the extent to which the members of a society feel threatened by ambiguous or unfamiliar situations. Chart 7.6 below shows the level of agreement or disagreement of respondents with the five uncertainty avoidance related statements. Respondents were asked to express their agreement or disagreement to these statements.
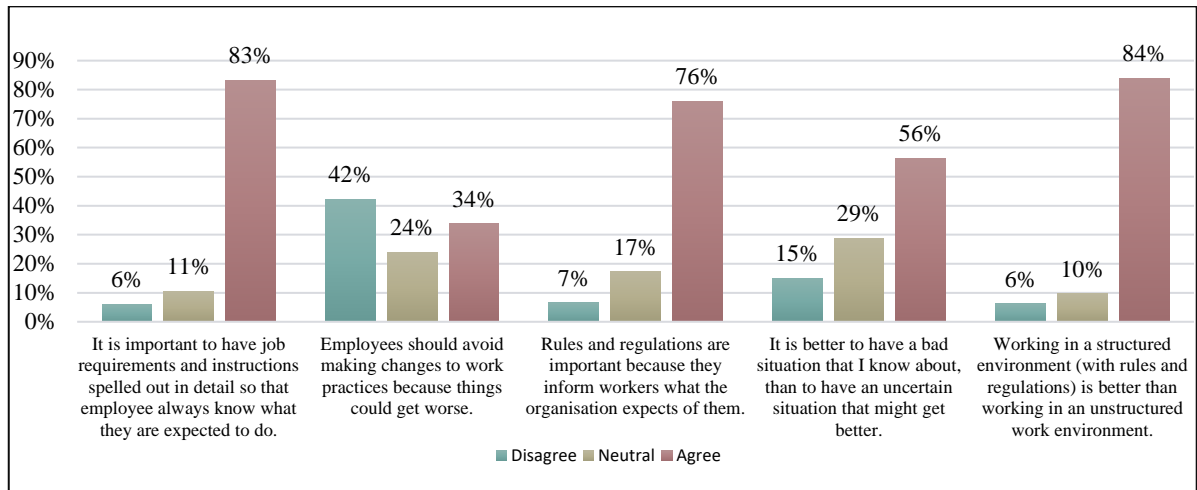
Chart 7.6: Uncertainty Avoidance Dimension

Chart 7.6 shows that a majority of the respondents (84%) agreed with the statement that working in a structured environment with rules and regulation is better for employees. Similarly, 83% of respondents agreed with the statement that it was important to have clear instructions about what they are doing. Over half of respondents (56%) agreed with the statement that "it is better to have a bad situation that I know about than to have an uncertain situation that might get better". Yet, 42% disagreed with the statement that "employees should avoid making changes to work practices because things could get worse".

The qualitative interviews indicate that 'uncertainty avoidance' plays an essential role in the implementation of ICT as avoiding unclear and ambiguous changes has a positive impact on the rapid and adaptive ways to introduce a new technology:

> *"If someone is unaware of ICT potentials and reluctant to take any step or risk, he would fear or have no desire to take such risk. On the other hand, people who have none of that would not have any problem. I think, in the last five years, we are witnessing some rapid changes in technology and culture. People are ready to change." ET1.*

Uncertainty Avoidance is more likely to lead employees to a comfortable work environment:

> *"Uncertainty Avoidance is an important dimension which has many sides. First, it may mean that the top management can change the situation to make it more viable- less boring due to the routine- or to create a better engaging work environment that does make the staff more comfortable; engaging the employees in, with no strange feeling, the work environment." EA3.*

The interviewees suggest that a low level of Uncertainty Avoidance when properly handled has advantages as top management can create a comfortable work environment.

Some employees do not like adaptations or changes as introducing new technologies needs strategic planning and training employees:

> *"We noticed that many departments and institutions in the Ministry of Health avoid uncertainty; they do not like introducing new things. It is important for the officials to establish a ground to encourage the staff to change. There must be some kind of tolerance and training. When finding solutions, the staff, then, avoid using technology and changing. Being bold is the best thing." A19.*

All the above interviews suggest that avoiding uncertainty plays a strong role in organisation culture. The interviews emphasised the need for employees to be trained and to adapt rapidly to changes.

Masculinity/Femininity (M/F): Masculinity/Femininity refers to the differences in the distribution of gender-values. A masculine culture has values of competitiveness and assertiveness. A feminine culture has values related to modest caring (Hofstede, 2010).

Chart 7.7 below shows the level of agreement or disagreement of respondents with the five Masculinity/Femininity related statements. The respondents were asked to express their agreement or disagreement with these statements.
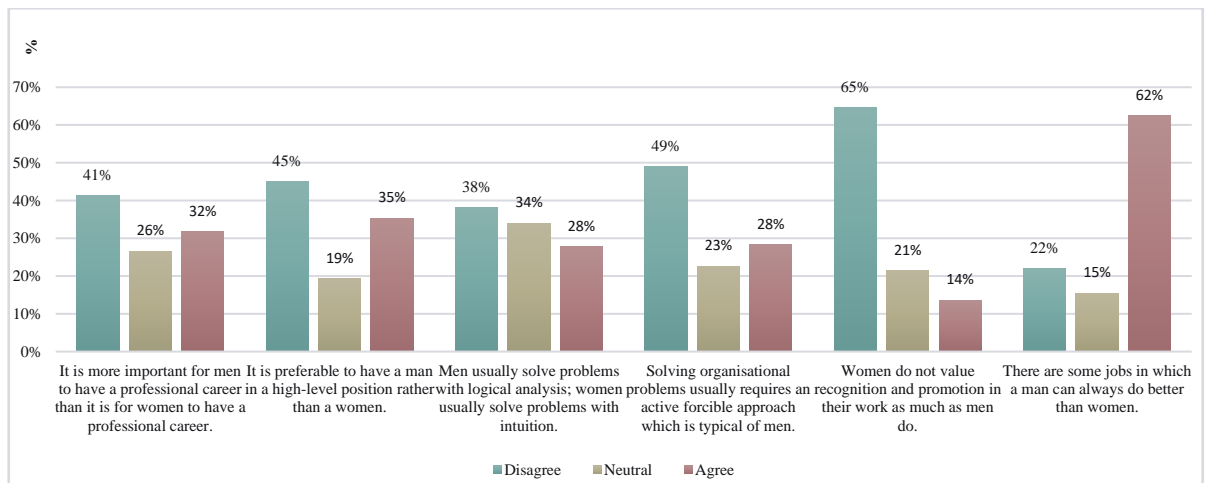
Chart 7.7: Masculinity/Femininity Dimension

Chart 7.7 above reflects some disparity among respondents with regards to having men or women following a professional career and holding high-level positions. However, a significant number of respondents (62%) believed that there are certain jobs which are more appropriate for men.

Chart 7.8 and Chart 7.9 show the percentage of the respondents to the six given statements broken down by gender. The respondents were asked to express their agreement or disagreement with these statements.
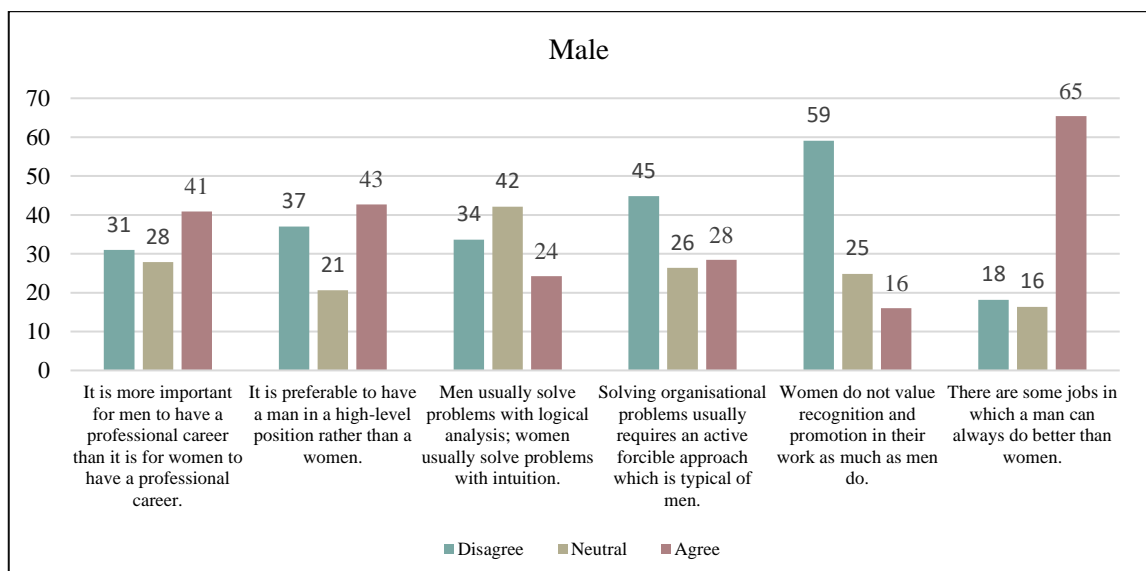
Chart 7.8: Masculinity VS Femininity Dimension (Male)
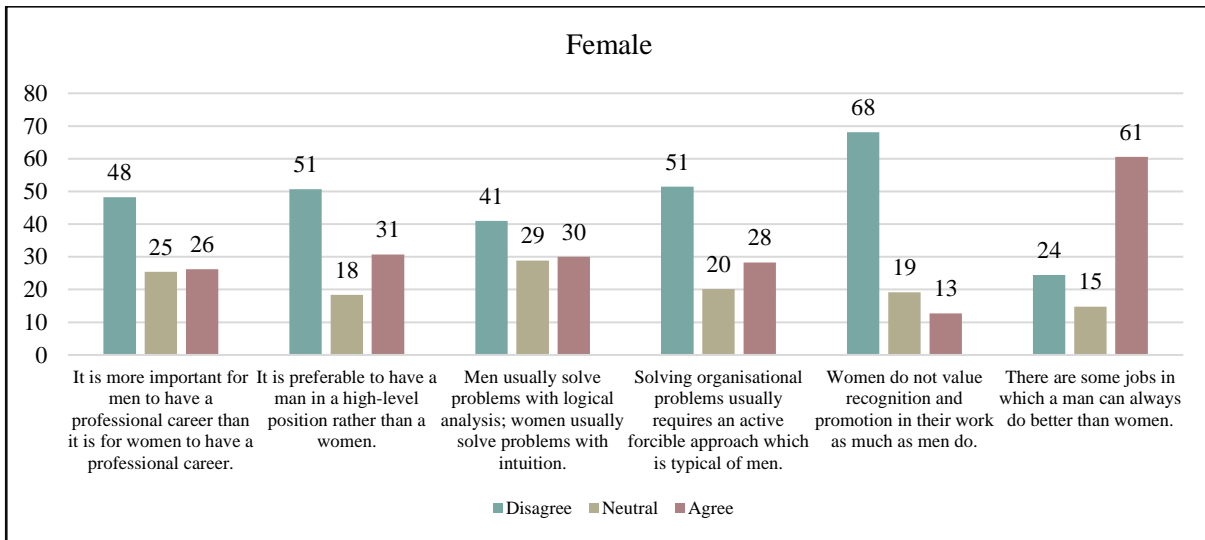
Chart 7.9: Masculinity VS Femininity Dimension (Female)

41% of the male respondents compared with 26% of the female respondents agreed with the statement that "it is more important for men to have a professional career than it is for women". 43% of male-respondents compared with 31% of female respondents agreed with the statement that "it is preferable to have a man in a high-level position rather than a woman". It is worth noting that there is a considerable number of both males and females who disagreed with the above two statements. 68% of women believe other women do value recognition as much as men. This indicated that there is gender parity of esteem in the four organisations. However, the two charts show that a majority of males and females (65% and 61% respectively) agreed with the statement that "There are some jobs in which a man can always do better than a woman". This suggests that the respondents to this survey show no conflicting issues related to the choice of job for either a man or a woman. The respondents are conservative about the choice of jobs which are more suitable for women than men for example jobs related to taxi-driving or mechanics are better suited to men.

The qualitative interviews showed that although some respondents were neutral; as one interviewee commented: *"There should be gender- equality between both genders. No gender should override the other"* A19. A majority of the respondents agreed that certain jobs require a gender balance. Having females in the IT work environment can enhance the social aspects of work: *"Female staff should pay attention to the organisational aspects. Social aspects must be respected. A work environment that is based on emotional intelligence is more productive."* ET4.

Another interviewee added:

"Work environment in general, regardless of the feminine or masculine values, is very critical, not only important. We have to consider social aspects at work and how to provide a convenient workplace, offering some new changes of place for the staff." EA3.

The interviewees contend that females working in IT tended to occupy more of the professional jobs than did males:

"The feminine side is more prominent than the masculine one, especially in the IT environment." T1.

The above data suggest that females in Oman can occupy high-level IT positions and that this is not seen as a problem (or as threatening) by their male colleagues. However, it also suggests that most respondents believe that there are certain jobs in which men can do better than women. Furthermore, a majority of the respondents agreed that certain jobs require a gender balance.

Individualism VS Collectivism: Individualism VS Collectivism describes the degree to which individuals are attached to groups. Chart 7.10 below shows the level of agreement or disagreement of respondents with the five Individualism/Collectivism' statements. The respondents were asked to express their agreement or disagreement with these statements.
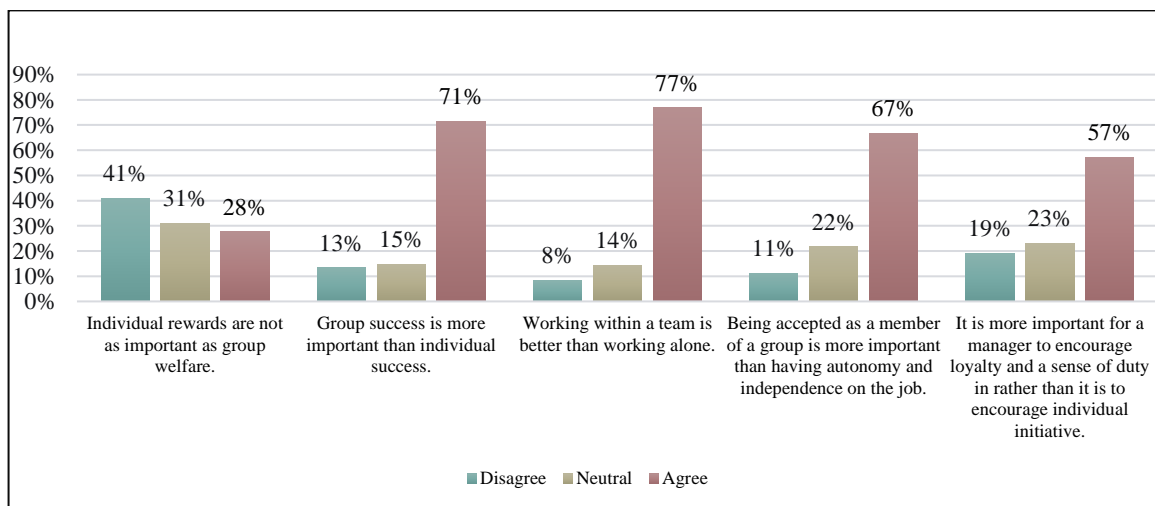
Chart 7.10: Individualism VS Collectivism Dimension

This chart shows that a majority of the respondents agreed to the importance of collectivism. A large proportion of respondents (77%) preferred working within teams to working alone.

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With regards to work success, (71%) agreed that team success is more important than an individual's success. Yet, with regards to rewards, (41%) of the respondents considered individual rewards as more important than group-rewards.

The interviews reflected the importance of collectivism for the successful implementation of ICT:

> *"Working as a team is essential. It requires a collaborative effort from different parties; [...] it helps to arrive at a successful application." ET2.*

> *"In IT projects, working in groups is better than dealing with individuals. We exchange ideas, help to set the right requirements, and build the electronic systems." EA4.*

More interviewees stressed the importance of collectivism in the work environment:

> *"We need to promote a culture of teamwork for all structures and all staff at all levels because there are different levels, various experiences and people with different perspectives. We are looking forward to dealing with groups rather than individuals." EA4.*

The same interviewee added to highlight the importance of team-work:

> *"When there is teamwork, there will be an exchange of ideas, taking the right requirements for the available vacancies from the concerned staff. This helps a lot in building and improving the system with all the right requirements." EA4.*

Collectivism helps employees to complete an IT project by sharing and assigning tasks to each team. This undermines their individuality and strengthens the spirit of cooperation:

> *"Group work is needed in an IT work setting. Individual contribution is concerned with any experience and knowledge of a decision maker but in technical matters; collective work is required. We must consider others' opinions since each department has its own line of work, competences, and requirements. I cannot take any procedure." A21.*

Another interviewee defines teamwork and points to its significance:

"Group work which means integration to establish a new idea and make the right decision." A19.

The above interviewees understand the importance of collectivism and express the need to promote it by emphasising collaboration and team-work which can contribute to the successful implementation of ICT.

Long-Term VS Short-Term Orientation: A Long-Term Orientation describes a society which fosters virtues oriented towards future rewards, in particular, adaptation, perseverance and thrift. A Short-Term orientation describe a society which fosters virtues related to the past and present, in particular, respect for tradition, preservation of "face" and fulfilling social obligations (Hofstede, 2010).

Chart 7.11 below shows the level of agreement or disagreement of respondents to the three Long-Term VS Short-Term orientation related statements. The respondents were asked to express their agreement or disagreement with these statements.
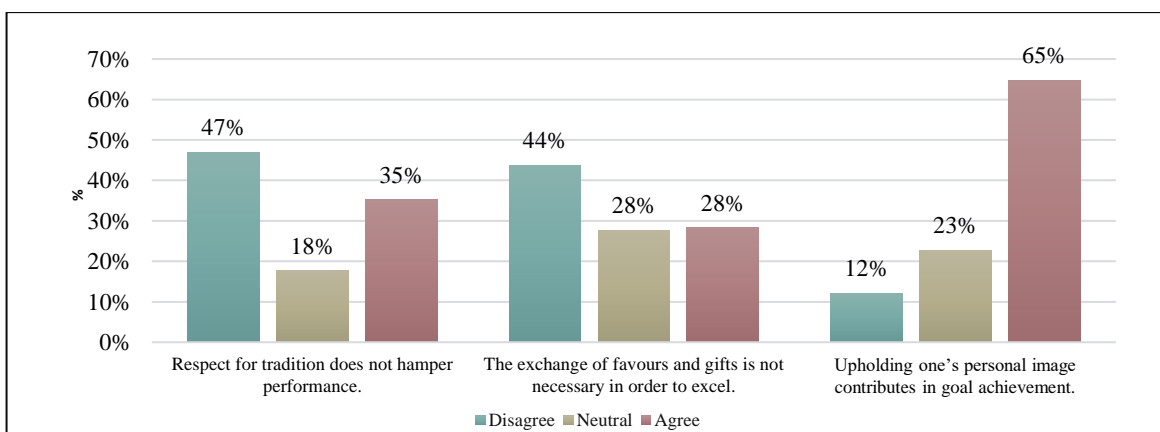
Chart 7.11: Long-Term VS Short-Term Orientation Dimension

In relation to the four organisations in Oman, Chart 7.11 suggests that almost half of the respondents (47%) disagreed with the statement that 'respecting tradition does not hamper performance'. This suggests that less than half of the employees favoured a Long-Term Orientation over Short-Term Orientation. In the view of the respondents to the second statement, (44%) disagreed with the statement that "The exchange of favours and gifts is not necessary for the employees to excel". Furthermore, (65%) of the respondents in the surveyed organisations agreed with the statement that "upholding one's personal image contributes to goal achievement".

The qualitative interviews showed that the interviewees favoured either a Long-Term or a short-term plan according to the goals and objectives of the ICT projects:

> *"There should be a long-term vision and short-term plan for development. This will create a sense of achievement for the staff at the end of each phase." EA3.*

Yet, a majority of the interviewees showed positive attitudes towards short-term plans: *"I think IT projects should be for a Short-Term." EA4.*

Some interviewees were aware of the benefits of the short-term plans in ICT and the drawbacks of the Long-Term plan:

> *"In my opinion, short-term plans are the best for IT projects. It should not last more than two to three years because information technology is witnessing rapid changes. If we have a long-term plan and we plan to commence a project for five years, we may discover by that time better methods to arrive at the target that we have planned to reach after five years." ET1.*

Another interviewee stated the rationale for the short-term plan:

> *"First: because integrated applications change with changes in technology. Second: we need to finish works as soon as possible. It will be more binding for institutions if it was shorter, more solid, and time-bound. There should be measurements and we can gradually know the good aspects in the staff. If there are challenges, we should address them. If we prepare long-term plans for a project, people will be lazy to execute the project when needed." EA4.*

In the view of the interviewees, it is more logical to adopt either a long or short-term plan depending on the objectives and goals to be achieved for different ICT projects:

> *"We should have short and long-term goals. We have a vision in the information technology until 2050 despite we do not know what will happen in the future. We have annual plans and five-year plans. Each year, we have a work plan with determined goals and timelines." T10.*

Oman usually has a 20-year vision which reflects the strategic pathways and directions for all sectors in the country. In 1995, Oman 2020 vision was approved. The government is

currently working on developing Oman 2040 vision. This could be the rationale for interviewees stressing the importance of long-term vision without undermining the significance of short-term plans in the implementation of any governmental project.

In fact, both quantitative and the qualitative data made it clear that the interviewees understand the differences between and the significance of long-term and short-term planning. Managers are inclined to adopt long-term vision integrated with short term plans for the successful implementation of ICT projects. The choice of long or short plans or both is based on the goals of ICT projects. The neutral attitude of the Omani employees' attitudes towards long/short orientation is discussed in more detail in the next chapter.

Indulgence VS Restraint: Indulgence VS Restraint refers to the perception of employees' gratification of needs in the workplace. Hofstede *et al*. (2010, p.281) describe Indulgence as the characteristic of *"a society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun"*. Its counterpart that is restraint is described as the characteristic *"a society that suppresses gratification of needs and regulates this by mean of strict social norms"* (Ibid). Chart 7.12 below shows the level of agreement or disagreement of respondents to the four 'indulgence/restraint' related statements. The respondents were asked to express their agreement or disagreement with these statements.
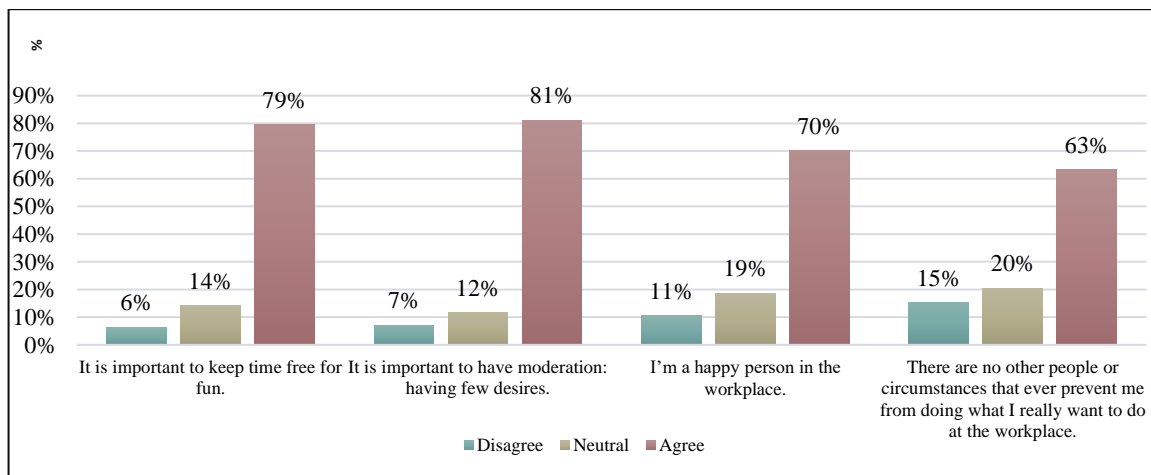
**Chart 7.12: Indulgence VS Restraint Dimension**

 As illustrated in chart 7.12, a majority of the respondents 63% agreed with the statement that there is nothing that prevents them from performing what they want at the workplace. 79% agreed with the statement that "It is important to keep time free for fun". This would suggest

that they are in favour of indulgence. Furthermore, 70% of the respondents were happy in the workplace. Finally, 81% of the respondents agreed with the statement that "It is important to have moderation: few desires". This indicates that the overall perception of the respondents is that employees need some time for fun and relaxation, but they should be moderate and sensible about this.

The qualitative interviews highlighted the importance of the dimension of Indulgence in the ICT work-environment:

> *"Indulgence has two aspects: social and career elements. We are always tying tolerance to social aspects, but tolerance has also a career element. Working as a team is very important. If I am looking to establish an environment for teamwork where ideas are shared and people must be gathered, I must introduce the social element to change the work routine. This is important and essential." A19.*

According to the interviewees, the nature of ICT work requires creating an atmosphere characterised by pacification, harmony, controlling the employees' desires for better performance of the various tasks of the ICT project:

> *"Indulgence has many good aspects that affect the success of system integration. It requires skills, patience and overcoming surprises that may occur during system setup or upgrade." EA3.*

> *"Tolerance is connected to administrative and leadership skills for officials" ET4*

> *"[Indulgence helps in] creating a casual respecting work atmosphere for the staff." ET4.*

> *"Taking centre-aligned is the most appropriate in an institution. Suppose a directorate sticks to productivity and never cares about humanitarian aspects, this productivity will not last for long and probably he will find no one wants to get the work done. On the other hand, when he or she becomes more lenient and tends to accept employees' excuses for social reasons, some employees may do their job carelessly and may lose interest in their work. Thus, the leaning to these two extremes are somehow risky and we need to be in the middle." A14.*

Further, the following interviewee showed the benefits of Indulgence:

> *"We believe in Indulgence and meeting with staff. We are feeling like people are getting along with each other. This helps in cementing relationships. Indulgence breaks the ice and helps converging ideas and opinions. It is part of the national culture…" A12.*

On the other hand, the qualitative data showed how "restraint" culture may influence the work environment and make employees uncomfortable and reluctant to communicate with others:

> *"Restraint is partially important. We are not in a military institution or in a factory. When we talk about government bodies and deal with individuals and institutions that highly depend on the workforce to perform tasks and offer service, you need to strike a balance between Restraint and Indulgence." EA3.*

> *"For example, thinking too much about job security may make employees perform their job with fear as they may be expelled from their job if they make big mistakes." A14.*

The same person added:

> *"The excessive unstandardised rights of the employee may lead to the failure of some electronic systems. There is a lack of accountability system for employees. Some employees may take advantage of this and get more then they deserve. This may influence the performance of some employees who will not do their job seriously. This is highly problematic for the fact that if there is no fair and codified accountability, work will be done poorly and reluctantly." A14.*

In summary, the interviewees understand that Indulgence in the work environment of ICT means to have some free time to allow employees to refresh themselves and to prepare for a better and successful performance in the implementation of ICT projects. This suggests that the respondents are aware that indulgence and restraint should be observed and balanced.

7.3.2 Organisational Cultural Dimensions

As described in Section 5.2.2, organisational culture dimensions are divided into four: Need for Security, Results-Oriented, Job-Oriented and Closed-System. Each of these factors was measured on multiple item 5-point Likert scales. The respondents were requested to demonstrate their level of agreement or disagreement with each of the statements.

Table 7.3 below shows the mean scores and standard deviations for each of the four dimensions.

Table 7.3: Organisational Dimensions Descriptive Statistics (n=857)

Factors	Score		Mean	Std. Dev.
	1 ← → 5			
Need for Security (NS)	Low-NS	High-NS	4.07	0.80
Results-Oriented/Prosses-Oriented (R/P-O)	High-PO	High-RO	4.19	0.76
Job-Oriented/Employee-Oriented (J/E-O)	High-EO	High-JO	3.27	0.91
Closed-System/Open-System (C/O-S)	High-OS	High-CS	3.08	0.90

Table 7.3 shows that the two dimensions (Results-Oriented and Need for Security) had higher mean scores (4.19 and 4.07) respectively than the mean scores of (Job-Oriented and Closed-System). These high mean scores indicate that the respondents agreed with the importance of the two dimensions (Results-Oriented and Need for Security) in the successful implementation of ICT. The scale is collapsed into three groups for ease of interpretation: disagree (points 1and 2), neutral (point 3) and agree (points 4 and 5). The following sections present further respondents' opinions on the statements corresponding to each of these dimensions.

Need for Security (NS): Need for Security represents an organisational culture wherein people require constant assurance for their acts. Chart 7.13 below shows the level of agreement or disagreement of respondents to the five related statements of Need for Security. Respondents were asked to express their agreement or disagreement with these statements.
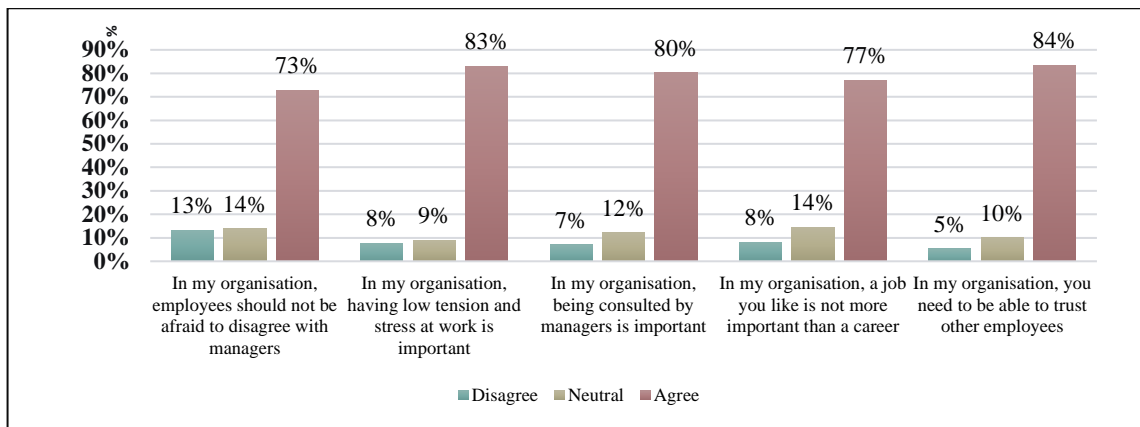
Chart 7.13: Need for Security Dimension

Chart 7.13 shows that there is an overall agreement among respondents with regards to the five statements. The high rate on the need for security scale reflects that employees believe a stronger need for security. More specifically, the data illustrate that a majority of the respondents (84%) agreed with the statement "in my organisation, you need to be able to trust other employees". A majority of respondents (73%) agreed with the statement "in my organisation, employees should not be afraid to disagree with managers". This suggests that the majority of employees believe that they work in an environment where healthy discussion is possible with their managers and should not be afraid to voice their concerns.

The interviews highlighted the need for security as follows:

> *"We must provide confidence and safety for the employees as it helps them do their job accurately, efficiently and quickly. [….]. There are some cases when employees take advantage of this environment and start postponing their work. Therefore, direct managers must encourage the employees to be devoted, trustworthy and responsible. The welfare of the employees and sense of security inside the work environment help achieve a successful application of IT in the institution." A2.*

Further benefits of a high level of security:

> *"When employees are safe and secure, they will be satisfied with themselves and more willing to work and develop their abilities and be more interactive." T1.*

This creates satisfaction and loyalty in the ICT environment for employees.

"Satisfied staff are more loyal to the institution leading to the quick execution of tasks. They like work, caring less about the time they spend on work. Whereas unsatisfied staff do not care much and are less productive." T10.

"We must provide a sense of security to achieve progress and continuation of work. This sense of security is realized by implementing several factors. One of which is a staff sense of self-worthiness, to feel that their work is appreciated, and their proposals are considered and implemented. Otherwise, they would feel threatened and insecure and that would jeopardize their priorities." A17.

According to interviewees, job security can enhance employees' motivation to help them to perform better:

"The more secure an employee feels, the more productive he/she is. Unfortunately, there is a small group that makes use of this situation because in the end they will get paid whether they have worked well or not. On the other hand, there is another category of staff who never feel satisfied unless working hard. Those are prevailing in the technological sections." T2.

"Feeling secure is one of the most important factors that increase productivity and innovation." EA3.

A small number of interviewees, on the other hand, believed that job security is not needed and that it has many disadvantages:

"Job security is available in Oman, but it is counter-productive. Other countries that have no job security are more productive. If you are managing a directorate general and have goals and quality to aspire for, deadlines and performance metrics to apply and have employees and departments that are not doing their duties. You cannot stop, suspend or terminate their contracts." ET2.

"Job security is the biggest obstacle to innovation, progress and performance. It is not just the public sector even the private sector suffers. Therefore, we are suffering from administrative flabbiness and negligence because staff are not recruited based on production plans or goals and values." ET2.

Overall, a majority of the interviewees favored a secure work environment as it strengthens and facilitates employees' performance. Only a few interviewees considered it an obstacle

which hinders progress and performance. There is a need not only for reassurance of 'security' for a better performance but also for changing ways of thinking of the employees as well as top managers. There must be a need for focusing on the best performance which would help create secure and successful work environment.

Results-Oriented (RO): A Results-Oriented culture refers to an organisation where employees put in the maximum effort required in their work and they see each day as bringing a new challenge. Chart 7.14 below shows the level of agreement or disagreement of respondents with the three Results-Oriented related statements. Respondents were asked to express their agreement or disagreement with these statements.
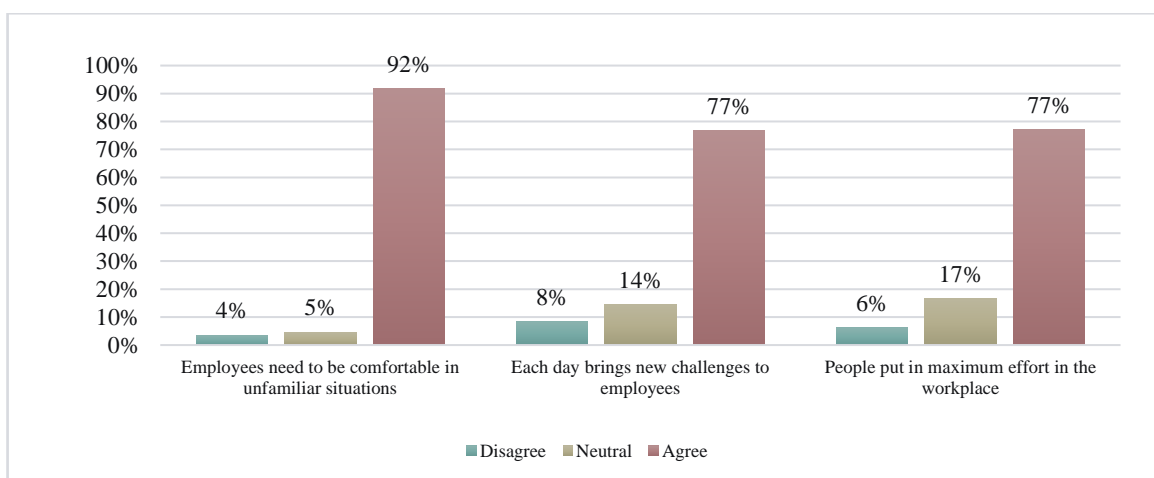
Chart 7.14: Results-Oriented Dimension

Chart 7.14 shows that 92% of the respondents think that an environment which encourages creativity by regularly providing challenging tasks. More specifically, the data illustrate that respondents agreed with the need for employees to have a comfortable environment when facing unfamiliar situations.

The interviewees were positive in tone. Most interviewees agreed on the importance of familiarizing staff with new environments. Most showed, in one way or another, their concerns for promotion, for the creation of the suitable environment to increase productive outcomes:

> *"Establishing a family-like work environment for the staff [is important]. For example, IT administration holds an open day every year in February or in March. Each staff member can bring their family with them if they would like. On that day, there is no senior or junior staff. They hold such events in one of the farms. They*

organize activities and award the best IT employees around Omani in the ministry."
T10.

"It is very important to provide a suitable environment for the E-system and make the staff comfortable at work." ET1.

This indicates that some interviewees believe that employees who are comfortable with performing their jobs would be able to achieve the assigned tasks and they are better in solving challenges.

"The employees' welfare should precede that of the clients' as it is very important to keep our employees happy. As long as the employees are relaxed, this will positively affect the service they provide and therefore raise the clients' satisfaction level. If we don't take care of our employee's welfare, we won't be able to provide good services. This concept should be adopted by all institutions providing services." A2.

Interviewees contend that it is the job of management to make sure that this dimension (Results-Oriented) is perceived in the same way for all the employees to achieve strong results of the job-performed:

"More success and satisfaction can be achieved if we are away from the subject of management and staff. I believe, we have achieved more success if the management tries to establish a friendly relationship. It makes the staff more satisfied. This is what career longevity is about." T10.

"Environment and convenience are important. They encourage the staff to perform their duties and exercise tolerance and innovation." EA3.

"Inside the centre, there is communication, showing initiatives and presenting ideas for developing the work. This means that the employees are happy and comfortable in the workplace. Therefore, keeping employees' welfare at its best is very important as it can lead to the success of the application of online services." A2.

The interviewees suggest that organisations which are Results-Oriented have many benefits and being Results-Oriented is important for the successful implementation of ICT projects.

A Results-Oriented organisation can help employees to perform better and be better able to face new and unfamiliar challenges.

Job-Oriented (JO): Job-Oriented refers to the employee attitude to job performance. Employees-Oriented believe that their personal problems must be considered, and that the organisation is responsible for the welfare of the employees. In a Job- Oriented culture, employees are under immense pressure to get the job done. Chart 7.15 below shows the level of agreement or disagreement of respondents to the three Job- Oriented related statements. The respondents were asked to express their agreement or disagreement with these statements.
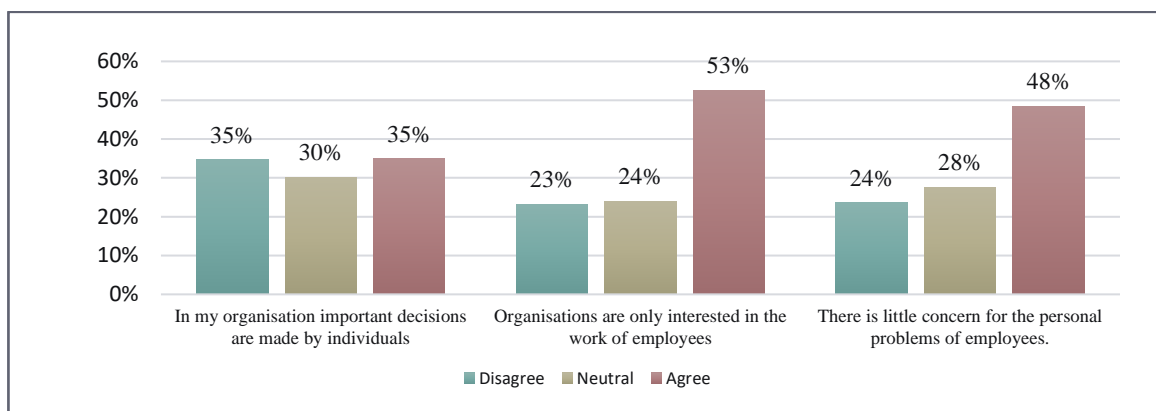
Chart 7.15: Job-Oriented Dimension

This chart shows that there is some divergence among respondents with regard to their views on the three given statements. The disparity is more apparent in their views whether important decisions are made by individuals in their organisations (35% agree, 30% neutral and 35% disagree). The data also show that almost half of the respondents (53% and 48% shown in statements 2 and 3 respectively) think that organisations are more interested in getting work done than in the employees themselves.

The interviewees' responses suggested that to achieve the goals of the organisation, management should focus on the welfare of the employees to complete their job:

> *"Senior management accepts ideas from employees and work with them to shape the goals, so they would reflect these goals in these meetings. These goals should be for the interest of the work and geared towards the interest of the staff as a whole." T7.*

"Staff must be aware of institutional goals and the management should be acquainted with staff aspirations by involving them in setting the goals. We have many committees in which staff are participating. Their opinions and requirements are heard, and decisions are reached out." A21.

"Increasing awareness influences employees to be proactive in setting the goals. If they believe in the strategies, they will be more productive." T10.

Most responses were concerned about innovation systems that may help employees focus on their jobs:

"Promoting talents, innovations and ideas and moving them to application helps in IT. Staff would be more likely to come forward with innovations if they find someone who listens to them." A17.

According to one interviewee, to create an 'employee-Oriented' environment for employees, it is important for the manager in ICT to create the welfare for that:

"The one in charge should pay visits to the workplace to communicate with employees. [....]. When this becomes a habit for the directors to observe the employees' conditions and their participation in the development of work and to see their needs, they will feel that this director is close to them and keen to hear from them. A family-like atmosphere would prevail in the work environment." A11.

"Everything should be devoted to serve employees who are productive. How do we become productive? First by making the right choice. Second, by developing his skills in the right direction. Third, by guiding him right. Fourth, by empowering him and giving him access to resources (money and time) that he needs. We need to motivate him and keep him in the institution. We must consider all these points. Job security is very essential at work." E12.

The above interviewees expressed their concerns regarding creating and empowering work conditions for a better work performance.

The different attitudes of the respondents and interviewees on the Job-Oriented dimension may reflect that employees in the organisations need more assurance regarding improving

their work-environment to perform better and to get the job done. In the four organisations, a quarter to a third of respondents were Employee-Oriented rather than Job- Oriented.

Closed-System (CS): The term Closed-System refers to both organisations and people who are closed and secretive, even to insiders. They believe that only a special type of person can fit into the organisation. Chart 7.16 below shows the level of agreement or disagreement of respondents with the four-closed system related statements. The respondents were asked to express their agreement or disagreement with these statements.
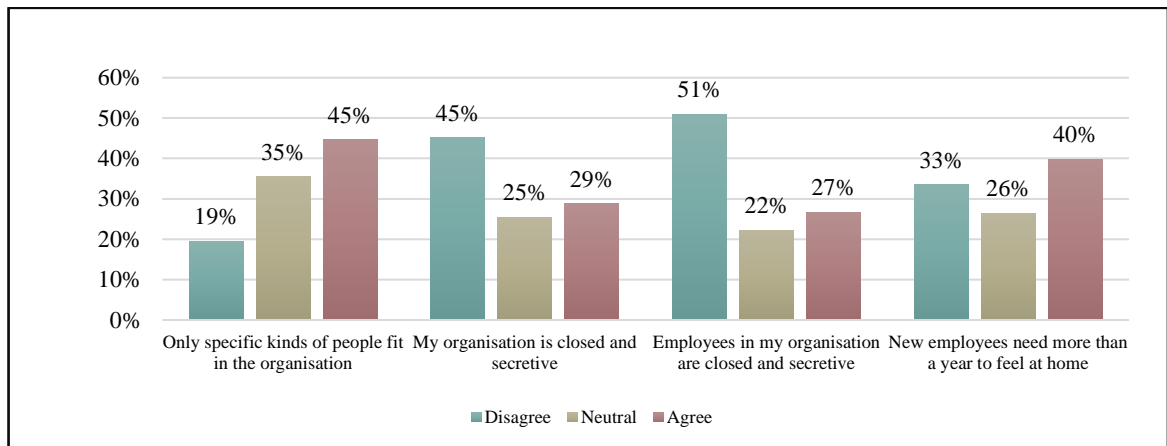
Chart 7.16: Closed System Dimension

Chart 7.16 shows some inconsistencies among the respondents about their views on Closed-Systems. The data show that while 45% of the respondents believe that only a certain type of person is suitable to work in their organisations and 40% of the respondents think that new employees need a lot of time to accommodate to the work environment. Only 29% of the respondents think that their organisations are closed and secretive.

The qualitative study of the interviews found that some interviewees prefer an Open System as it welcomes participation among the employees, and sharing knowledge, which plays an important role in the successful implementation of ICT:

> *"I believe in an open-door policy because it enhances the communication between employees and management; technology is not constant. It is mostly in flux. Therefore, meeting and preparing proposals to keep abreast with up-to-date development requires a lot of communication for making decisions. The open-door policy has flourished because of the technology. It has a tremendous influence on*

the success of IT and telecommunication in the institution. IT will not develop a closed-door policy as it requires continuous follow- up." A11.

"An open-door policy creates harmony and affinity between the head and the staff." EA4.

"The gap between the employees and management is very close. This is an open-door policy, not a closed-door policy." T7.

Most of the interviewees believed that an Open-System has many positive impacts on the development of ICT:

"A secure and stable environment in the open-door system where the spirit of teamwork exists makes the employee feel a sense of comfort. He or she feels secure as they are home. In contrast, if the employee felt that he was working in a non-incentive, unsafe or hostile environment; he would not be working properly." ET1.

Other respondents who favoured an Open System found that a Closed System does not contribute positively to shared communication and knowledge. This might lead to poor performance in the implementation of ICT:

"In the closed-door system, we do not receive any response from the people in charge to respond to inquiries or to express an opinion and receive assistance for development. Possibly, an employee has good ideas about how to develop the system. Therefore, this interaction, which is supposed to be between the head and the employee, helps to develop along with the use of technology in the institution." EA1.

"We are still holding conventional beliefs at institutions. A closed-door policy is applied more frequently compared to an open-door policy. If someone wishes to meet the director, he cannot meet him or meet any of the staff let alone meeting the director general. He will find more than thirty individuals like him waiting with no clue where to go." EA3.

The adoption of an Open System in the ICT environment may require regulations:

"An open-door policy is good, but it requires regulation. Officials cannot listen every day to problems and issues that are not part of their job. There should be a

communication plan with the goals and the institutional vision. Staff ideas should reach officials in a regulated manner and not haphazardly." ET4.

The qualitative data show that organisations and employees prefer Open-System as opposed to Closed-System. Organisations with Open-System facilitate communication of ideas for a better decision-making process. Interviewees believe their organisation is Open-System.

7.3.3 Workplace Factors

As described in Section 5.2.3, this study examined 7 workplace factors: Self-Efficacy, Peer Influence, Resistance to Change, Legacy System Upgrade, Top Management Support, Project Management Standards and Communication in the organisation. Each of these factors was measured using a multiple items questionnaire and five-point Likert scales. The respondents were requested to demonstrate their level of agreement or disagreement with each of the statements. Table 7.4 shows the mean scores and the standard deviations of each of the seven factors.

Table 7.4: Workplace Factors Descriptive Results (n=857)

Factors	Score 1 ← → 5		Mean	Std. Dev.
Self-Efficacy (SE)	Low-SE	High-SE	3.91	0.81
Peer Influence (PI)	Low-PI	High-PI	3.29	0.80
Resistance to Change (RC)	Low-RC	High-RC	3.48	0.71
Legacy System Upgrades (LS)	Low-LS	High-LS	3.47	0.68
Top Management Support (TMS)	Low-TMS	High-TMS	3.55	0.84
Project Management Standards (PMS)	Low-PMS	High-PMS	3.55	0.77
Communication in the organisation (CO)	Low-CO	High-CO	3.55	0.67

The mean scores of all the factors are higher than 3, indicating that the respondents tend to agree with the importance of the factors in the success of ICT implementation. This table also shows that Self-Efficacy has the highest mean score (3.91) while Peer Influence has the lowest (3.29).

Each scale is collapsed into three groups for ease of interpretation: disagree (points 1and 2), neutral (point 3) and agree (points 4 and 5). The following sections present further details of the respondents' opinions on the statements corresponding to each of these factors.

Self-Efficacy: Self-Efficacy refers to the individual's belief about his/her ability to perform certain tasks successfully. It is considered an important cognitive mechanism for influencing and developing behaviour (Bandura, 2010). Chart 7.17 below shows the level of agreement or disagreement of respondents to the four Self-Efficacy related statements. The respondents were asked to express agreement or disagreement with these statements.
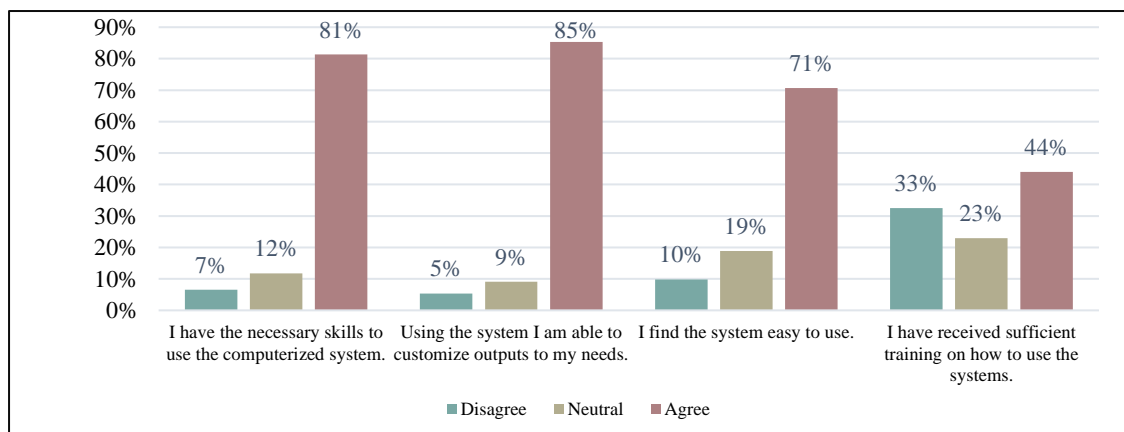
Chart 7.17: Self-Efficacy Factor

Chart 7.17 shows that most of the respondents agreed with these statements to varying degrees and rate their own Self-Efficacy highly. (85%) of the respondents either strongly agreed or agreed with the statement "using the system, I am able to customize the outputs to my needs". This indicates that the system is flexible enough that people can make the changes on it the way they need and that people have the skills to do this. The second highest rated factor was 'I have the necessary skills for using the system' which was strongly agreed or agreed by 81% of respondents. Only 44% of respondents felt that they have received adequate training. It is important to make sure that employees receive enough training to develop their skills and to facilitate their uses of different systems if not new ones.

The responses of most of the interviewees with regard to the lack of training and support for developing skills focus on the need for training to help use ICT efficiently. The following responses are from interviewees who stated that they lack both competence and experience to perform their jobs efficiently:

"How many project managers do we have in the country in the e-government project management and digital transformation? In ITA, they are few. We did not give trust, support, training, and qualification to the middle link. We are missing some professional specialities in the country. We should educate students about these professional jobs. We should promote the economic prospects for such professional jobs." ET3.

Another respondent said:

"Career guidance is essential for two reasons: putting the right person in the right position i.e. distributing staff according to tasks; forming a main work cell and offering both training and technical support at all levels." EA3.

The same respondent emphasised the need for training for managers to pass on a clear picture of work to the employees:

"[…] another important aspect is having well-aware experts and, having the capabilities and the supports from concerned authorities or partners that are qualified to handle the system in terms of quality and function." EA3.

The empirical study of the qualitative data show that training provides employees with guidance and with the necessary skills for the successful implementation of ICT.

Peer Influence: Peer Influence is the impact of a peer group on an individual or other group. This impact encourages others to change their attitudes, values, or behaviours to conform to those of the influencing group or individuals. It was shown earlier in Table7.6 that Peer Influence (mean: 3.29) was the lowest rated among all the seven workplace factors. Chart 7.18 below shows the level of agreement or disagreement of respondents to the four-peer influence-related statements. The respondents were asked to express their agreement or disagreement with these statements.
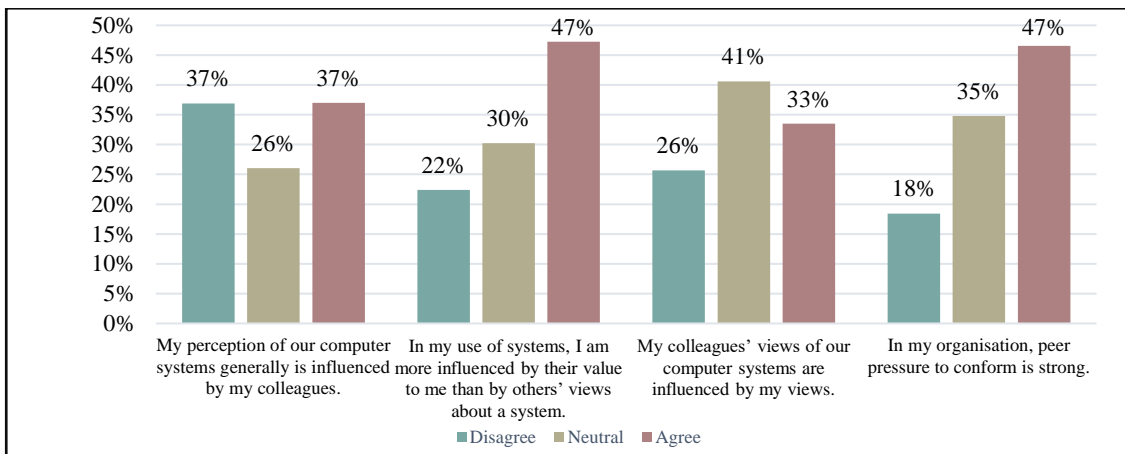
Chart 7.18: Peer Influence Factor

Chart 7.18 shows that the empirical results did not reflect positive opinions among the respondents about the Peer Influence factors. For example, 37% of the respondents stated that they either agreed or strongly agreed their colleagues influence their perceptions of computer systems. Yet, a similar percentage (37%) of the respondents also disagreed or strongly disagreed with the same statement. The responses were spread across the three categories (agree, neutral, disagree) for the other factors: influence by others, influence on others, and strong peer pressure.

The interviewees back up these findings and illustrate that the Peer Influence factor is a two-edged sword. It is neither good nor bad in itself. It depends on the context whether it is benign or maleficent.

The following are some examples of interviewees' comments on the positive effects of Peer Influence in reducing resistance, increasing awareness which could lead to innovation and better learning:

> *"Peer pressure is very important. It must be positive so that you can learn from [your peers] how to develop the business, especially in the IT field. It helps reduce resistance to the use of information technology, but it requires skill and innovation." A19.*

> *"I think engaging skilled employees with others motivates the remaining employees to be innovative and this is reflected in upgrading electronic systems." ET1.*

> *"Having role models is vital in the institution. For example, when employees gather in one place and one of them is shrewd, you will find others follow and learn from*

him not only the skills but also beliefs, loyalty and desire. Management can use
such employee during a meeting to consult him or request him to do some tasks."
EA3.

Peer Influence has many advantages in increasing productivity, creativity, spreading information and motivating competition:

"Influence among peers can affect the productivity due to the bonding between
employees. It can also lead to encouraging them to be more creative and to come
up with positive ideas to achieve development. However, employees can influence
each other both positively and negatively." A2.

"We can benefit from Peer Influence in spreading information as this type of
influence is very powerful and helps strengthen the spirit of competition among
them." A3.

Peer Influence sometimes has negative influences when the peer group or individuals are not helpful. In this way, they add more pressure when experiencing a problem:

"Peer Influence can be positive or negative or both." A2.

"Peer pressure is very significant. Most people are led by following an example.
Peer pressure can work for people who have leadership traits or who have anarchy
traits. They can make fragile people rebel." EA3.

"Peer Influence has some problems and negative issues. They affect each other
negatively, so they may get frustrated. This frustration and disappointment may
spread over the institution." A11.

Peer Influence may cause disappointment and may hinder the dissemination of information among employees and encourages them to rebel.

The qualitative data suggest that many employees are aware of the significance of Peer Influence as a factor that can bolster the implementation of ICT projects, however, they express negative views about peer influence when it is not conducted in the right ways. The benefits of Peer Influence surmount any negativity.

Resistance to Change: Resistance to Change refers to people's reaction to resist anything that can cause work disruption, interrupt their routine, or affect the power structure by reducing authority or changing the reporting structure. The Resistance to Change factor was measured by five statements as shown in Chart 7.19 below.
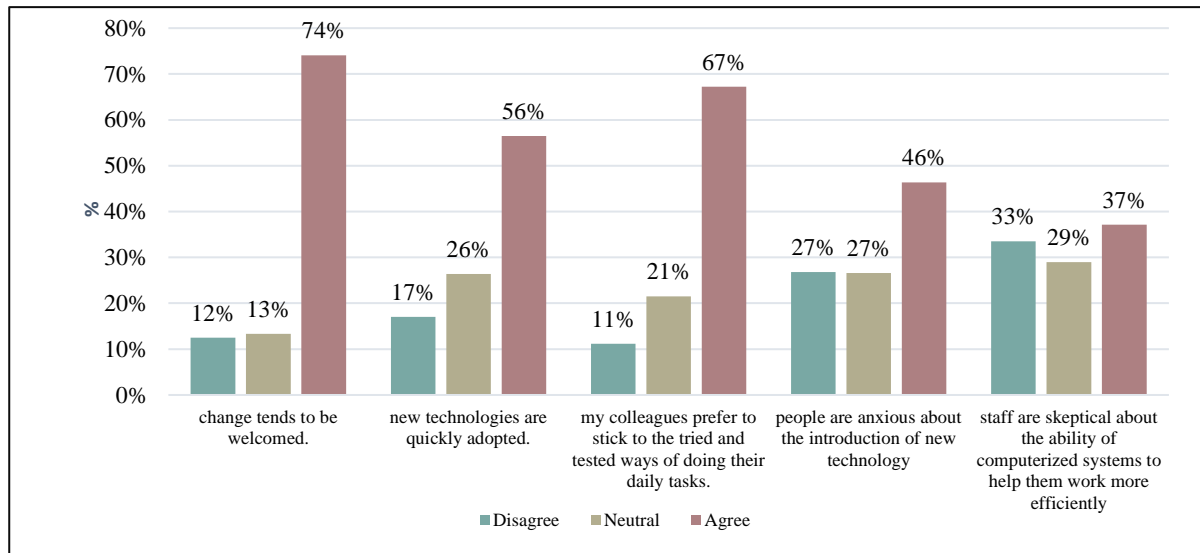
Chart 7.19: Resistance to Change Factor

It is interesting to note, in Chart 7.19, that 74% of the respondents said that they welcomed change. Yet, 67% of them stated that their colleagues preferred to stick to the tested ways of performing tasks. Another interesting finding is that while 56% of participants welcomed new technology, 46% of participants were anxious about the introduction of a new technology. Finally, the number of respondents who were sceptical or not sceptical about computerised systems are roughly equal.

The qualitative interviews show an awareness to the idea of 'resistance to change':

> *"The resistance rate increases with the adaptation of new ideas or the change in the conventional work routine. It also increases with age and experience. Long-standing [older] employees show more resistance compared to junior employees."*
> *EA4.*

A majority of the interviewees said that changes are easily accepted as it is part of the nature of Omani people to accept and tolerate change with little resistance:

"There is no resistance at the directorate level or you can say it is very little. We do not force the use of any new technology on the staff before preparing a feasibility study and getting feedback from users." T10.

"There is no resistance. Most employees are keen on the use of technology." A19.

"In the centre, we are constantly developing old systems and acquiring new ones. The system is renewable and is compatible with any new technology, which helps achieve the successful application of the online system. Being an online admission system, it is considered one of the oldest yet successful in the Sultanate and worldwide." T1.

"There is little resistance in the centre regarding the acceptance of new technologies. In the past two years, employees of the ministry became more accepting of using new technologies as they felt the difference between the traditional methods and the new ones which depend on technology." A9.

With the advent of technology, the degree of resistance to change becomes less. However, if there is resistance, it is tackled and reduced:

"Resisting change has decreased tremendously because people's attitude towards using technology has also changed." T7.

The same respondent added:

"Nowadays, people's conception has changed, and they are showing less resistance and more tolerance [to new ideas and new adoption of technology]." T7.

According to the interviewees the factor 'resistance to change' can be easily dealt with by increasing awareness:

"We can address the issue of resistance through awareness. It is very important for any electronic system. Nowadays it is very easy for us to deal with any modern technology. No doubt, we still need training, but things are getting better than before in terms of training and tolerance." A21.

The interviews suggest that change is not a big problem for Omani employees. They do understand its relevant benefits and its significance in taking the right new procedures for the successful implementation of ICT.

Legacy System Upgrades: The term Legacy System refers to outdated computer systems, programming languages or application software that are used instead of available upgraded versions (Techopedia 2016). The factor of Legacy System Upgrades was measured by six related statements as shown in Chart 7.20.
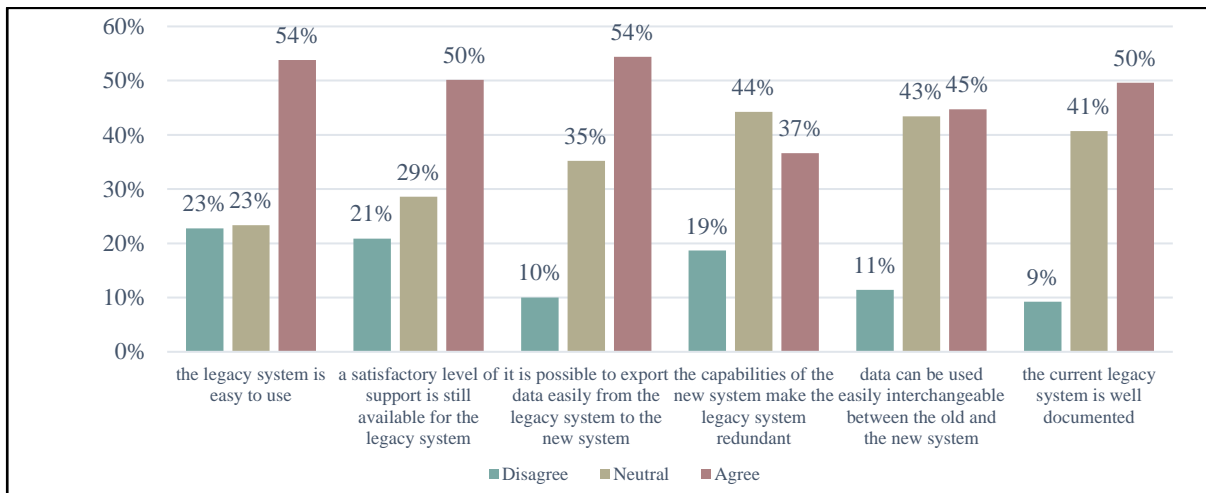
Chart 7.20: Legacy System Upgrades Factor

Chart 7.20 shows that around half of the respondents, that is 54% agreed or strongly agreed that the legacy system is easy to use and that data from the legacy system can easily be exported to the new system support. 50% of the respondents found that the legacy system is both available and well documented. The results show that there are differing views about the legacy system: positive and negative. More individuals are neutral or disagree about the capabilities of the new system in making the legacy system redundant.

A number of interviewees have stated that the existing systems in their organisation need upgrading to meet the requirements:

> *"The admission system is considered one of the most successful systems as it is upgraded to contribute to its success. It saves time and effort and preserved data and expertise." A2.*

The same person further recommended that:

"When establishing an online system, we have to take into consideration that the system has to be upgraded and compatible with all types of technologies at any time and place." A2.

The responses of the interviewees would suggest that there are no legacy systems in their organisations because a majority of the interviewees commented on systems in general which are continuously upgraded to fit in with the new IT technologies:

"If the system is unable of development and renew-ability, it is then considered a failed system." T1.

The interviewee would consider any outdated system a failure. This suggests that they are unaware that new software development is risky due to the unexpected problems and expenses. Employees do not understand that the availability of Legacy System can help to make them productive by giving them more explanation of the workplace rules being documented in the legacy system of an organisation.

Top Management Support: Top Management Support includes the support of all managers who have authority in establishing and enforcing policies and guidelines. The Top Management Support factor was measured by the five related statements shown in Chart 7.21 below. These statements revolve around different tasks for supporting employees.
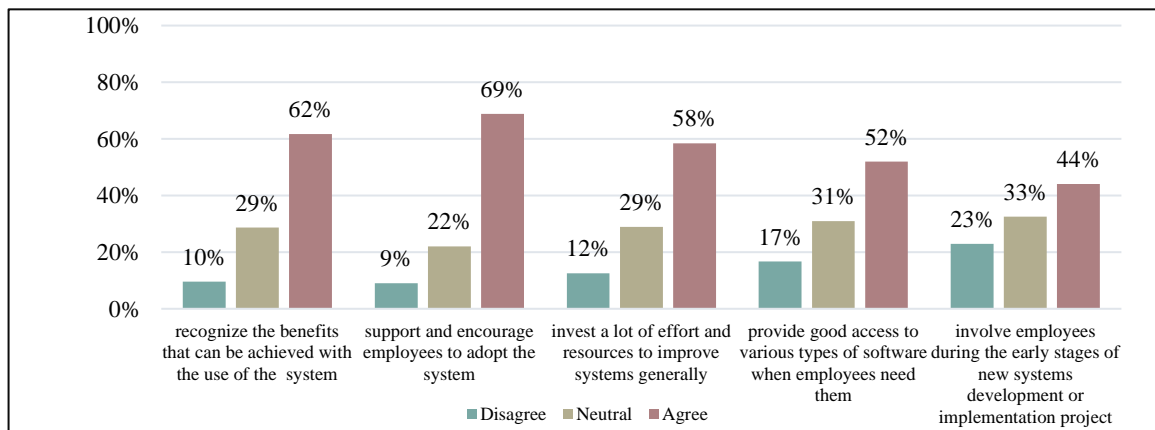
Chart 7.21: Top Management Support Factor

Chart 7.21 shows 69% of the respondents agreed with the statement that senior manager "support and encourage employees to adopt the system". 62% of the respondents agreed with the statement that senior manager "recognise the benefits that can be achieved with the use

of the system". 23% of the respondents disagreed with the statement that senior manager "involve employees during the early stages of a new system development or implementation project".

The qualitative study indicates that top-management plays an important role in IT projects:

> *"The role of high management is very crucial. It is the compass for the use of electronic applications. The top management support will have either a negative or a positive impact based on the vision and the line director's perception of IT applications." EA4.*

> *"Management should be aware of its importance for ICT projects. It is not superficial. It is essential for all other kinds of development like social, cultural, and economic development if there is an infrastructure for that, which will come." ET1.*

Top Management Support can assist and contribute to the success of an IT project:

> *"Top management emotional and financial support is essential to the success of the project." ET1.*

This suggests the importance of Top Management Support as it is a critical success factor for a project. This is discussed in Chapter Four: Section 4.5.

In the context of practices of the four organisations, Top Management Support can provide several benefits as stated by the following interviewee:

> *"High management can provide substantial financial support i.e. budgets and can take big decisions with other ministries and institutions. While others cannot take any further steps, high management can take actions through support and embracement." EA1.*

In the view of the interviewees, Top Management Support is important for its financial obligations towards middle and low management as well as employees

> *"It is very important to have Top Management Support for the application and setup of any system. If the employees see that the support is coming from top management, there will be more acceptance and success. If the vision comes from*

top management, there will be more motivated. Top management has a big role to overcome technical obstacles and other kinds of obstacles since they have connections with other top management as infrastructure or service providers." T11.

"Some projects failed because the project was not adopted by the high management. It was only supported financially. The project, the plan and the budget are offered and made available and the head of the unit or the high management offer support in carrying out the requirements of the project. However, a failure is bound to happen at any challenge that may occur if there is no determination to see it through." T7.

Top Management Support is the driving force and the important source of emotional support which can motivate employees by creating the relevant environment to be more productive:

"Emotional support is stronger than financial support. It aids in continuing with development." EA3.

"I think emotional support comes first before financial support. Emotional support is mostly ignored nowadays." A19.

There are other types of Top Management Support such as political, executive, decision-making and organisational support. In general, Top Management Support can help and speed up the successful implementation of ICT:

"Top Management Support is important and has a role in the successful application of ICT." A19.

"If the management does not show support, the IT project will not succeed." ET4.

All the respondents in the qualitative study said that top management in the four organisations is good for achieving success for ICT projects. Further, Top Management Support motivates the employees, invests in developing new ideas and helps implement successful ICT projects.

Project Management Standards: Project Management Standards refers to the planning, monitoring and controlling of all aspects of a project and the motivation of all those involved

in it to achieve the project objectives on time and at the specified cost, quality and performance (BS60794, 1996). The Project Management Standards' factor was measured by four statements shown in Chart 7.22 below.
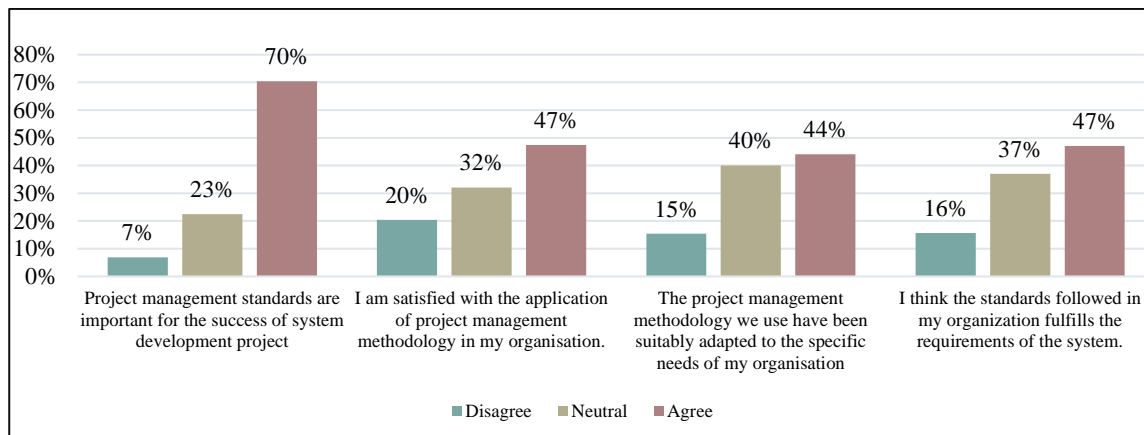
Chart 7.22: Project Management Standards Factor

Chart 7.22 shows that 70% of the respondents recognised the importance of Project Management Standards. However, less than half of the respondents (47%) expressed their satisfaction with the project management methodology used in their organisation and the same percentage found that the standards followed fulfilled the requirements of the system. Furthermore, only 44% of the respondents agreed that the project management methodology was adapted to suit the specific needs of their organisations.

The interviewees provided an elaboration on the issues related to the use of the Project Management Standards when introducing new systems:

> *"When new systems were introduced, there were no clear standards to follow or apply. In fact, standards are thought of at a later stage for the evaluation of the project." T1.*

The qualitative and quantitative findings suggest that employees are fully aware of the relevance and importance of Project Management Standards. However, nearly half of the employees were not satisfied with the functionality of the standards in fulfilling the requirements of the system.

Communication in the Organisation: The communication factor in the organisation was measured by six statements as shown in the following Chart 7.22.
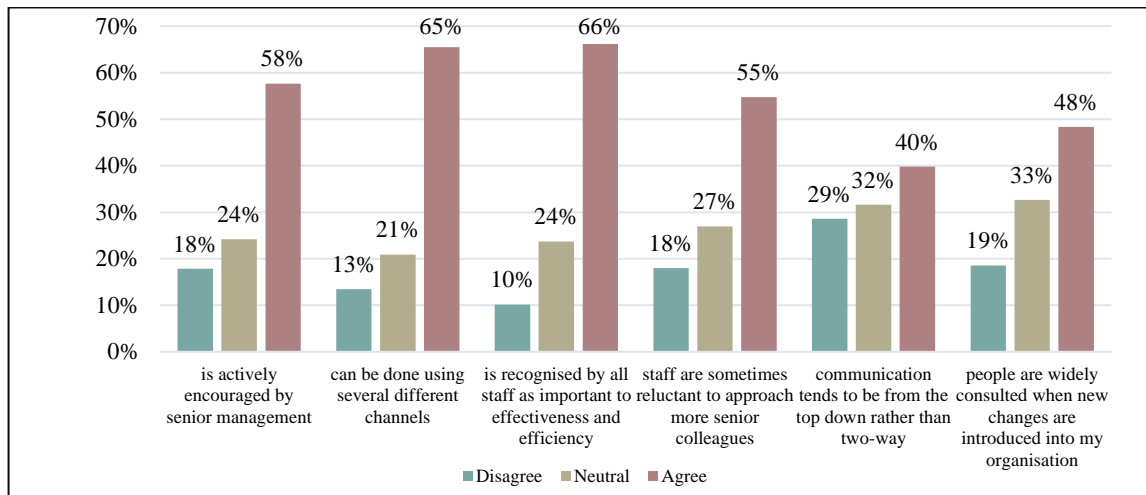
Chart 7.23: Communication in the Organisation Factor

Chart 7.23 shows that 66% of the questionnaire respondents perceived that communication is recognised as being important to efficiency and effectiveness. 65% of the respondents believe that there are several channels to achieve communication. However, nearly half of the respondents (48%) felt that they were not consulted when new changes are introduced.

There are three types of communication in any institution: top-down, bottom-up and horizontal communication between administrations and departments. The interviewees suggest that horizontal communication is the best communication in the IT field as this type of communication enables quick decision-making:

> *"A closer and direct relationship promote for more transparent system requirements and more understanding among the staff to achieve the target." A19.*

The qualitative interviews indicate that many of the respondents were content with the existing system of horizontal communication:

> *"In my opinion, there is a continuous horizontal communication in the Admission Centre. It is also a direct uncomplicated communication, yet communication is highly organized and follows a specific plan for a specific topic." A2.*

Some of the interviewees preferred the horizontal communication to top-down and bottom up communication-systems:

"Horizontal communication is very important in IT to exchange ideas and opinions and to utilize staff capabilities regardless of their specialization in IT. This will surely lead to successful systems." T10.

Some found that the horizontal communication system is relevant, effective, and efficient when utilised in the work-environment of e-government.:

"I think horizontal communication is the most appropriate method since employees feel they have participated in generating ideas and proposals in a way that reflects positively on their performance. On the other hand, imposing ideas from high level staff to lower level staff would make employees reject the idea and would lower their performance." T7.

"In turn, this contributes to reaching the right answers and helps achieve a successful application. If employees communicate horizontally regarding the development of a case, it will positively affect the application of the online systems." T1.

The qualitative findings show that the employees are aware of the importance of horizontal communication with their top managers, giving them a chance to contribute and to participate in the progress of the organisation. The findings suggest that horizontal communication is good enough and can have a positive impact on the successful implementation of ICT projects. The other channels of communication: top-down and bottom-up which help contribution among different levels of operation are available.

7.3.4 Other Qualitative Findings

The factors that interviewees considered important for the successful implementation of ICT were the need for more Expertise in ICT, Effective Leadership in ICT and Situational Awareness of the significance of ICT.

The qualitative data gathered from the interviews suggest that there is a national cultural value in Oman that is not found in Hofstede's model. This new value is 'tolerance' which reflects the nature of the Omani individuals. This is a special feature that marks the Omani cultural model of this research study.

The 41 interviewees were asked if there was a 'specific feature which distinguishes Omani society'; see Appendix (D); all respondents emphasised that Tolerance[5] is a specific feature which universally describes Omani society. Here are some of the responses emphasising Tolerance as a distinctive characteristic of the Omani culture.

> *"Omani society is known for tolerance, not only among ourselves, but also in dealing with other people, other nationalities, or other communities. By looking through this feature, you can pass your judgement upon us since we cannot judge ourselves. The Omani society is a tolerant society and loves peace. It is socially an interdependent community. Perhaps these things do not exist in other communities. It is possible that these characteristics affect the nature of work and even productivity." EA1.*

The respondent above stressed how Tolerance positively motivates the Omanis to focus on the progress and productivity of work.

Another respondent related the concept of Tolerance to the concept of 'change' which triggered other features such as patience and attentiveness.

> *"Tolerance influences change. They have the potential to change and tolerate the use of electronic systems. Patience, tolerance, following instructions, listening to others and even overlooking mistakes and so on are all linked to tolerance, which has an impact on the success of IT integration." EA3.*

Tolerance is rooted in both the history and the culture of every Omani individual; Oman is distinct and remarkable for its religious tolerance (UNESCO 2014 Jones & Ridout 2012). Tolerance can influence changes in IT positively. The third respondent highlights the concept of Tolerance which has positive impacts on other features such as cooperation among the different communities of the Omani culture:

> *"Omani society is tolerant and supportive and basically takes things seriously. These aspects are the basis of the public culture and should be considered. We*

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[5] There are many definitions of tolerance in literature. In this thesis, tolerance is related to the concept of accepting and adapting to new ideas and changes without resistance.

should also look for means and methods of how to employ these aspects properly, such as cooperation, harmony, family relations, and community relations." A11.

One respondent discussed the role Tolerance plays in the success of ICT:

"Tolerance has a positive and very significant impact on the success of ICT for certain reasons. First, because we have different directions, diverse cultures, and doctrines whose members have different capabilities. If Tolerance exists among ourselves in the key issues where we excuse one another, we will benefit from all these parties and their various technical ideas. Everyone would give either money, ideas, or probably certain cadres to build our nation. Therefore, these things emerge in the light of tolerance." A11.

More responses can be found in (Appendix F). According to the interviewees, without Tolerance, it would be hard for Omani society to adopt and to adapt to new ways and new styles of living. 'Tolerance' is an additional dimension of Omani culture. This research study extends Hofstede's model of the national culture in Oman to include this dimension of Tolerance.

A number of interviewees mentioned that professionals in ICT with expertise are urgently required and their availability would speed up the successful implementation of ICT:

"Despite having many IT graduates, we are lacking quality IT specialists who can build and upgrade systems. We are lacking fine specialities like Java and Oracle programmers and database management specialists who can set up a large specialized IT database." EA1.

This interviewee also emphasised the need for Omani experts in ICT *as "Public and private institutions are recruiting specialists from outside [Oman]."* A1. This helps reduce the employment of expats and create a better economy for the Omani people.

Others expressed the view that innovative leadership cannot be ignored as it plays an important role in the adoption of ICT:

"I think we have a problem with our leaders and administrations. They are hesitant and not taking any decisions due to a lack of information and relevant background,

> *lack of trust with the people around them or simply they have no power to take the decision." ET3.*

A further demand for an effective and innovative leadership was stated as follows:

> *"Leaders must have faith in IT and adopt ICT initiatives and projects. Having an organisational structure that is decentralized and away from the bureaucracy is very important. In addition, leadership is very crucial." ET2.*

In the view of the above interviewees, a fact that should not be undermined is that it is not enough to have effective leaders without them being knowledgeable and competent in ICT. Leaders play an important role in the adoption of ICT. This helps in the effective decision-making process for ICT enterprises.

The fast pace of changes in the ICT sector has increased the demand for effective and innovative leaders in dealing with the challenges that face the success of ICT implementation in Oman.

Another factor suggested by the interviewees is to increase the awareness of the employees in many aspects of the workplace. For example, a lack of Situational Awareness might cause an employee to be marginalised and not to be fully engaged in the work environment. An informant states his concerns on this:

> *"[Situational-Awareness] is important before the execution of any system to consider elements such as briefing, Situational -Awareness and engagement." EA3.*

Another informant emphasises the need for Situational-Awareness:

> *"We need a platform. We need to start an awareness campaign for the people to commend role models or spread successful stories worth following." ET3.*

> *"Spreading awareness through media and introducing the Higher Education Admission centre's objectives and know how to use online services." A2.*

In the view of the interviewees, when there is a lack of Situational-Awareness, performance of the assigned tasks will be badly affected:

"When you want to start a project and you plan according to the resources available to you, a team must help you with the project and you are unaware of the level of experience the team has, this will definitely affect the project. [....]. While if the team lacks experience, the project will get delayed ...." T1.

Another interviewee expressed the need to increase Situational-Awareness in the ICT sector, otherwise, the feelings of fear and reluctance will lead him to failure:

"If someone is unaware of ICT potentials and reluctant to take any step or risk, he would fear or have no desire to take such risk." ET1.

Employees face some challenges which need confidence and power to face and to solve them. The most frequent challenges noticed by a majority of the interviewees are related to ICT projects:

The first challenge is related to the budget for ICT projects. ICT requires a high budget to upgrade and to respond to the implementation of new technologies:

"The biggest problem is persuading the official of the importance of providing a sufficient budget for ICT projects. The Internet service needs upgrading considering geographic isolation and remote scattered villages. Companies value profit above everything else." ET1.

In the view of the above interviewee, the budget to be given to ICT projects is not to be wasted.

In the view of another interviewee, ICT projects reflect benefits useful to the whole government-organisation, investing money in ICT projects should be logical:

"E-government is not just the computer. It is a logical work. Nothing that defies logic should be in the system." ET2.

Providing an adequate budget paves the way for setting up e-government initiatives.

Another challenge is that employees who face challenges need the confidence to face and solve them:

"You need to build confidence among employees to come forward with their ideas and innovations without any hesitation." ET3.

"We must build confidence [...] for the employees as it helps them do their job accurately, efficiently and quickly. IT environment is different from other types of environment as it is reflected in the work. There are some cases when employees take advantage of this environment and start postponing their work. Therefore, direct managers must encourage the employees to be devoted, trustworthy and responsible." A2

In summary, the descriptive statistical analyses of the national culture, organisational culture and workplace factors from the questionnaire and interviews show that a majority of the participants agree on the importance of workplace factors to achieve the success of ICT projects in e-government. Moreover, the participants suggested that several factors such as effective leadership, expertise in ICT and Situational-Awareness of many aspects that are important for the workplace and in effect they contribute to strengthening the organisation cultural impacts on the success of ICT.

7.4   Overall Satisfaction with Using the Four Systems

This section describes the level of participant's satisfaction with using ICT systems. The results showed that (86%) of the participants were satisfied with the existing ICT systems in the four different organisations. As shown in Table 7.5, all participants from the different organisations presented similar levels of satisfaction with ranges from 84 – 95% satisfaction.

Table 7.5: Proportion of Respondents Satisfied with System

Satisfied with ICT System		Agree
HEAC n = 44	Freq.	42
	%	95%
EDUP n = 369	Freq.	311
	%	84%
HR n = 157	Freq.	133
	%	85%
SH n = 287	Freq.	247
	%	86%
Total n = 857	Freq.	733
	%	86%

7.4.1 HEAC System

In interviews, users of the HEAC system in the Ministry of Higher Education were positive about the system:

> *"HEAC is one of the entities that falls under the Ministry of Higher Education and all the general managers who headed the centre were good to the employees and treated them well. Therefore, it contributed to raising the employees' satisfaction level. Employees want to be appreciated for their work not just financially but also through emotional support. However, ministries follow the regulations of the civil service which can be a challenge as the civil service doesn't consult with the employees." A3.*

The HEAC system has proven to be a great success:

> *"The HEAC system has been a remarkable success. People always say everything you need is there and available. The public attitude is that the system is effective, operational, and transparent. The most important thing is that people trust it." ET3.*

> *"The system has proven to be a success and achieved its goals, yet we are doing our best to keep up with the latest developments in technology [....] In general, I am satisfied with the system and I aspire to develop it so that the system becomes easier to use and meets with all the users' expectations." T1.*

> *"Yes, I feel satisfied and I have confidence that this system is fair. With regards to the feedback of students and parents, they trust in the fairness of the system and the evidence that supports this is that other institutions in the Sultanate have decided to establish systems like the admission system. For example, a while ago there was a statement from the Minister of Endowments and Religious Affairs to establish a system for Haj and before that, the Ministry of Commerce and Industry wanted to convert their 'one stop shop' system into a system like the online admission system." A9.*

7.4.2 EDUP System

The qualitative findings show that EDUP plays an important role in the Ministry of Education, however, it faces many challenges and has many problems that need to be addressed:

> *"I could say that the Portal is successful, but we need to address the challenges and find a solution for slow Internet connections in other directorates. Therefore, the use of technology affects the work." A6.*

> *"I feel partially satisfied. Fully satisfied means I should stop looking for the best. Therefore, to reach what you dream of, you need to feel that there is always an imperfection somewhere. Actually, job satisfaction is there but user satisfaction is what we seek." T2.*

Some of these problems are explained by the interviewees:

> *"As for the EDUP, I heard there are problems like disconnection, data loss and low-quality system outcomes." ET3.*

> *"Frankly speaking, the end users are dissatisfied because of other factors not within the Portal itself. Slow connection is the most frequent one beside peak times which are also one of the factors." ET3.*

The same interviewee added concerns for finding a solution to the problems with the EDUP system:

> *"To address the current situation, adjustment is required in certain practices to relieve the pressure at certain times. Sometimes the peak time comes because of the application of various other systems at the same time, such teachers and students transfer, grades entry which need a kind of work distribution according to certain schedule within the Ministry. Hence, possibly, there are some kinds of solutions that can ease the traffic in the Portal at certain times." T2.*

7.4.3 HR System

The HR system is in the Ministry of Civil Service and is called 'Mawred' (HR). Interviewees comments on this system were largely positive, but some comments were critical:

> *"The Mawred-system is functional and provides a quicker execution. It has created an optimal job environment. What we need is to amend the law to switch to e-government." A17.*

> *"[I am] satisfied with the system and data accuracy 95%." T6.*

Some responses indicated that there is lack of integration between the HR system in the Ministry of Civil Service and other systems in the other ministries:

> *"HR as far as I know, is not implemented in all ministries. Linking the Ministry of Civil Service to the Ministry of Health is very hard. However, there is a trend to develop or change the HR system to be compatible with other systems as far as I know." A19.*

7.4.4 SH System

Interviewees were less happy with the 'Shifa' or SH system in the Ministry of Health:

> *"The SH system is functional for nine years in hospitals but without any connection or data exchange. They are working on this issue for the last five years without being linked to the system of different hospitals. It is still incomplete to this day. People do not know about the system because they are not using it. Only the medical officers who use the system internally." ET3.*

> *"I feel satisfied. I think the system is successful. However, we hope that we have the budget to upgrade the system. We hope to develop components in the system. The new generation does not need a method to change. They need motivation and encouragement." A21.*

Some of the interviewees believed that the SH system could be made more efficient by re-engineering it:

> *"I personally hope for more. There is internal satisfaction but we are looking forward to making the Shifa system better and better. We have a lot to do. We are working on the client base right now and we hope to work on a web-based system. We need a lot of effort and time to re-engineer the system, perhaps from two to three years. We need a lot of effort especially if we consider the lack of workforce."* T10.

In summary, a majority of interviewees were satisfied with the existing ICT projects in the four different organisations with the exception of some critical comments. The interviewees suggest that the networking infrastructure is poor and that there is a need for an integrating system among the various public organisations. The government needs to solve these issues.

7.5   Exploring Relationships

A further analysis of the quantitative data has been carried out to examine the relationships between the three study areas (national culture, organisational culture, and workplace factors). The analysis examines:

-To what extent does Omani national culture interact with other factors in the workplace and how does this interaction support or hinder the successful implementation of ICT?

-To what extent does organisational culture interlink with other factors in the workplace and how does this interlink influence the successful implementation of ICT?

7.5.1   Correlation between National Culture and Workplace Factors

A Spearman correlation coefficient is used to measure the strength of the relationship between the National Culture dimensions and Workplace Factors. The strength of the correlation is measured using the Evans' (1996) guide which suggests the absolute value of R:

- .00 -.19 "very weak"
- .20-.39 "weak"
- .40 - .59 "moderate"
- .60 - .79 "Strong"

Table 7.6 shows the Spearman's correlation coefficient between the national cultural dimensions (Power Distance, Uncertainty Avoidance, Individualism/Collectivism, Masculinity/Femininity, Long/Short-Term Orientation and Indulgence/Restraint) and workplace factors (Self-Efficacy, Peer Influence, Resistance to Change, Legacy System, Top Management Support, Project Management Standards and Communication in Organisation).

Table 7.6: Correlation Coefficients between National Culture and Workplace Factors

Factors		Self- Efficacy	Peer Influence	Resistance to Change	Legacy System	Top Management	Project Management Standards	Communication in Organisation
Power Distance	R	.003	.161**	.103**	.115**	.102**	.146**	.118**
	p-value	.935	.000	.002	.001	.003	.000	.001
Uncertainty Avoidance	R	.188**	.078*	.127**	.225**	.209**	.190**	.200**
	p-value	.000	.023	.000	.000	.000	.000	.000
Masculinity/ Femininity	R	-.045	.147**	.135**	.080*	-.022	.090**	.012
	p-value	.191	.000	.000	.019	.519	.008	.724
Individualism/ Collectivism	R	.116**	.072*	.170**	.158**	.170**	.196**	.164**
	p-value	.001	.035	.000	.000	.000	.000	.000
Long/Short Terms	R	.066	.118**	.139**	.160**	.071*	.111**	.124**
	p-value	.053	.001	.000	.000	.037	.001	.000
Indulgence/ Restraint	R	.236**	.149**	.196**	.208**	.258**	.240**	.250**
	p-value	.000	.000	.000	.000	.000	.000	.000
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Among the six-predicted national cultural dimensions, three dimensions (uncertainty avoidance, individualism/collectivism and indulgence/restraint) are found to have a significant correlation with all the workplace factors at ($p < 0.05$). The strength of this correlation is weak (R less than 0.3). However, there is no statistically significant correlation between the two dimensions Power Distance and Long/Short-Term Orientation and Self-Efficacy at ($p > 0.05$) level. Likewise, Masculinity/Femininity is found to have no statistically significant correlation with Self-Efficacy, Top Management Support and Communication in organisation at ($p > 0.05$) level.

Chart 7.24 examines in more detail the statistically significant relationship (r= 0.258) between Indulgence and Top Management Support.
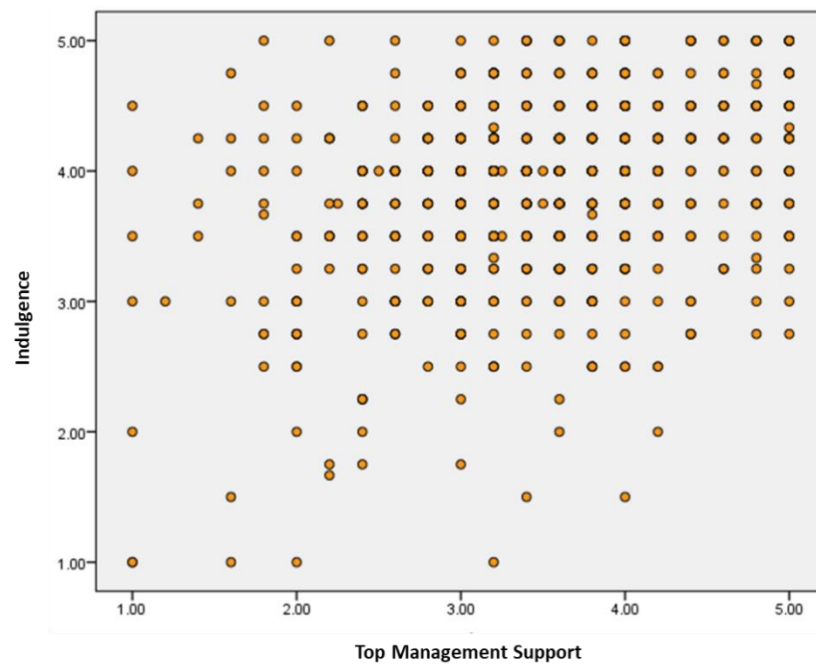
Chart 7.24: Indulgence Correlation with Top Management Support

This chart shows a trend that can be observed, showing that when Indulgence increases, Top Management Support increases. This indicates that organisations perceived to have high Indulgence are more likely to be seen to have high level of Top Management Support in the workplace.

7.5.2 Correlation between Organisational Culture and Workplace Factors

Table 7.7 shows the results of the Spearman's correlation coefficient between the organisational culture dimensions (Need for Security, Rresults-Oriented, Closed-System and Job-Oriented) and workplace factors (Self-Efficacy, Peer Influence, Resistance to Change, Legacy System, Top-Management Support, Project Management Standards and Communication in organisation).

Table 7.7: Correlation Coefficients between the Orgnisational Culture and Workplace Factors

Factors		Self- Efficacy	Peer Influence	Resistance to Change	Legacy System	Top Management Support	Project Management Standards	Communication in Organisation
Need for Security	R	.261**	.118**	.212**	.207**	.306**	.270**	.227**
	p-value	.000	.001	.000	.000	.000	.000	.000
Results-Oriented	R	.198**	.110**	.172**	.172**	.213**	.180**	.184**
	p-value	.000	.001	.000	.000	.000	.000	.000
Job-Oriented	R	.054	.153**	.159**	.067	-.045	-.021	.008
	p-value	.115	.000	.000	.050	.185	.535	.819
Closed-System	R	-.065	.162**	.204**	.147**	-.021	.007	.011
	p-value	.056	.000	.000	.000	.538	.846	.756
**Correlation is significant at the 0.01 level (2-tailed).								
* Correlation is significant at the 0.05 level (2-tailed).								

The findings indicate that there is a statistically significant correlation between the Need for Security and the Top Management Support at (p-value = 0.00) level. The strength of this correlation is moderate (R2 = 0.306). Moreover, there is significant correlation between the Need for Security and the Results-Oriented dimensions with all the remaining factors of the workplace at (p-value < 0.05) level. There is also a significant relationship between Job-Oriented dimension with certain factors of the workplace at (p < 0.05) level, manifested in Peer Influence, Resistance to Change, and Legacy System Upgrade factors. On the other hand, there is no statistically significant relationship between Job-Oriented or Closed-System with each of the work place factors: Self-Efficacy, Top Management Support, Project Management Standards and Communication in Organisation at (p-value > 0.05) level. Further correlation tests are employed between the study-areas to examine their influences on the successful implementation of ICT (see in Appendix G).

Charts 7.25 examines in more detail the statistically significant relationship (r = 0.306) between Need for Security and Top Management Support.
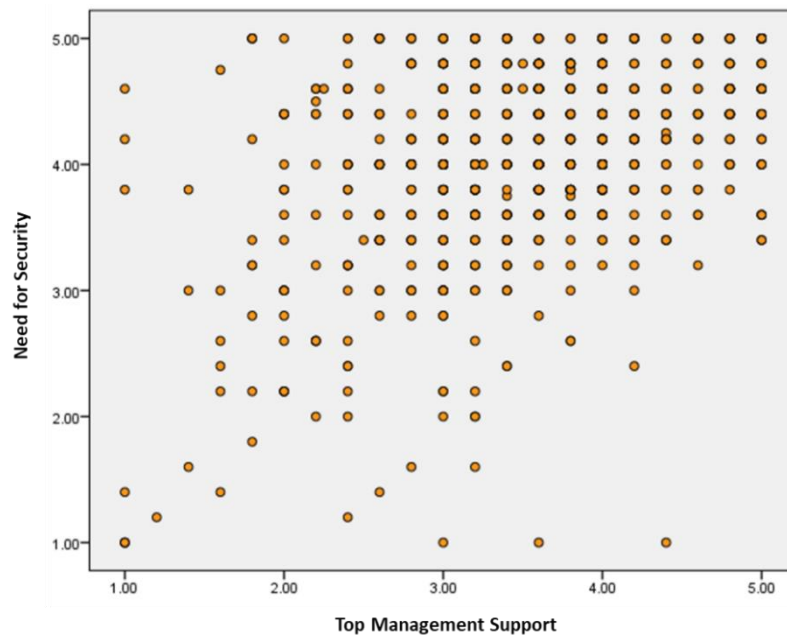
Chart 7.25: Need for Security Correlation with Top Management Support

It shows that as Need for Security increases, Top Management Support increases. This suggests that a high rate of the Need for Security measure reflects that employees showed that they perceived Top Management Support as strong in the workplace.

7.5.3 Relationships between the Study Area-Factors and Satisfaction

Chi-Square tests are undertaken to examine the association between ICT satisfaction (Yes, No) with each of the national, organisational culture and workplace factors. The relationships between the six dimensions of the national culture and the level of satisfaction are measured first.

Table 7.8: Chi-Square with Monte Carlo Assumptions between National Culture and Satisfaction

National Culture Dimensions			Power Distance	Uncertainty Avoidance	Masculinity/ Femininity	Individualism/ Collectivism	Long/Short - Terms	Indulgence/ Restraint
I am Satisfied with system	HEAC N=44	Chi-Square	1.746	1.609	.991	1.451	1.592	.564
		Sig.(2-tailed)- Monte Carlo	0.755	0.599	0.613	0.641	0.705	0.439
	EDUP N=369	Chi-Square	8.757	1.537	1.105	.830	6.685	3.385
		Sig.(2-tailed)- Monte Carlo	0.067	0.668	0.9	0.963	0.142	0.47
	HR N=157	Chi-Square	2.613	9.921**	2.256	4.082	5.976	15.219**
		Sig.(2-tailed)- Monte Carlo	0.470	0.049	0.693	0.243	0.188	0.003
	SH N=286	Chi-Square	4.339	27.293**	4.965	12.015**	9.572	21.072**
		Sig.(2-tailed)- Monte Carlo	0.356	0.000	0.296	0.025	0.054	0.001
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Table 7.8 shows that, with regards to the two systems (HEAC and EDUP), there is no statistically significant relationship between the national cultural dimensions and the satisfaction level (p-value > 0.05).

In the (HR) system, there is a statistically significant relationship between (Uncertainty Avoidance and Indulgence/Restraint) and the satisfaction level of ICT with (χ^2 = 9.921, p-value = 0.049, χ^2 =15.219, P-value = 0.003) respectively. On the other hand, there is no statistically significant relationship between the other national cultural dimensions and the satisfaction level (p-value > 0.05).

With regards to the (SH) system, there is a statistically significant correlation between (Uncertainty Avoidance, Indulgence/Restraint and Individualism/Collectivism) and the satisfaction level of ICT with the level of significance (P-value <= 0.05). On the other hand, there is no statistically significant correlation between (Power Distance, Masculinity/Femininity and Long-Term Orientation) and the satisfaction level (p-value > 0.05).

In the systems of HR and SH, some dimensions of the national culture have an impact on employee satisfaction with ICT in e-government projects in Oman.

Charts 7.26 and 7.27 examine in more detail the statistically significant relationships for the HR ICT system.
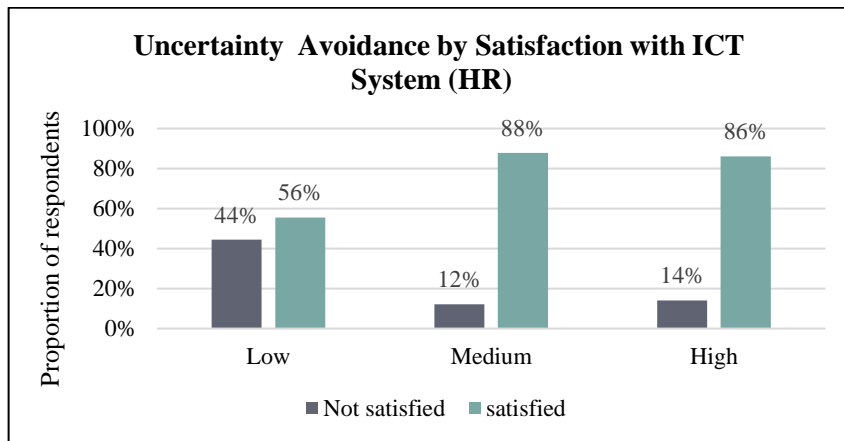
Chart 7.26: Uncertainty Avoidance by Satisfaction with ICT System (HR)

Chart 7.26 shows, as the Uncertainty Avoidance scale increases the level of satisfaction with the ICT system also increases. A higher rating on the Uncertainty Avoidance scale reflects employees who also express a stronger Uncertainty Avoidance in the workplace.

A similar relationship is evident for the Indulgence factor in Chart 7.27.
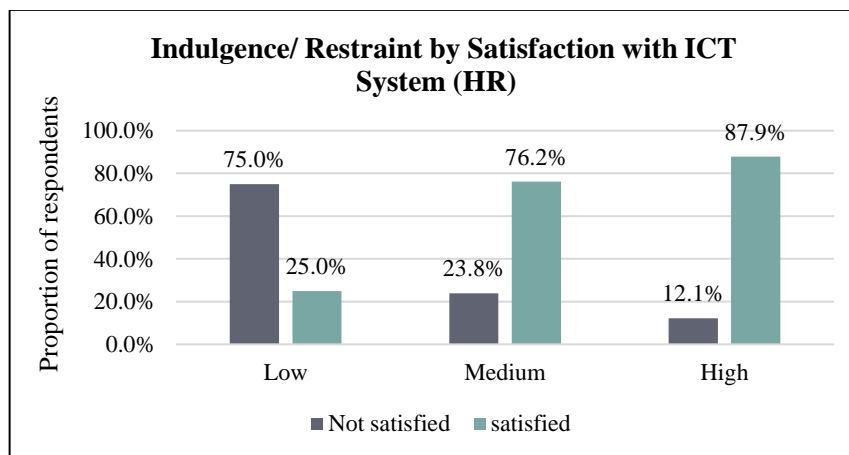
Chart 7.27: Indulgence/Restraint by Satisfaction with ICT System (HR)

Chart 7.27 shows that a higher rating on the Indulgence scale reflects employees in organisation that are more Indulgent as opposed to restrained. This suggests that respondents who rate higher on the Indulgence scale also express higher levels of satisfaction with the ICT system.

Charts 7.28, 7.29 and 7.30 examine in more detail the statistically significant relationships for the SH ICT system.
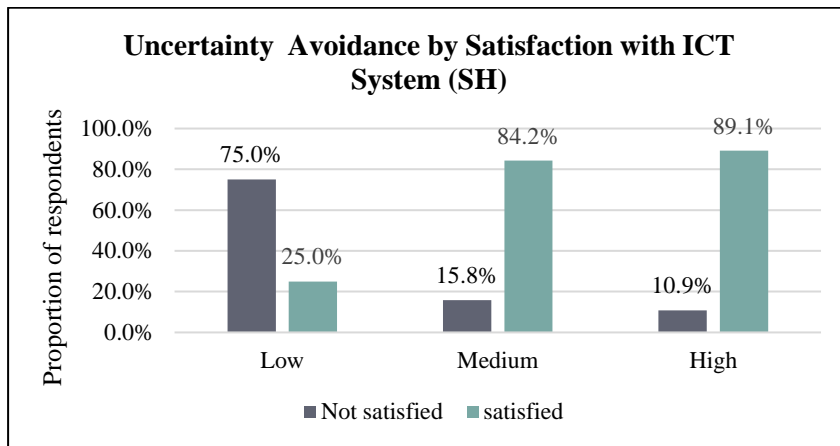
Chart 7.28: Uncertainty Avoidance by Satisfaction with ICT System (SH)

Chart 7.28 shows that for the SH system, as the Uncertainty Avoidance scale increases the level of satisfaction with the ICT system also increases. A similar relationship is evident for the Individualism/Collectivism factor in Chart 7.29.
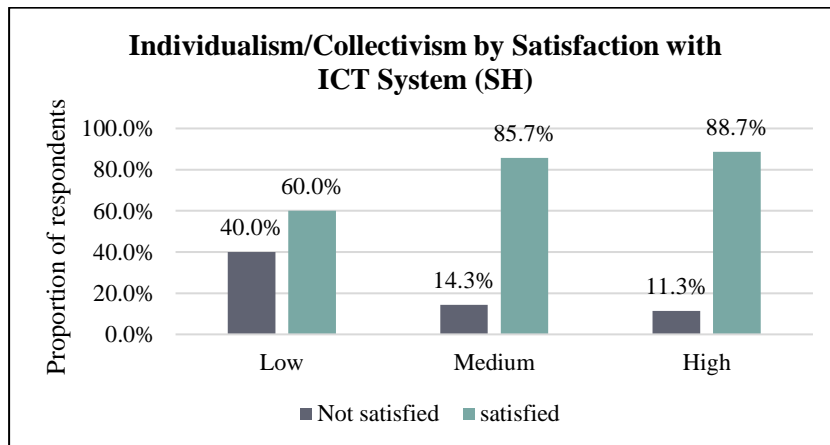
Chart 7.29: Individualism/Collectivism by Satisfaction with ICT System (SH)

Chart 7.29 shows that a higher rating on the Collectivism scale reflects employees in the organisation that are more Collective as opposed to Individualistic. This suggests that for SH system, respondents that score high on the Collectivism scale also show higher levels of satisfaction with the ICT system.

Chart 7.30 also shows a similar relationship is evident for the Indulgence factor.
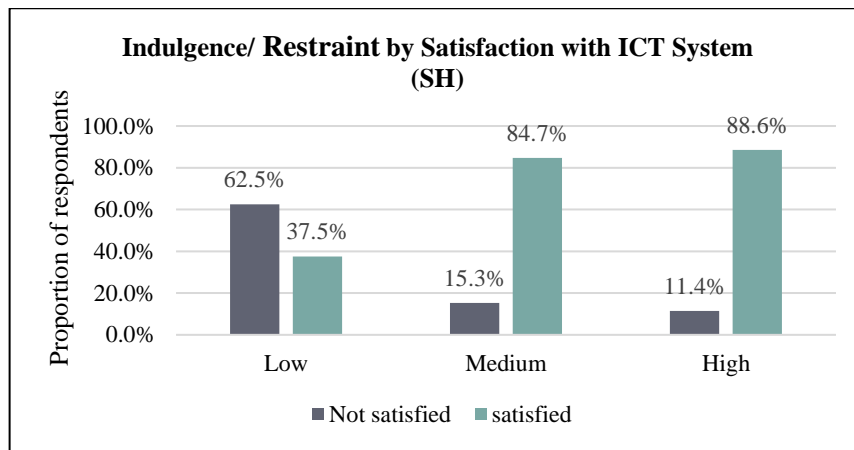
Chart 7.30: Indulgence/Restraint by Satisfaction with ICT System (SH)

A higher rating on the Indulgence scale reflects those employees in the organisation that are more Indulgent as opposed to Restrained. This indicates that as the Indulgence scale increases the level of satisfaction with the ICT system also increases. The SH system shows similar trends to the HR ICT system. As the Indulgence scale (Chart 7.27) and (Chart 7.30) increase, the level of satisfaction with the ICT system also increases.

The associations between the four dimensions of organisational culture and the satisfaction level of the different systems are shown in Table 7.9.

Table 7.9: Chi-Square with Monte Carlo Assumptions between Organisational Culture and Satisfaction

Organisational dimensions			Need of Security	Results-Oriented	Job-Oriented	Closed System
I am Satisfied with system	HEAC N=44	Chi-Square	2.412	0.107	0.703	1.181
		Sig. (2-tailed)-Monte Carlo	0.251	0.687	0.442	0.729
	EDUP N=369	Chi-Square	4.570	5.820	3.545	9.291
		Sig. (2-tailed)-Monte Carlo	0.315	0.112	0.472	0.053
	HR N=157	Chi-Square	20.835**	18.539**	2.297	2.012
		Sig. (2-tailed)-Monte Carlo	0.001	0.002	0.689	0.733
	SH N=286	Chi-Square	23.309**	16.329**	7.483	3.378
		Sig. (2-tailed)-Monte Carlo	0.001	0.007	0.113	0.507
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Table 7.9 shows that in two of the systems (HR and SH), there is a statistically significant relationship between the Need for Security and Results-Oriented dimensions and the

satisfaction level with the ICT system. With regard to the HR system, the significant associations of the above two factors are $\chi^2 = 20.835$, p-value = 0.001 and $\chi^2 = 18.539$, P-value = 0.002 respectively. For the SH system, the significant relationships of the two factors: the Need for Security and Results-Oriented are $\chi^2 = 23.309$, p-value = 0.001 and $\chi^2 = 16.329$, P-value =0.007 respectively.

Charts 7.31 and 7.32 examine in more detail the statistically significant relationships for the HR ICT system.
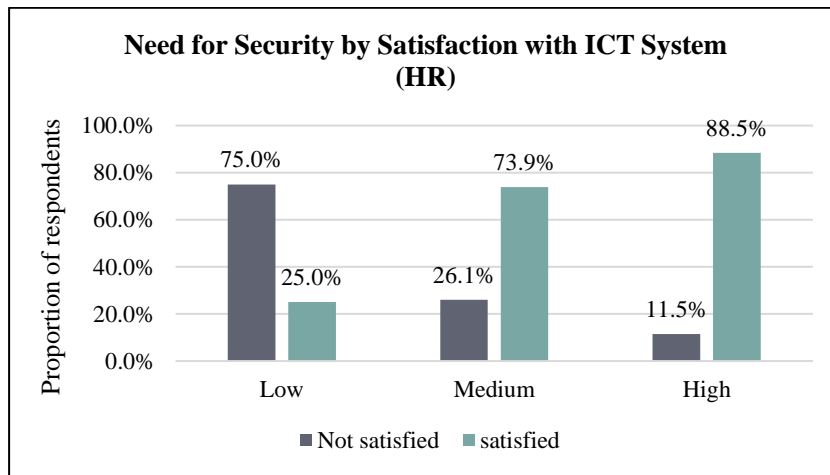
Chart 7.31: Need for Security by Satisfaction with ICT System (HR)
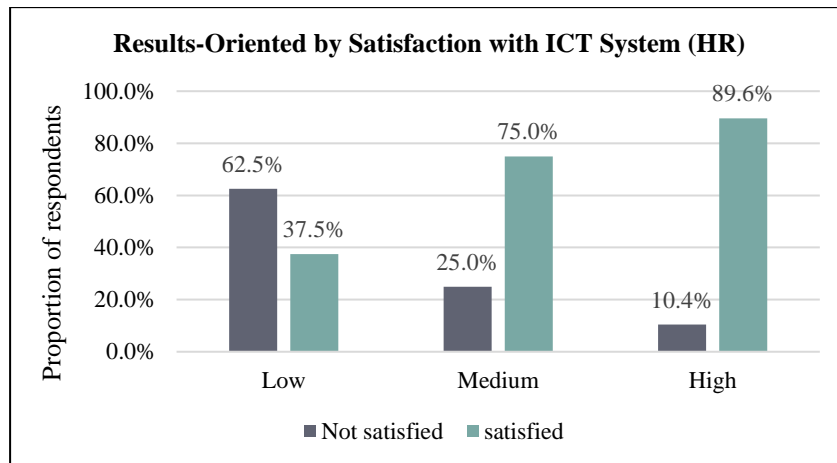
Chart 7.32: Results-Orientated by Satisfaction with ICT System (HR)

Chart 7.31 shows that for the HR system, as the Need for Security scale increases the level of satisfaction with the ICT system also increases. A higher rating on the Need for Security scale reflects employees that express a sense of security in the organisation. A similar

relationship is evident for the Results-Oriented dimension (see Chart 7.32). A higher rating on the Results-Orientated scale reflects those employees who perceive their organisation as more Results-Oriented as opposed to Process-Oriented.

Charts 7.33 and 7.34 examine in more detail the statistically significant relationships for the SH ICT system.
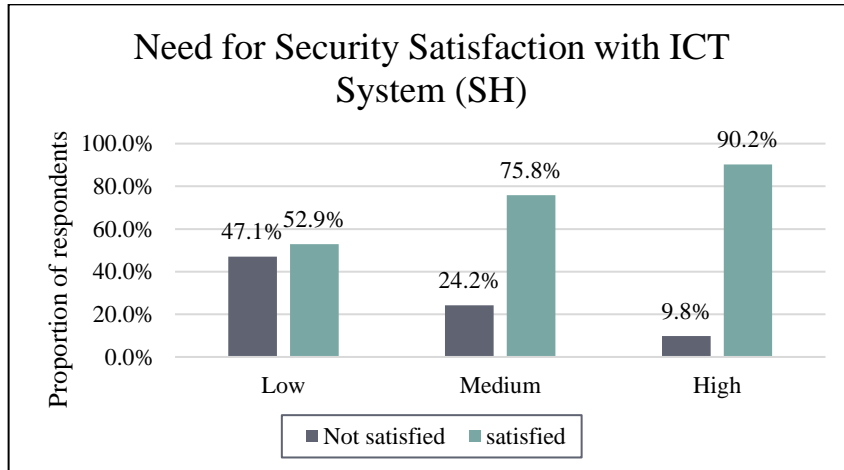
Chart 7.33: Need for Security by Satisfaction with ICT System (SH)
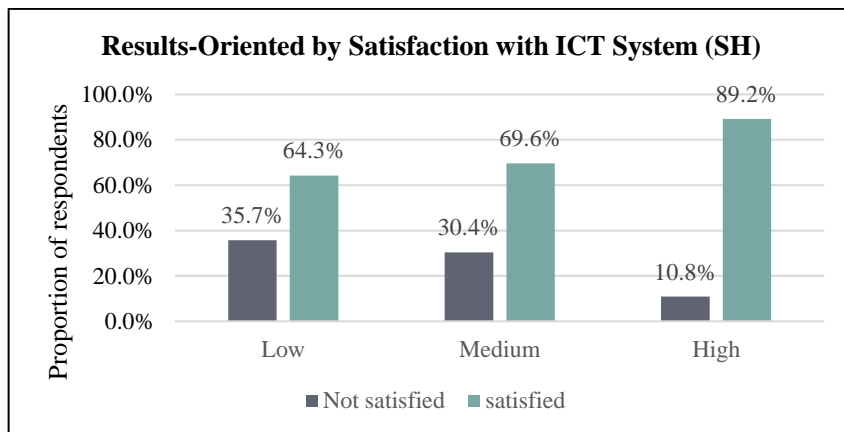
Chart 7.34: Results-Orientated by Satisfaction with ICT System (SH)

The SH system shows similar trends to the HR ICT system. As the Need for Security scale (Chart 7.33) and the Results-Orientated scale (Chart 7.34) increase the level of satisfaction with the ICT system also increases.

Table 7.10 shows that for all four systems examined there is no evidence of any relationships between ICT success and the Job-Oriented or Closed-System dimensions.

The final section examines the relationship between the workplace factors and the satisfaction level.

Table 7.10: Chi-Square with Monte Carlo Assumption between Workplace Factors and Satisfaction

Workplace Factors			Self-Efficacy	peer influence	Resistance to change	Legacy system	Top management Support	Project management standard	Communication
I am Satisfied with system	HEAC N=44	Chi-Square	10.581**	2.757	.187	4.490	11.349**	.698	1.444
		Sig.(2-tailed)-Monte Carlo	0.004	0.393	0.598	0.186	0.034	0.767	0.364
	EDUP N=369	Chi-Square	38.278**	10.209**	8.869	10.014**	12.036**	12.012**	8.733**
		Sig.(2-tailed)-Monte Carlo	.000	0.041	0.081	0.048	0.019	0.02	0.034
	HR N=157	Chi-Square	54.335**	15.467**	19.467	19.006**	30.599**	22.453**	35.789**
		Sig.(2-tailed)-Monte Carlo	0.000	0.007	0.001	0.001	0.000	0.000	0.000
	SH N=286	Chi-Square	42.632**	8.448	16.861	32.332**	37.695**	36.406**	12.255**
		Sig.(2-tailed)-Monte Carlo	0.000	0.076	0.006	0.000	0.000	0.000	0.033
**Correlation is significant at the 0.01 level (2-tailed).									
*. Correlation is significant at the 0.05 level (2-tailed).									

Table 7.10 shows, with regards to the (HEAC) system, that there is a statistically significant relationship between the two factors (Self-Efficacy and Top Management Support) and satisfaction level with (χ^2 = 10.581, p-value = 0.004, χ^2 = 11.349, P-value = 0.034 respectively).

Regarding the (EDUP) system, there is no statistically significant association between Resistance to Change and the satisfaction level (p-value > 0.05). On the other hand, there is a statistically significant relationship between all the other remaining workplace factors and the satisfaction level with p-value <= 0.05.

With Regards to the (HR) system, the table shows that there is a statistically significant relationship between all factors of workplace area and the satisfaction level with p-value <= 0.05 of the level of significance. The strongest correlation is between Self-Efficacy and satisfaction level with (χ^2 = 54.335, p-value = 0.000).

Regarding the (SH) system, there is no statistically significant association between peer influence and the satisfaction level (p-value > 0.05). On the other hand, there is statistically

significant relationship between all the other remaining workplace factors and the satisfaction level with p-value ≤ 0.05 of level of significant.

Chart 7.35 examines in more detail the statistically significant relationships for the four ICT systems. It shows that employees that display higher levels of Self-Efficacy also express higher satisfaction with using the four ICT systems.
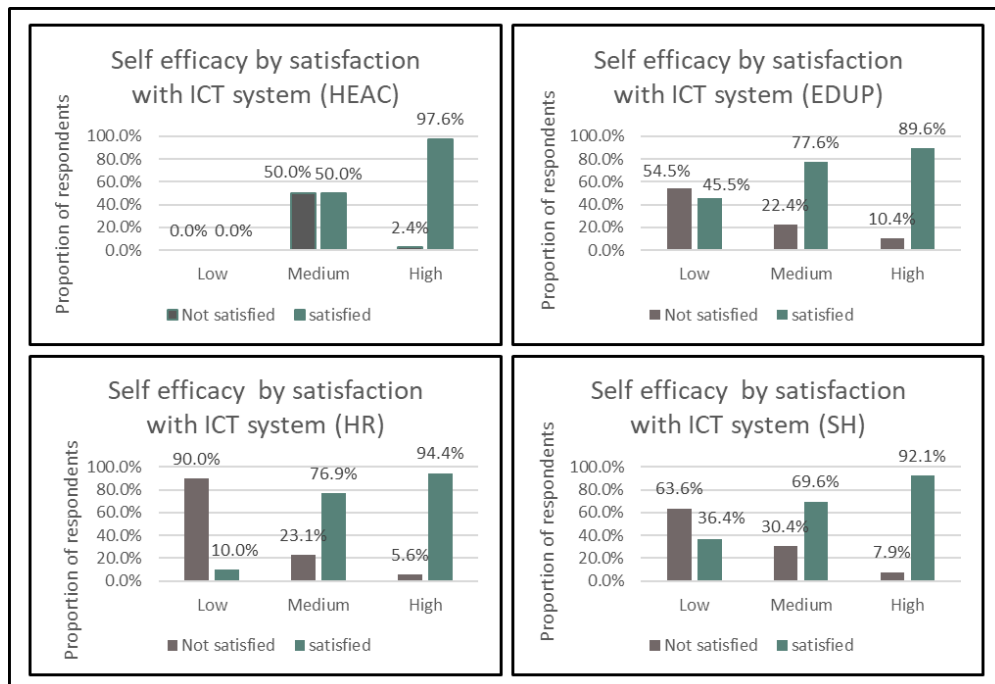
Chart 7.35: Self-Efficacy by Satisfaction with Four ICT Systems

The HEAC system shows higher ratings on the highest Self-Efficacy scale compared to the other three systems (EDUP, HR and SH). Those HEAC employees that express a higher level of Self-Efficacy in the workplace also express high levels of satisfaction with the ICT system. The explanation as to why employees in HEAC show the highest rate is discussed in Section 8.2.1.

Chart 7.36 shows that as the Top Management Support scale increases the level of satisfaction with three ICT systems (EDUP, HR and SH) also increases.
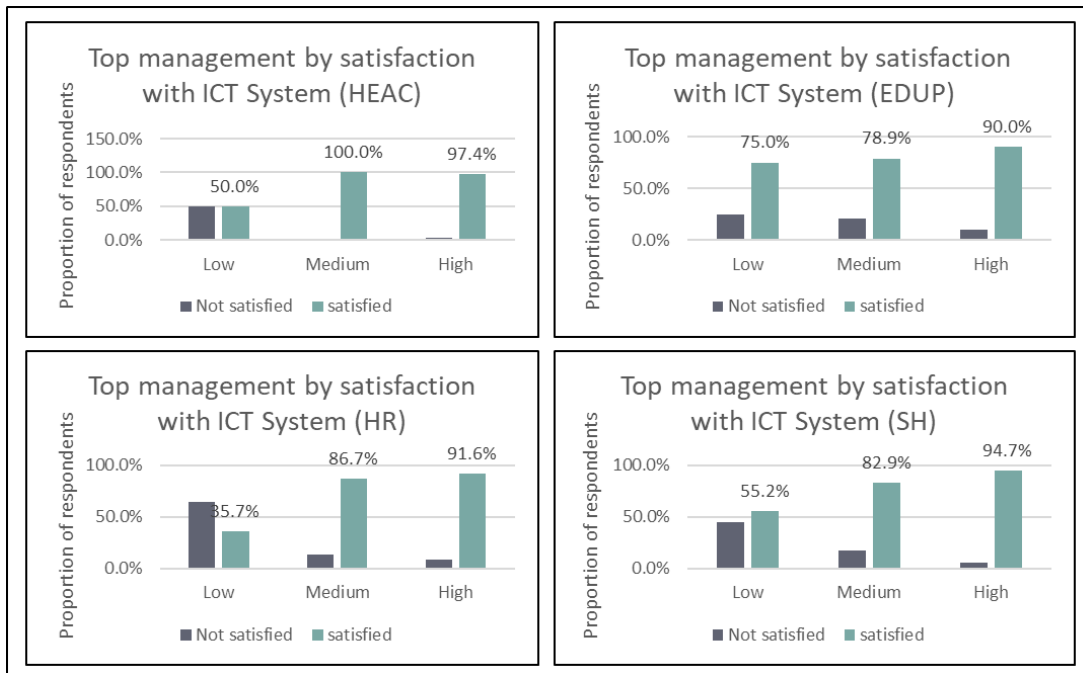
Chart 7.36: Top Management Support by Satisfaction with Four ICT Systems

In three of these cases, the higher the perception of Top Management Support, the lower the level of dissatisfaction with the system. In the case of HEAC, a similar, but slightly less clear picture emerges as one respondent reported a high perception of Top Management Support, but a low level of satisfaction.

Similar relationships are evident for the other workplace factors (see Appendix G).

7.6   Conclusion

This chapter presents the results of the analysis of 875 questionnaire-respondents and 41 interviewees, which examined the impact of the factors of the study areas on the successful implementation of ICT. This includes an investigation of the importance of the three study-areas: national culture, organisational culture and workplace factors and their impact on the successful implementation of ICT. The mixture of questionnaires and semi-structured interviews provided a more in-depth analysis of the findings. The key findings that have emerged from this analysis are:

- There is a correlation between the national cultural dimensions of and the workplace factors. The findings show that among the six-predicted national cultural dimensions, three dimensions (Uncertainty Avoidance, Individualism/Collectivism, and

Indulgence/Restraint) are found to have a significant correlation with all of the workplace factors.

- There is a correlation between the organisational cultural dimensions and the workplace factors. There are correlations between two dimensions of organisational culture (the Need for Security and the Results-Oriented dimensions) with all the workplace factors. There is a significant relationship between the Job-Oriented dimension and the four factors of workplace (Self-Efficacy, Peer Influence, Resistance to Change and Legacy System Upgrade).

- Most dimensions/factors of the three areas (national culture, organisational culture and the workplace factors) show that they have a significant effect on employee satisfaction with ICT in e-government projects in Oman. With the exception of the five dimensions: (Power Distance, Masculine/Femininity, Long-Term Orientation, Job-Oriented and Closed-System) from the national culture and from the organisational culture respectively show no impact on employee satisfaction with ICT projects.

The characteristics of the respondents were described and their level of agreement and disagreement with the statements in the questionnaire was reviewed. The responses to the interviews suggested one dimension which does not exist in Hofstede's model of six national cultural dimensions. This dimension is Tolerance. Moreover, the participants found that several factors such as an Effective Leadership, Expertise in ICT and Situational-Awareness are important for the workplace. In addition, the encountered challenges such as the need for monitoring the budget in the ICT sector and confidence, need to be addressed.

The next chapter discusses the implications of these findings in terms of the research questions. In a broader sense, the discussion provides an understanding of the significant issues related to the integration of the three study-areas: national and organisational and the workplace with the four systems that can predict to support or hinder the successful implementation of ICT in Omani public sector. The following chapter presents an initial framework of successful ICT implementation.

8.   Discussion

8.1   Introduction

This chapter discusses the major issues identified in the key findings of this study in relation to the research questions, research aims and in the context of the literature review. The purpose of this research was to explore cultural dimensions which may influence the success of ICT implementation of e-government projects. This study examined how and to what extent cultural dimensions influence the successful implementation of ICT in Omani public administration.

Section 8.2 describes the main findings about the factors which affect the successful implementation of ICT. Section 8.3 discusses the findings related to the interaction between cultural dimensions and workplace factors. A conceptual framework based on Hofstede's models of national culture, organisational culture and workplace factors is then proposed. Section 8.4 presents the modified model that has emerged from this study containing the success factors of ICT implementation in e-government projects in the Omani public sector.

8.2   The Impact of the Study Components-Factors on Successful Implementation of ICT

This section discusses the findings in relation to the first research question, "What are the cultural dimensions that support or hinder the successful implementation of ICT projects in public organisations in Oman?" The study focused on four public organisations in Oman (Ministry of Higher Education, Ministry of Education, Ministry of the Civil Service and Ministry of Health) wherein four IT systems (HEAC, EDUP, HR and SH) are used respectively.

Table 8.1 illustrates the dimensions of national culture, organisational culture and workplace factors that have significant impacts on the successful implementation of ICT projects in Omani public organisations.

Table 8.1: Summary of the Success Components/Factors in the Four Case Studies

Study Components	dimensions/Factors	HEAC	EDUP	HR	SH
National Culture	Power Distance				
	Masculinity/Femininity				
	Uncertainty Avoidance			✓	✓
	Individualism/Collectivism				✓
	Long/Short-Term Orientation				
	Indulgence/Restraint			✓	✓
Organisational Culture	Results Oriented			✓	✓
	Job-Oriented				
	Closed System				
	Need for Security			✓	✓
Workplace Factors	Self-Efficacy	✓	✓	✓	✓
	Peer Influence		✓	✓	
	Resistance to Change			✓	✓
	Legacy System		✓	✓	✓
	Top Management Support	✓	✓	✓	✓
	Project Management Standards		✓	✓	✓
	Communication		✓	✓	✓

Table 8.1 summarises the findings in Tables 7.8, 7.9 and 7.10 presented in Chapter Seven; which measure the factors based on the level of employees' satisfaction with regards to ICT projects.

8.2.1   The Impact of National Cultural Factors on ICT

The findings showed that three of the six national cultural dimensions (Uncertainty Avoidance, Individualism/Collectivism, Indulgence/Restraint) have a significant impact on the successful implementation of ICT, while the remaining three (Power Distance, Masculinity/Femininity, and Long/Short-Term Orientation) do not have a significant impact on ICT.

Uncertainty Avoidance (UA): This dimension shows a significant impact on the successful implementation of ICT projects in this study in two of the cases (HR and SH). The qualitative

data revealed that the presence of a high level of Uncertainty Avoidance has a positive impact on leading employees who, as a result, work in an unambiguous/clear work environment and that this tends to contribute to successful implementation of ICT projects. A similar conclusion was found by Nguyen (2016) who states that the higher the level of Uncertainty Avoidance found, the greater the success achieved by e-government projects. It is worth noting that result contradicts that of Matusitz and Musambira (2013) who find that Uncertainty Avoidance has a negative influence on technology acceptance. One explanation for this difference in findings might follow from Erumban and de Jong (2006) who found that Uncertainty Avoidance is a significant cultural dimension which impacts on ICT implementation in different ways in various countries. The influence of Uncertainty Avoidance on ICT implementation is limited and in a given context tends to be become less important especially with the spread of information technology (Bagchi *et al.*, 2014).

A high level of uncertainty makes people more worried about failure and, as a result, they try to avoid taking risks. A more detailed analysis (see Section 7.6.3) suggests that as the Uncertainty Avoidance level increases, the level of satisfaction with the ICT system also increases. The high level of Uncertainty Avoidance might be explained by the fact that employees in both systems (HR and SH) are not by nature risk-takers and that they prefer clarity and certainty to risk and uncertainty. How, then might a high level of Uncertainty Avoidance contribute to successful implementation of ICT in HR and SH? Interviewees suggested that one reason could be the fact that the two systems have been in place for a long period of time especially when compared with HEAC and EDUP. They have both developed over a fairly long period.

Because of the long development period, people have had a long time to learn how to use the system. This means that users can adjust to the system in small steps. The risks and degree of change at any point is modest and for uncertainty avoiders this is helpful. Over time they build-up confidence in the system and their ability to use it, and this contribute to self-confidence and thus to satisfaction. An implication of this is that where there is high uncertainty avoidance, it may be that taking system's development at a slower pace over longer time is likely to make it successful. Within a high uncertainty avoidance environment, major rapid change is not a good idea is likely to be much riskier. With a low uncertainty avoidance people are more likely to be risk takers, as in the HEAC system. In the case of

HEAC this may be because users are both younger and better educated. With such users, fast system development causes fewer problems.

Other possible reasons for the success include the engagement of top management and the training and the awareness raising programmes provided to employees. Despite survey respondents' overall satisfaction with HR and SH, there are still some major problems in the systems such as outdated data and a lack of integration respectively (ET3 and A19).

Some interviewees suggested that Omani employees in general, prefer not to take risks because they are afraid of facing problems and challenges which may result in them having low levels of success in their work. Hayton (2003, p.337) states that organisations adopting an innovation-based strategy "*should promote learning, collaboration, experimentation, and risk-taking*". In a publication entitled *Equity Risk Premiums, January* (2018), Oman's score on the scale of risk in business was low at (7.2%). This suggests that Omani people in general endeavour to avoid unclear and uncertain situations in their workplace. The qualitative research suggests that one of the possible reasons for this could be the way people are educated both at home and at school. Families tend to be fairly strict. Children are always instructed to listen to old people, obey them and never to argue with them. Even if children have opinions on certain issues, they are not expected, in most cases, to present and put their ideas forward (at least in adult company). Older people are considered the wise ones and as such children should respect them and their opinions. Similarly, at school, children are asked to be careful about what they write and what they say. They are expected to listen to their teachers and to memorize a lot of material and be able to reproduce this in examinations (Al-Abri 2010). As one informant observed, when such children become adults, they are more likely to be afraid to take risks and try new things (A21). It should be noted here, according to informants, though, that such culture was more obvious in the 1970s and 1980s, it started to change gradually after the 1990s. The country has become more open, the education system has changed considerably and the communication, and the technological developments in Oman have influenced people's willingness to change and develop (A20 and EA3).

An interesting finding in this study was that Uncertainty Avoidance has no significant impact on employee's satisfaction with the ICT implementation in the HEAC and EDUP systems (see Table 7.8). The success of the HEAC and EDUP systems was attributed by informants to the common factors shared by the two systems. Interviewees cited these factors as

including the support and supervision of both systems from higher authorities in the Ministry of Higher Education and the Ministry of Education, as well as communication from the Information Technology Association (ITA) and OmanTele. This level of contact provides support to employees in terms of troubleshooting issues affecting the implementation of ICT. As these two systems serve the education sector, where younger people are the end users of both systems, both organisations are more likely to be open-minded about new technology. According to the one expert in the Higher Education Admission Centre, this helps collaboration. He commented that the uniqueness of the HEAC could be attributed to the fact that it is a semi-independent body within the Ministry, with its own budget. Unlike many other bodies which manage ICT systems in the Omani public sector, the business clients and ICT departments work together in the same place in the centre; this encourages collaboration between them in the decision-making process (AE1).

With regard to **Individualism/Collectivism**, findings from the quantitative and qualitative research showed that Collectivism has a more positive influence on the implementation of ICT projects than Individualism. These findings emphasise the importance of sharing and assigning tasks in order to complete the ICT projects. As elsewhere, some of the literature supports this finding, whilst other scholars arrive at different conclusions. For example, Khalil (2011) reached a similar conclusion, demonstrating that Collectivism practices appear to influence e-government readiness while Bankole and Bankole (2017) found no statistically significant relationship between individualism and ease of use. They concluded that Collectivism helps ICT-innovation and ensures implementation is simpler and occurs at a quicker pace.

In contrast, Bagchi *et al*. (2014) found that higher individualism results in better implementation of ICT. Bagchi's conclusion, may be explained by Hofstede *et al*.,'s (2010) claim that the influence of collectivism and individualism on the successful implementation of ICT varies from one society to another. There may, therefore, be some variations across different cultures in this regard.

The findings showed a trend among survey respondents that reflects the collectivist culture of Omani society (see Chart 7.10). Confirming the findings of the survey, many interviewees are aware that the Omani culture is heavily weighted towards collectivism. Omanis, like Arabs more generally, tend not to be individualistic in their social or business behaviour and, as this research suggests, this is particularly so in Oman. One would expect that in projects

requiring a high degree of cooperation and coordination, such a collective approach would contribute to success and this research supports this conjecture. In this respect therefore, Omani national culture is deemed to be a significant factor in the success of ICT implementation in the public sector.

There is an evident relationship between Collectivism and the satisfaction with the ICT in SH system. The findings presented in Section 7.6.3 and Chart 7.29 show that, in SH, as Collectivism increases, the perceived success rate of ICT implementation increases too. However, the EDUP, HEAC and HR systems showed no significant relationship between Collectivism and the satisfaction with the ICT. This may be explained by the fact that the SH system is used by internal users from the Ministry of Health such as doctors and the nursing staff. The nature of their work requires frequent communication and coordination between various individuals. The other three systems are primarily used by external users (staff from other Ministries in the case of HR, students in the case of EDUP and HEAC). In these three systems, the users deal individually with the systems and their own applications. This suggests that the collectivism/individualism factor may not only be influenced by the characteristics of the society, as Hofstede *et al*.'s (2010) suggested, but it may also be influenced by other factors such as the nature of the service and the end users of the system, however, more research is needed to establish whether this is true or not (see chapter 9).

Indulgence/Restraint is a new dimension considered by Hofstede (2010) after Minkov's (2007) study (outlined in Section 5.2.1 of this study). There are only a few studies on ICT implementation which employ this dimension as one of their constructs (Anjum *et al.*, 2014; Nguyen, 2016).

This study shows that indulgence has a significant impact on the successful implementation of ICT projects in two of the cases, HR and SH, but not in HEAC and EDUP. Findings outlined in Section 7.6.3 indicate that as the Indulgence scale increases, the level of satisfaction with the use of the ICT system also increases. Interviewees stressed the importance of indulgence in the ICT work environment. This indicates that the nature of ICT work must create an atmosphere where aspects of Indulgence such as harmony, improves employee's performance of ICT tasks.

The link between indulgence and satisfaction is explained by interviewees who, as noted, point out that the HR and SH systems have been developing for a long period of time. Several

interviewees stated that these two systems lack complete integration and continuous update of data. The SH system has taken a long time to implement since the end users have been and continue to be of many different nationalities and backgrounds. The Ministry was quite flexible in how it allowed them to use the system (A19). For its part, the HR system was dependent on acceptance of the end users who come from many other Ministries in the Sultanate. Some Ministries have been and, in some case still are, slow in updating the data in the system due to resistance to change especially from more experienced employees (T16 and T7).

On the other hand, when HEAC and EDUP systems were first introduced, employees and students had no choice but to use these systems. Since they were introduced of these systems have been the only means for Ministry staff, parents and students to do certain tasks (such as students applying for place in university or finding out their results). The Ministry of Higher Education and the Ministry of Education were very strict in not allowing any application for courses or other tasks except through the electronic route whether from employees or end users. When these two systems were launched, the Ministries rejected all calls from public to use the traditional ways either as a second choice for people or for certain groups from remote areas (A1, T2 and A2). The result was, to some extent, a forced success in that students and employers were left with no choice but to use the system to achieve their goals.

This finding supports Hofstede's results, which states that the more indulgence that is present, the greater the likelihood of a positive and optimistic attitude towards technology and the Internet. In Oman, there is a certain amount of flexibility for organisations to provide staff with a comfortable work environment contributing to the successful implementation of ICT projects. The level of indulgence has been influential in certain organisations, but not in others due to the nature of the organisation as each one may have its own way of management and work environment. Such a finding is similar to the observation of Nguyen (2016) who concluded that the influence of the level of Indulgence may vary from one culture to another. Nguyen concluded that Indulgence is not significantly correlated with the provision level of e-service in Japan, which may in part reflect the low level of indulgence in Japanese corporate culture. However, in other cultures, a high level of indulgence may be important, depending on the nature of work and the system characteristics.

This study found that the three remaining dimensions out of the six dimensions of the national culture (Power Distance Masculinity/Femininity and Long/Short-term Orientation) have no significant impact on the successful implementation of ICT.

Power Distance was found to have no significant impact on the successful implementation of ICT in any of the four cases. This result aligns with Nguyen's (2016) findings which state that power distance is not significantly correlated to the provision level of e-service. The findings of this study also align with those of Zhao *et al.* (2014) as they did not find Power Distance to have an effect on e-government diffusion in either richer or poorer nations. In contrast, Zakour (2004) takes a slightly different position and states that individuals in low power distance cultures are more receptive towards ICT than individuals in high power distance cultures. The rationale is that ICT poses a threat to hierarchy (or the power of any group) in high power distance cultures, while individuals in low power distance cultures are interdependent on each other regardless of their ranks in the hierarchy. This study shows no support for this thesis.

Most of the interviewees of the present study believed there was no connection between Power Distance and the success of ICT adoption. A senior interviewee pointed out that there is a discretionary recommendation from the Sultan to adopt ICT in public organisations. Each year there is Sultan Qaboos Awards for Excellence in e-government in Oman. These awards make the field of ICT driving force for the development of an organisation in the third Millennium (ITA, 2018). The awards also help to achieve better and faster implementation of ICT in the work environment.

Interestingly, there is a median to high power distance in Omani society and in most Arab societies, but when one examines the phenomenon at organisation's level it is much less noticeable. High power distance influence may reduce, whether at national level or within an organisation, as a result of the type of leadership. As a national cultural characteristic seems to have evaporated within the organisations studied, this may imply that this is one factor that leadership can change.

As noted in Chapter Seven in the study of **Masculinity/Femininity**, it was found, unexpectedly, that there is no significant Masculinity culture in any of the four organisations. This would mean that the success of the implementation of ICT in the Omani culture is unaffected by Masculinity/Femininity. This is a factor about which there are divergent

findings in the literature. The findings in this research are in line with Al-hujran *et al.* (2011) who concluded that Masculinity has no measurable impact on citizens' intention to adopt e-government. Other researchers who did not find any significant correlation between Masculine culture and implementation of ICT in e-government projects include Zhao (2013), Al-hujran *et al.* (2011); Kovacic (2005); Arslan (2009). Bankole and Bankole (2017) also found that masculinity had no significant effect on ICT-innovation.

However, these findings are in conflict with the results reported in the study of Abdulrab (2011) about this dimension of Masculinity where he finds that Masculinity is significantly correlated with IT adoption. Similarly, Aida and Majdi (2014) argue that Tunisia, a country with high Masculinity, shows a positive attitude towards e-government projects. It is possible that this is a national, rather than a pan-Arabic phenomenon.

The interviewees provided further indications of the reasons behind the female-choice of a job in the public sector on the one hand and having an IT job on the other. The first reason is that more females believe that working in the public sector has its own advantages in comparison with working in the private sector. One advantage is that it involves less working time. A second advantage is that it is less demanding, and it provides a more flexible working environment. Many interviewees claimed that males tend to favour jobs in the private sector due to the higher salaries available, combined with their greater tolerance for working for long hours.

With respect to **Long Term Orientation** (LTO), this study found that LTO has no significant influence on satisfaction of using ICT. This finding is in line with some other research findings which had concluded that there is no relation between LTO and e-government implementation (see for example Zhao, 2013 and Alhujran, 2009). However, Nguyen's (2016) conclusion contradicts the findings of this study.

In Oman, long term planning helps organisations to set their vision and strategic objectives. This is done through a 20-year period strategic vision plan for the whole country. The strategic vision 2020 was developed in 1995 and the country is currently developing a 2040 vision plan (The Education Council, 2018). In addition, a short-term plan covering a five-year period is also used to set immediate targets (Al-Mamari, 2013). Some of the interviewees suggested that having short term planning for ICT projects is preferable as this allows for more flexibility to incorporate changing requirements and changing technology.

Khalil (2011) arrives at a similar conclusion. He asserts that long and short-term strategies should be formulated according to a specific cultural profile in order to enhance e-government readiness. This is because a long-term culture has a positive influence on e-services strategic planning. A Long-Term Orientation in e-government strategy could contribute to more effective implementation processes.

Interviewees suggested that the adoption of either a long-term or a short-term plan depends on the goals and objectives of the ICT projects. Many interviewees stated that both long-term orientation and short-term orientation are of great benefit to the success of ICT implementation. Khalil (2011) concluded that organisations with Long Term Orientation are more likely to have successful IT adoption. No evidence to support this was found in this study.

In summary, the findings which were presented in Chapter 7, suggest that three of the six national cultural dimensions (Uncertainty Avoidance, Individualism/ Collectivism, Indulgence/ Restraint) affected IS success in two of the four organisations (HR and SH) studied.

It is interesting to note that none of the national dimensions of culture seem to have any very low in Power Distance in HEAC or EDUP. There are several possible reasons for this. HEAC, for example, is a much smaller organisation and has a more focussed role than, say, HR. According to interviewees, it also benefits from strong leadership, excellent internal communications and more advanced ICT systems supported by a strong ICT team. It has a long tradition of innovation and more of its staff are graduates. It may be that employees working in such an environment shed or change, over time, their cultural attitudes. For example, in an organisation with high levels of communication and close teamwork, power-distance tends to become less significant.

As far as EDUP is concerned, it also is in a dynamic educational environment where changes and developments are happening continuously. Every year, the Ministry of Education receives new graduates who join the Ministry and bring new ideas and practices with them. The EDUP system is mainly used by the young generation in the country such as students as well as graduate employees who are used to new developments in technology.

8.2.2 The Impact of Organisational Cultural Dimensions on ICT

As discussed in Section 5.2.2, Hofstede's 1991 model of organisational culture encompasses four dimensions: Results-Oriented, Job-Oriented, Closed System and the Need for Security. This study found that two of these (Need for Security and Results-Oriented) have a significant impact on the satisfaction level with the use of ICT projects in two of the four cases. The study showed that the remaining two dimensions (Job-Oriented and Closed System) have no significant impact on the satisfaction level with the use of ICT

The **Need for Security** dimension focuses on the existence of an organisational culture in which employees are concerned with having a secure environment in their workplace and job security. From the qualitative findings, it was evident that in workplaces where the lines of communication are open between management and staff there tends to be mutual respect for expressing ideas. Informants felt that this led to greater productivity and innovation in implementing a new ICT project. A study by Lanciano and Zammuner (2014, p703) supports this view noting that "*Higher levels of security […] predicted workers' greater involvement in their job*" and that a secure work environment is related to workers' job satisfaction.

The quantitative findings also showed that there is a positive relationship between the Need for Security and employees' satisfaction level with the use of an ICT system. Many interviewees believed that employees who are working in a secure environment express more satisfaction with their work environment. Feeling secure makes employees feel motivated, committed and more engaged with their work in order to achieve success in ICT projects. Interviewees also pointed out that feeling secure enhances trust and the respect that employees have for each other in an organisation. This finding is in conflict with the findings of Mohamed's (2015) study which found no significant relationship between the Need for Security and email usage among employees in a university setting, although it is arguable that attitudes to e-mail are likely to be different to those to the larger e-government operational systems examined in this study. Obviously, email systems are by no means equivalent to major information systems like the ones in SH and HEAC. Nonetheless, there are lessons to be learned from the email systems especially given the paucity of studies which have investigated the organisational culture.

The results of the interviews aligned with this finding, show that satisfying a high Need for Security is important, not only for the employees using the two systems studied, but also,

given the age structure and the history, for other e-government projects in these organisations. The interviewees highlighted the need to feel safe and secure especially when expressing their opinions and sharing ideas. However, some interviewees stated that they feel threatened and anxious regarding potentially losing their jobs if they express disagreement with or criticise their managers. According to Mikulincer and Shaver (2005), an insecure work environment is sometimes associated with the *"functional manifestation of anger in which expression is neither expressed nor overwhelming intense"* (cited in Ashkanasy *et al.* 2016, p.53), or, putting it colloquial terms, they take out their frustrations on the system and complain about the computer rather than their manager.

The results of the study suggest that top management should provide clear rules and proper training/procedures for how staff can draw attention to problems without fear of repercussions or reprisal, as a fear of reprisal often causes anxiety and impacts on satisfaction. The qualitative research suggests that employees need to be reassured that disagreement with managers in the workplace will not lead to being threatened or a risk to their job. Equally, for front line workers, learning how to express disagreement and justifications for opinions is necessary in order to create an environment in which employees feel valued and secure. In this way, there is a greater likelihood of promoting satisfaction and loyalty in the ICT environment, as expressed in the qualitative findings of this study.

Overall, the study showed that, in all four cases, there is a widespread sentiment among survey respondents with regards to the importance of Need for Security for the successful implementation of ICT projects. Yet, it was interesting to see that only two of the four cases (HR and SH) link this dimension to satisfaction with the system. One possible reason for this is that the HR and SH lack channels for providing feedback on the system. Unlike the HEAC and EDUP, HR and SH do not have communication and discussions forums where end users can communicate directly and freely with system administrators and developers. Another possible reason is that the HR and SH contain sensitive information for people such as health and income. The need for Security in this respect satisfies the end users. The need for security is related to the Uncertainty Avoidance which, as noted above, is high in these organisations.

Results-Oriented is another dimension which focuses on the goals and targets of employees' performance (Hofstede *et al*., 2010). As noted in Section 7.4.2 earlier, Results-Oriented organisations are more risk-oriented and this helps to create an environment which

enhances innovation for the organisation in order to survive and expand (Hofstede *et al.*, 1990). The findings of this study showed a significant impact of Results-Orientation on the implementation of ICT. These results are similar to those of Ruppel and Harrington (2001) who found that Results-Orientated individuals show higher levels of satisfaction with new ideas. Mahomed (2015) also found that there was significant positive relationship between Results-Oriented individuals and perceived ease of use and perceived usefulness of email usage in Malaysian universities, although it should be noted that usage of email is, of its nature, quite different from usage major information systems (see also above).

In this study, the results presented in Section 7.6.3 showed that the higher the Result-Oriented score is, the higher is the satisfaction level. The findings show that there is a statistical significant relationship between the Results-Oriented and the satisfaction with the use of two of the systems (HR and SH). This suggests that employees using these two systems who have a positive attitude towards change and innovation in the workplace and are more likely to perceive ICT projects as successful. Confirming the findings of the survey, many interviewees expressed awareness that the Omani culture has a tendency to focus on results rather than process. The qualitative findings showed the importance of creating an environment which encourages employees to be creative and innovative at work. Both organisations (HR and SH) require highly skilled and professional managers who encourage creativity and change. They thus help to create a comfortable environment in which employees can feel at ease when change takes place.

As discussed, the employees in the HR and SH systems are Results-Oriented. The findings also showed that when Results-Oriented (organisational culture) increases, the Uncertainty Avoidance (national culture) increases too. Employees in these two systems are risk avoiders. Omanis, like Arabs more generally, tend to feel insecure when taking on new projects which involve risk (Salem, 2006). One would expect that new projects require a high degree of innovation to achieve success in ICT implementation. According to Ashkanasy *et al.* (2016), there is a need for rules and training to utilise any fear/anxiety/conflict productively and positively within the work environment.

The findings also show that there is no statistically significant correlation between the Results-Oriented dimension and the satisfaction level of employees in the EDUP and HEAC systems. The interviews showed that these organisations provide staff with convenient environment for creativity and encourage them to suggest ideas for improvement and

development at work (EA3 and A2). This may also be due to the fact that there are low numbers of non-results orientated staff in these organisations.

Job-Oriented is the dimension which considers whether the welfare of the employees is dependent on their interest in job completion (Hofstede *et al.*, 2010). The findings of this study suggest that there is no significant correlation between the level of Job-Orientation and the successful implementation of ICT in any of the four organisations examined. This means that employees themselves are interested in accomplishing the work. The interviewees believe that employees should be fully aware of the goals and the tasks expected of them as managers may discuss with them about their achievements and work progress and such awareness is necessary for a meaningful discussion. Interviewees also stressed the importance of listening to employees and considering their ideas and opinions.

The findings show that in the four organisations Job-Oriented has no significant relationship with the level of satisfaction employees experience in the use of ICT systems. According to the interviewees, there are two possible explanations for this finding. First, the work systems within the four organisations focus on the welfare of employees which makes them Employee-Oriented organisations. Second, the overall atmosphere in the work environment reflects the nature of Omani society when people usually communicate and interact with each other in a family-like environment.

The above suggests that one possibility is that high Employee-Oriented (i.e. low Job-Oriented) culture may play an important role in the success of ICT, but the data from this study are not sufficient to support this. Ruppel and Harrington (2001), for example, assert that putting employees' welfare among the top priorities in the organisation can lead to high level of ICT implementation success. This findings of this study do not contradict this assertion, but neither do they provide evidence to support it.

The above may imply that employees, in the Omani public organisations, seem not to focus on getting the immediate job done rather than on the wider process of which that job might be a part. This possibly flows from national cultural characteristics such as indulgence. This dimension (i.e. Indulgence) means gratification of employees' desires without giving more attention to its negative consequences on the job to be done. The results of this study suggest that a Job Orientated culture does not have a material impact for better or worse on ICT success. Unlike other factors, the impact of this aspect of organisation culture on ICT is not

widely studied in the literature; hence, there is a lack of research with which to compare this finding.

Closed System is a scale that measures the degree of openness in an organisation. A high score on this scale indicates an organisation that is secretive and where information and communication is guarded. A low score indicates a higher degree of information sharing.

This research found that there is no significant statistical correlation between this dimension and successful implementation of ICT. It may be that organisations in Oman are inclined to be Open System Orientated and that this contributes to the successful implementation of ICT. Further research is necessary to establish if this is true. However, it is worth noting that the interviewees clearly believe that this open approach is significant for the implementation of ICT. This is in line with Mahomed's (2015) findings that there is a significant negative relationship between Closed System and email usage. Researchers such a Ciganeck *et al*. (2010) also report a negative impact of a closed organisational culture on ICT success. As Omani culture is by nature open, this is reflected in Omani organisations, but this result was not measurable in this study because all four organisations exhibit an open culture. Clearly, however, being open does not inhibit success.

These findings may help to understand the influence of organisational culture in Oman on the successful implementation of ICT. Two dimensions (Need for Security and Results-Oriented) out of the four organisational culture dimensions have an impact on the successful implementation of ICT in the four organisations.

In summary, from the above discussion, three national culture dimensions are associated with the organisational culture dimensions in one way or another. The Omani culture which has the characteristics of avoiding uncertainty, collectivism and flexibility in the work environment have the characteristics of Need for Security and Result-Oriented. However, there is the need to change the national culture dimension in organisations that is Uncertainty Avoidance as Omani tend to experience anxiety, fear and conflict when introducing novelty.

8.2.3   The Impact of Workplace Factors on ICT

In chapter five, seven workplace factors discussed namely Self-Efficacy, Peer Influence, Resistance to Change, Legacy System, Top Management Support, Project Management Standards, and Communication in the Organisation. As discussed in Section 5.2.3, all of

these factors have been found to influence ICT success. This result is supported by some previous research (AL Naimat *et al*., 2013; Lallmahomed *et al*., 2017; Abdalla, 2012) in e-government implementation.

Self-Efficacy in relation to ICT means that employees have confidence in solving basic and advanced tasks to both computer and Internet-related issues (Rohatgi, Scherer & Hatlevik 2016). The finding of this study indicates that there is a significant impact of Self-Efficacy on the successful implementation of ICT. As mentioned in the literature review, Al-Naimat *et al*. (2013) suggest that the presence of enabling resources such as computer systems, Internet and proper training on e-government services allow employees to cope with new technology. These can strengthen the ability of employees to solve problems, to make decisions and to gather and disseminate information.

In this study, Section 7.6.3 showed that employees that display higher levels of Self-Efficacy also express higher satisfaction with using the four ICT systems. The HEAC employees show higher ratings on the Self-Efficacy scale compared to users of the other three systems (EDUP, HR and SH).

Interviewees stressed the fact that they still require more training and support to enable them to develop their skills and have confidence in operating ICT applications. There are interesting implications in this. It suggests that people who are Self-Effective tend to rate ICT success higher. This is probably because they can use systems more effectively, get more value from them and fear them less. The implication is that good training and support will lead not just to more effect use of systems, but to better perceptions of IT success.

Interestingly, for all four systems there is a positive statistical significant correlation between both Self-Efficacy and Top Management Support on the one hand and satisfaction level with the use of the system, on the other. This could be attributed to Top Management Support for employees which aims at developing their skills and competencies. The interviews suggest that Self-Efficacy is one of the most important factors in the workplace when it comes to ICT implementation; high Self-Efficacy increases the probability of the successful implementation of ICT. The employees are conscious of the importance of training programmes to enhance their skills.

Peer Influence, if of the right kind, can help to increase productivity, creativity, and the spread of information within the organisation. It helps employees to be more engaged in

work and in exchanging ideas/ opinions with regards to problem-solving. This is similar to what Suki and Ramayah (2010) found in their research. They found that influence from peers/ colleagues/ friends offers great support to the employees and encourages their use of e-government systems rather than any traditional paper-based systems. This study shows that there is a significant correlation between Peer Influence and satisfaction with ICT in the EDUP and HR systems. AlAwadhi and Morris (2012) suggest that Peer Influence is more significant when individuals do not have enough experience of online services.

In this study, a more detailed analysis (see Section 7.6.3) indicates that the higher the level of Peer Influence is, the higher the satisfaction level. A higher rating in the EDUP and HR systems on the Peer Influence scale reflects that employees express a stronger role of Peer Influence in the workplace of both systems. The qualitative findings suggest that Peer Influence is a two-edged sword; it depends on the context as to whether it is benign or malignant.

For example, some interviewees stated that if Peer Influence helps to reduce the level of resistance to ICT innovation, it will have a positive impact. This helps to increase motivation and productivity within the work environment. However, if Peer Influence instils in employees a feeling of frustration and disappointment, then it can be said to have a negative effect as it reduces motivation and productivity.

The interviews revealed that there are some efforts from the organisations to build cooperation and communication among employees with regards to all developments in the organisation in general and ICT developments in particular. The organisations form committees and organise training that helps employees build relationships, share similar beliefs and work together towards achieving successful implementation of systems. Such efforts, according to the interviewees, have played an important role in encouraging employees to support, help and cooperate with each other.

Resistance to Change refers to the degree to which employees display resistance to a new idea or change that is likely to cause work disruption. The survey in this study shows that there is a significant correlation between Resistance to Change and satisfaction with ICT in the HR and SH systems. This was described in Section 7.6.3; as the rating of Resistance to Change increases, the satisfaction level increases too, a finding which seems counterintuitive. This Resistance to Change in these two organisations (HR and SH) may be

attributed to the fact that most of the employees in these organisations, as described earlier in this chapter, are from an older generation. Most of the employees working with the other two systems (HEAC and EDUP) are from a younger generation and with a higher level of education. Resistance to Change is one factor amongst the most significant factors that can inhibit the adoption of e-government services and cause the failure of adopting new systems (Dwivedi *et al.*, 2015). Despite this resistance in HR and SH, there has been some success in the implementation of ICT, though the systems themselves took a long time to develop. Such success can be explained by the role of some other factors especially government encouragement and support through the e-government nation-wide initiative as well as the Top Management Support.

The interviews showed that changes are likely to be accepted in the implementation of ICT if they occur in a clear context and are not abrupt. One interviewee commented that before implementing change, leadership must be conscious of how such changes will be made possible. Informants stated that leadership should consider involving employees from the very beginning of any plan to introduce new systems. Many interviewees felt that leaders need to hold meetings at many levels within the organisation to introduce new ideas and changes. With this change, leaders might be changing the whole system, including some cultural aspects of the organisation. Support from top management motivates employees to work harder in creating new ideas to speed up the processes and face obstacles, such as Resistance to Change

The most salient finding to emerge from this study is that there is no significant correlation between Resistance to Change and ICT satisfaction level in both HEAC and EDUP systems. The staff of both organisations show almost no Resistance to Change and indeed welcome new ideas. Surprisingly, there is congruence within these two systems between the findings of Resistance to Change in the workplace and Uncertainty Avoidance in the national culture, i.e. whenever there is no correlation between Resistance to Change and satisfaction level, there is no correlation between Uncertainty Avoidance and the satisfaction level with the HEAC and EDUP systems. Intuitively, this correlation between Resistance to Change and Uncertainty Avoidance suggests that employees who are insecure normally resist change. The interaction between Resistance to Change, as a factor of the workplace, and Uncertainty Avoidance justifies further study.

In computing, a **Legacy System** means an old method, technology, computer system, or application programme, Wikipedia (2018) or "*of, relating to, or being a previous or outdated computer system*" Merriam-Webster (2018). As discussed in detail in Section 5.2.3, upgrading a Legacy System might not solve existing problems and can sometimes risk interrupting service as the new systems are debugged.

A-Shihi (2004) contends that legacy systems within each ministry are usually introduced and developed independently. Such an approach, he says, is followed by all almost all Ministries in Oman and makes it difficult to have integration between different systems. It should be noted here that A-Shihi (2004) is referring generally to the systems being used in various Ministries in Oman (i.e. in addition to the four Ministries involved in this study). The Omani government intends to solve this problem by developing a national gateway (web portal) as suggested by participants in the study by Al-Busaidy (2012). This would require an adequate infrastructure otherwise the implementation of various ICT systems will be delayed. Currently the networking infrastructure between Ministries is poor and there is a need for systems to link the four organisations (Alkharousi, 2016). The government has established the Oman Broadband Company to address this issue (EA1).

This study showed a significant relationship between the presence of a Legacy System and the level of satisfaction of using ICT. This finding suggests that as the high level of functionality provided by the legacy systems themselves is associated with a high level of satisfaction with these systems. A critical aspect of the ability of a Legacy System to interface with a new system is the degree to which the data from the Legacy System can be used by the new system.

Unsurprisingly, as discussed in section 7.6.3, HR and SH systems scored a higher rating on the Legacy System scale in than the rating of EDUP system. HEAC being a new system has no legacy issues. The findings suggest that although both HR and SH employees score high on the Legacy System, the fact that these systems have been built up over a long time is reflected in the fact that user have over time grown used to these systems and have confidence in them. This study also shows that there is a significant relationship between the users' satisfaction with the Legacy System and the use of the HR and SH system. This significant relationship could be attributed to a fact mentioned in the qualitative findings that the SH system has been functional for 30 years in hospitals. It is highly reliable, and the underlying hardware has been upgraded over the years. However, it has a number of quite

important shortcomings, for example it does not support data exchange between hospitals. The SH system, too, is continuously upgraded (both hardware and software) to avoid a long-term risk or associated high expense in order to maintain it rather than replace it (A20).

The HR system was introduced 22 years ago, it has been upgraded (but not replaced) in the intervening years. The interviewees reported that the HR system is functioning well. However, the system requires regular updating of data from other organisations. Unfortunately, the updates are not provided systematically by those organisations which results in having, every so often, inaccurate data in the system (T6 and T7). One of the reasons for not having regular updates of data in HR from other organisations is that some of these organisations have replaced their old systems with new and more advanced ones and building interfaces into the older HR system can be problematic. At the time of writing, the HR system cannot be replaced with a new one because it is compatible with the system of the Ministry of Finance which still uses an old system (A19).

Interviewees who are using an outdated system reported feeling a sense of failure. This sense of failure may be due to the fact that they do not manage to operate modern technology as the old systems are still running. People running an outdated system feel frustrated that they are not using modern, attractive and user-friendly new technology which has become elsewhere part of their daily lives. Such frustration may be due to cultural factors as people often replace old systems, equipment and other stuff with new ones even if the old equipment is still useable. This explanation may become more relevant for people nowadays as they use more and more mobile technology.

The necessity of keeping the old systems in place is in itself a major challenge for public organisations in Oman. Interviewees noted that regular update of data in these systems is not always practical. Also, the systems cannot be replaced with new ones as they have critical interfaces with other systems which cannot easily be updated. This situation represents the largest ICT challenge facing the public sector. It requires coordinated efforts to customize systems across all public organisations.

Top Management Support is, as Al-Naimat *et al*. (2013) observe, is a well-established CSF in ICT implementation. Chart 7.36 displays in detail the statistically significant relationships between Top Management Support and satisfaction. It shows that as the Top Management Support score increases the level of satisfaction with the four ICT systems also increases,

i.e. there is a significant impact of Top Management Support on the level of satisfaction with the use of ICT. Lack of Top Management Support is considered by many to be the number one risk-factor to the successful implementation of an ICT project (Liu *et al.,* 2010; Peter, 2013).

It is interesting to note that in the survey the SH employees report a higher score on Top Management Support scale than do employees in the other three organisations. The qualitative findings support the survey results.

Top Management Support and organisational culture are affected by Power Distance. In the four organisations studied, the Power Distance between manager and employee is low. In this situation, managers can allow employees to be active in decision-making, pointing to an Open System organisational culture. The interview findings suggest that Top Management Support motivates employees by creating the relevant environment in which they can be more productive; further, it invests employees into the culture of developing new ideas which helps to implement successful ICT projects.

Project Management Standards: Varajão *et al.* (2017) define standards as "*a formal document that describes established norms, methods, processes, and practices*" (p.3). Turner (2016) states that

> "*To increase the efficiency of projects in the project-oriented company the processes for the performance of the project contents are to be documented and standardized. Standards can be adapted for each project by considering individual project requirements*" (p.557).

This study suggests that the quality of Project Management Standards has a significant impact upon the successful implementation of ICT projects. Section 7.6.3 showed that in the EDUP, HR and SH systems, higher score on this scale is, i.e. the better the quality of Project Management Standards, the more likely users are to be satisfied with their ICT.

The qualitative findings showed that interviewees were fully aware of the importance of Project Management Standards. However, they were not satisfied with the standards related to the implementation of new systems.

Communication in most organisations is critical to the success and effectiveness of innovation. Good communication raises employee awareness and encourages their participation in the different channels of communication in order to achieve progress within the organisation.

This study found that in all four cases Communication is recognised by the respondents of the questionnaire as an important and effective factor that impacts on the satisfaction of ICT projects. Section 7.6.3 showed, for two systems, EDUP and SH, that a high quality of Communication, is positively correlated with a high level of satisfaction.

To conclude, the findings showed that the workplace factors have a high impact of on the successful implementation of ICT in Omani public organisations notably with regards to Self-Efficacy and Top Management Support. The quantitative and the qualitative components of this research provide a better understanding of the three surveyed components (national culture, organisational culture and workplace factors) on the successful implementation of ICT in the Omani public sector. The responses of the quantitative and qualitative participants were supportive of the research findings.

A surprising finding, as previously discussed, is found in relation to the organisational culture dimension Results-Oriented and the national dimension Uncertainty Avoidance which were found to be positively correlated. It could be intuitively expected that a correlation would exist between these two dimensions - employees who are Result-Oriented are normally more willing to take risks. This contradicts the current findings of this study which suggests that as the Result-Oriented scale (organisational culture) increases, the risk-taking (national culture) decreases. There is a need for further research to investigate this seeming contradiction. Changing the attitudes of public servants is desirable if Oman wants its ICT systems to be more successful.

8.3 The Relationship between the Cultural Dimensions and Workplace Factors

This section discusses the findings in relation to the third and fourth research questions of this study. The third question asks: To what extent does Omani national culture interact with other factors in the workplace? How does this interaction support or hinder the successful implementation of ICT? The fourth question posed is: 'To what extent does organisational

culture interlink with other factors in the workplace? How does this interlink influence the successful implementation of ICT?'.

8.3.1 Correlation between National Culture Dimensions and Workplace Factors

This section explores the degree of correlation between different dimensions of national culture and workplace factors and how any such correlations contribute satisfaction of ICT in e-government projects. With regards to the third research question, the findings of this study showed that among the six national cultural dimensions, three dimensions (Uncertainty Avoidance, Individualism/Collectivism and Indulgence/Restraint) were found to have a significant positive correlation with all of the workplace factors (see Section 7.6.1 and Table 7.6). Surprisingly, the study showed an interaction between the dimension of Uncertainty Avoidance in the national culture and the factor of resistance to change in the workplace. Intuitively, one would expect employees who are risk-avoiders to be more resistant to change than risk seekers.

Contrary to what one might expect, there is no evidence for a significant correlation between the dimension of Power Distance in the national culture and Self-Efficacy. Regardless of whether the organisation shows a small or large Power Distance, Self-Efficacy always scored highly within the four organisations because training to gain competency in the use of ICT is a must; indeed, there is always an awareness of the need to increase training programmes to enhance employee skills.

Section 7.6.1 suggested in more detail that there is a statistically significant relationship between Indulgence and Top Management Support. This reflects a trend that can be observed showing that when Indulgence increases, Top Management Support increases. This suggests that organisations with high Indulgence are more likely to have a high level of Top Management Support in the workplace.

Likewise, there is no evidence that Masculinity/Femininity has a significant correlation with the three workplace factors Self-Efficacy, Top Management Support and Communication. This means that the high score on Masculinity/Femininity tells us nothing about Self-Efficacy, Top Management Support and Communication within the workplace. One unanticipated finding was that Self-Efficacy, Top Management Support and Communication scores are unaffected by Masculinity/Femininity dimension. Likewise, Long/Short Term Orientation was found to have no significant correlation with the Self-Efficacy factor.

The analysis shows that there is a positive correlation between some elements of each of the two sets of dimensions of national culture and the workplace. The national culture dimensions in Oman are strong and influential. The findings imply that national culture in Oman is significantly influences the factors at play in the workplace.

8.3.2 Correlation between Organisational Culture Dimensions and Workplace Factors

It is interesting to note that this study of the four cases found that there is a high positive correlation between the Need for Security and the Top Management Support. A high level of Top Management Support makes people feel more secure and reduces the perceived need for more security. Broadly speaking, Top Management Support is through the literature is widely consider as a critical success factor in major products not just in ICT (Iqbal *et al*., 2015).

This results also suggests that when employees feel secure in their work environment, they strive harder to achieve Self-Efficacy; when Self-Efficacy increases, performance improves. This suggests that employee's perceptions of their Need for Security will be directly related to the technical abilities and Self-Efficacy confidence. While managers cannot always change the level of technology-experience of their users, it is possible to influence the employees' attitudes, Self-Efficacy and experience. This can be achieved through training or other activities which help employees feel more comfortable with the system (Petter *et al*. 2013).

Moreover, the positive interaction between two dimensions of the organisational culture Need for Security and Results-Oriented with all of the workplace factors suggests that these two dimensions characteristics directly influence workplace factors. These characteristics help to affect and shape the performance of employees in the successful implementation of ICT. These two organisational cultural dimensions form an integral part of the general functioning of the organisation and can be considered the main cornerstones of the organisational culture in these organisations.

The results presented in Section 7.6.2 suggest that there is a significant positive correlation between the Job-Oriented and Closed System dimensions and the three workplace factors (Peer Influence, Resistance to Change and to the Upgrading of Legacy System). This suggest that in such a culture, management needs to pay close attention to employees and where

necessary try to counter negative Peer-Influence. One way to do this might be to introduce positive individuals/mavens.

On the other hand, the findings suggest that there is no correlation between Job-Oriented and Closed System dimensions with the other workplace factors, namely Self-Efficacy, Top Management Support, Project Management Standard and Communication. These four workplace factors demand an organisational culture which is characterised by an Open System. A considerable number of the interviewees noted that an Open System helps information to flow freely between top management and employees. Doing this encourages employees to be more willing to adopt new technology. This finding supports the fairly self-evident point that employees often needed to be managed in different ways to get the best from them and doing this included understanding their cultural attitudes.

The discussion on the correlation between the national culture and organisational culture on the one hand and the workplace factors suggests that there is a number of cultural dimensions which may play a major role in influencing employee's performance in the workplace. The support from top management may have an important impact on employee's attitudes, perceptions and confidence about change and development. Such support may be provided through training and focusing on employees' welfare. Interviewees stressed the importance of having an open system in which information and instructions flow quickly and transparently between top management and employees.

8.3.3 Conclusion

It can be concluded, from the above discussion, that there is a correlation between certain dimensions of organisational culture and workplace factors. In addition, the study showed that workplace factors play a major role in the successful implementation of ICT in e-government projects in Omani public sector. The reason behind this, as this study showed, is that only those national and organisational cultural dimensions that show correlation with all the workplace factors are those that significantly influence the successful implementation of ICT. This means any dimension from the national and organisational culture that interacts with the workplace factors is a candidate influential factor for the successful implementation of ICT.

8.4   Emerging factors from qualitative data

Hofstede's model includes six dimensions in the national culture. The qualitative data revealed one extra dimension; this is 'tolerance'. Tolerance is related to the concept of accepting and adapting to new ideas and change without resistance (it also means, amongst other things, acceptance of diversity). Omanis exhibit high levels of tolerance and this may have an important impact on IT success.

The government has undertaken several programmes and activities inside and outside Oman to spread the message of tolerance to all people. For example, the government has been organising international exhibitions on tolerance in different countries promoting religious tolerance, mutual understanding and peaceful coexistence. Here is an example of how this exhibition is viewed by other people: "*It is also good that the positive resources of the Ibadhi school of Islam and the tolerant traditions of the Sultanate of Oman in particular are given more prominence. I trust that the exhibition will provide a space in which mutual sharing and learning can take place*" (Williams, 2012).

Several interviewees suggested high levels of tolerance as a distinctive feature of the Omani culture. Tolerance was also regarded as a dimension which supports change and triggers other features such as patience, attentiveness and cooperation. Tolerance was also stressed in the interviews as playing an important role in the success of ICT projects in Oman since opposing change becomes a minimal challenge in the organisation to a large extent. The finding with regards to tolerance suggest that, generally speaking, there some aspects of workplace factors that are universal across cultures while there may be some others that may be subject to significant cultural influence.

In addition to Tolerance, the interview data revealed three other extra factors which can help in the success of ICT implementation. These factors are the Experts in ICT, Effective Leadership and Situational-Awareness.

Experts in ICT, interviewees emphasised the importance of providing IT professionals and specialists who are well qualified and knowledgeable. Technical support is crucial and necessary throughout all different phases of implementation of ICT projects. However, the interviewees made it clear that this was not just a question of having good technical support available, but of close interrelationships between experts and users in the workplace.

Effective Leadership unsurprisingly interviews also stressed the importance of having leaders who believe in ICT initiatives and projects. The key word in from their perspective is 'believe' as opposed to paying lip service to the importance of IT. In this research, interviews were agreed that the role of leaders has been seen influential in all four organisations when they set the vision for the organisation, provide support to ICT projects and help overcome all challenges.

Situational Awareness of employees in relation to any proposed ICT project was also regarded to be important by interviewees. It is necessary to ensure that employees are aware of both ongoing developments and upcoming projects, so they feel involved and get engaged in the process of implementation. Awareness-raising can be done though meetings, workshops and media. Lack of situational awareness among employees may lead to fear and reluctance as employees may feel that they do not know what is happening around them and/or that they are being kept in the dark.

This recognition of the significance of these three factors could enhance efficiency and speed up the successful implementation of ICT.

8.5   The Model for Successful ICT in E-government Projects

The Initial model in Figure 8.1 encompassed 17 candidate factors that could influence the successful implementation of e-government projects in Oman. By incorporating dimensions from both Hofstede's cultural theory (National and organisational cultures dimensions, together with workplace factors), this study investigates the influence of cultural dimensions on successful ICT implementation in Omani e-government projects.
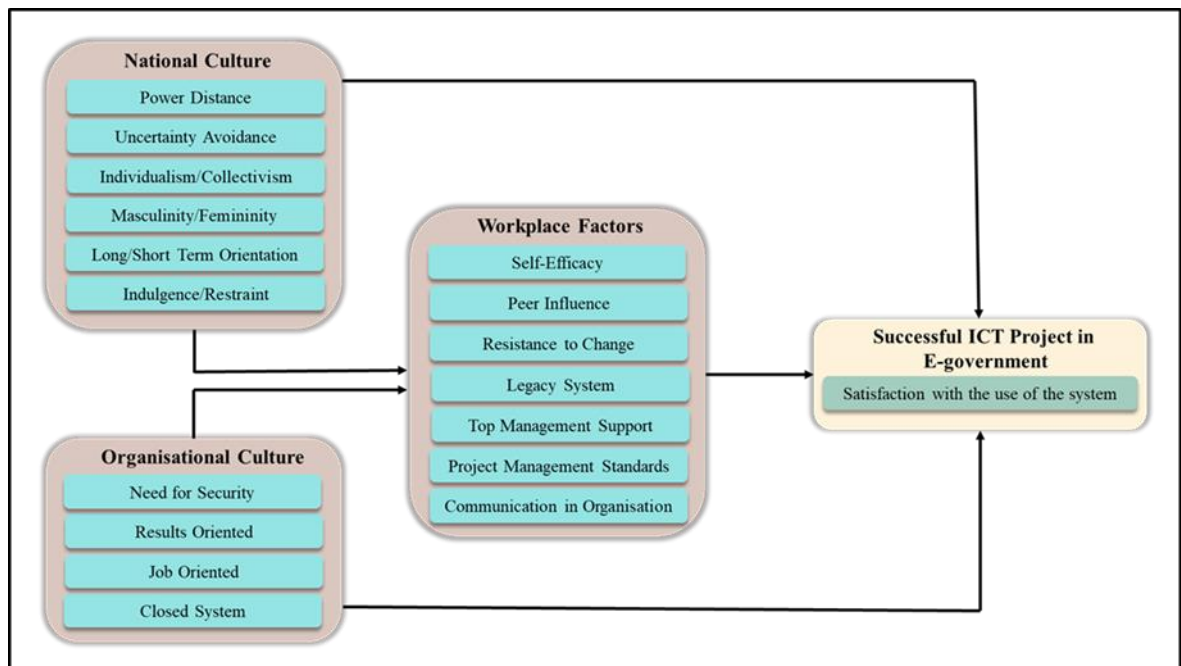
Figure 8.1: The Initial model for Successful ICT in E-government Project

Each component is made up of a different number of factors. The most influential factors were highlighted in the literature and in a preliminary investigation by IT professionals at a number of governmental bodies in Oman. The three main components are regarded as the main factors of the research model and were used to develop an initial model for the factors that might influence the successful implementation of ICT in public organisations.

The above initial model has been modified (as shown in Figure 8.2 below) based on the findings of the study. The modified model includes the dimensions/factors which have been found to exert a significant influence on the successful implementation of ICT in e-government projects within Omani public organisations. This modified model has three dimensions in the national culture, two dimensions in the organisational culture and seven factors in the workplace component.
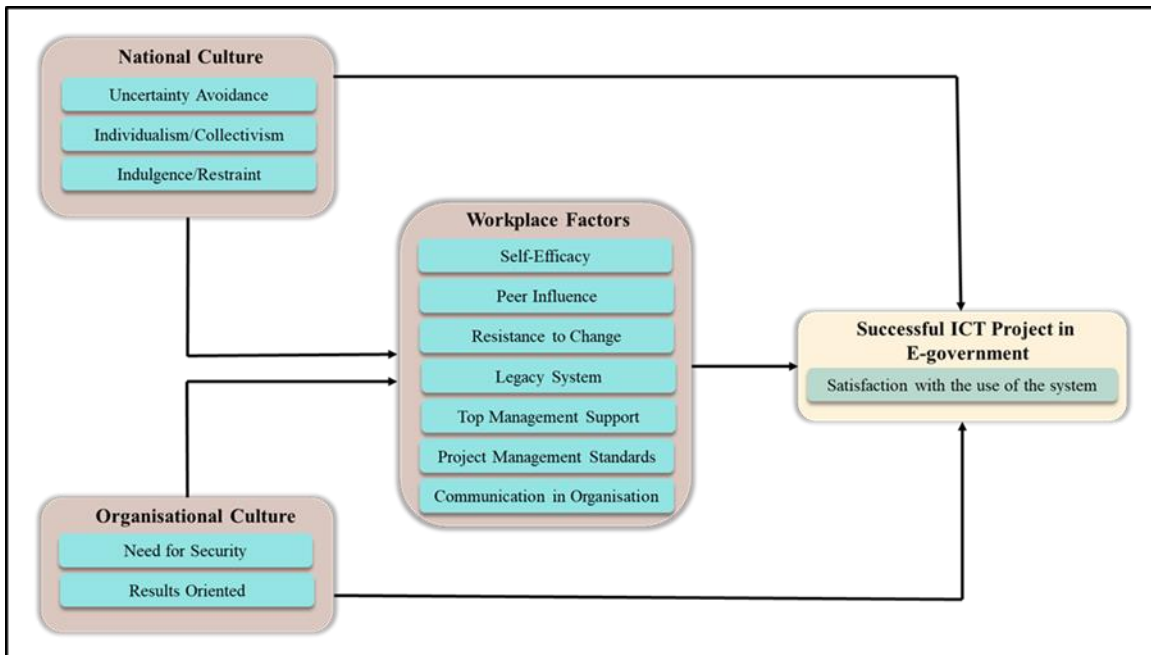
Figure 8.2: A Model as Modified for Successful ICT in E-government Projects

The modified model in Figure 8.2 shows the 12 dimensions/factors that emerged from the empirical study which influence the successful implementation of e-government projects in Oman. A number of comments are in order.

First, Hofstede's national culture dimensions are well established. In this research, it emerged that three out of these six dimensions (Uncertainty Avoidance, Individualism/ Collectivism and Indulgence/Restraint) have significant influence on the successful implementation of ICT projects in Oman. The research suggests that the remaining three national cultural dimensions (Power Distance, Masculinity/Femininity and Long-Term Orientation) have no significant impact on the successful implementation of ICT in the Omani public sector. The explanation for this result as regards these three national culture dimensions could be that they are not prominent manifestations within the national culture of public organisations or else they are not perceived to be so by the employees.

Second, for organisational culture, two out of Hofstede's four dimensions (Results-Oriented and Need for Security) were found to have an impact on the successful implantation of ICT in e-government projects. The remaining two dimensions (Job-Oriented and Closed System) show no significant impact on successful ICT implementation within the Omani context. It could be explained that these two dimensions do not stimulate the successful implementation of ICT or that interviewees do not perceive them as important dimensions.

Finally, all seven factors (Self-Efficacy, Peer Influence, Resistance to Change, Legacy System, Top Management Support, Project Management Standards and Communication) were found to influence ICT implementation in Omani e-government projects.

The Final Model suggests 16 dimensions/factors that influence the successful implementation of e-government projects in Oman. Comparing the research model with the modified one, the following results emerge:

Figure 8.3 includes the 12 dimensions/factors of the modified model, with the addition of four dimensions/factors (Tolerance, Effective Leadership, Experts in ICT and Situational Awareness). These four dimensions/factors are based on the findings of the qualitative data and are integrated within the framework of all 16 dimensions/factors for the three components (national, organisational culture and workplace). This model is designed to serve as a foundation for future research on the successful implementation of ICT in e-government in Oman, as well as other research related to successful ICT implementation.
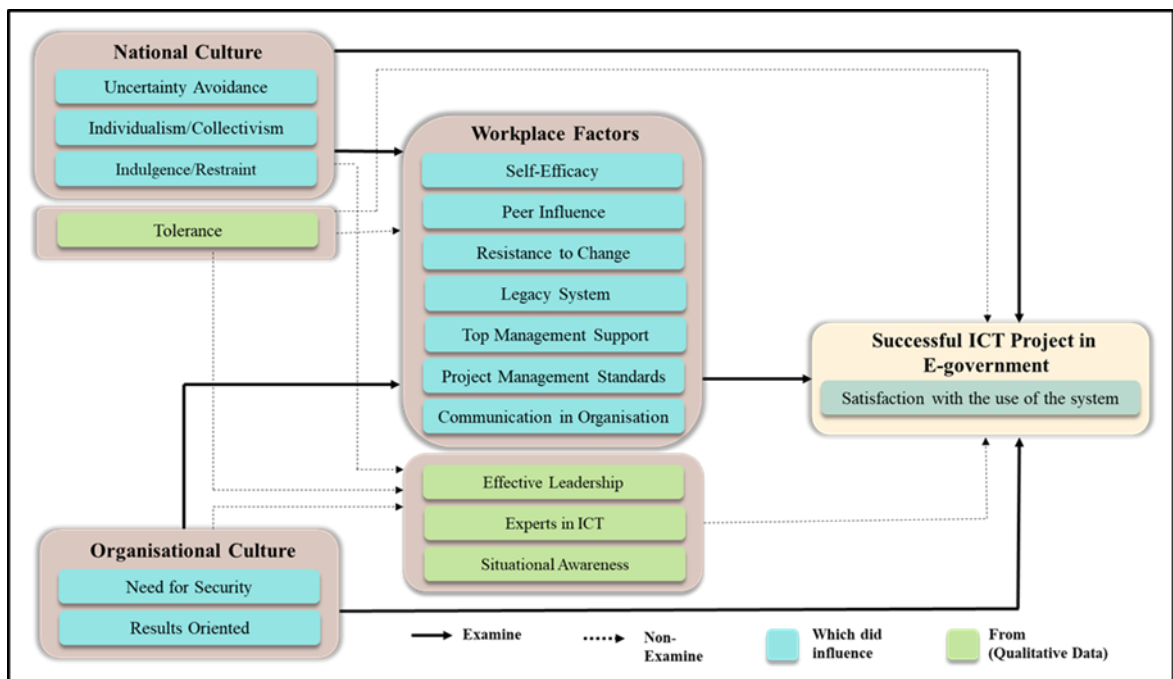
Figure 8.3: The Final Model for the Successful implementation of ICT in E-government Projects

The first factor (Tolerance) is a potentially successful feature of Omani culture in terms of successful ICT implementation. Tolerance is an important additional national culture dimension that emerged in this research and one which is not in Hofstede's current model.

For the interviewees, without 'Tolerance', it would be hard for Omani society to adopt and adapt to new ways and styles of working. Whether Tolerance is a new dimension that should be added to Hofstede's model requires further research, but this research shows that it is important in Oman and suggest that it should be a candidate for inclusion in that model.

The remaining three factors (Experts in ICT, Effective Leadership and Situational Awareness) are related to the workplace. It is not possible to explore these new factors in this study as the nature of this research is based on identifying 17 factors that stimulate the successful implementation of ICT in the Omani public sector. Further research is necessary to establish how these three would stimulate the successful implementation of ICT in that sector.

The interviewees also emphasised, as discussed in Section 7.4.4, the need for Omani Experts in ICT as demand increases which results in greater recruitment into the public sector of specialists from abroad. To date, the fast pace of change in the ICT sector has increased the demand for Effective Leadership in dealing with the challenges facing successful ICT implementation in the country.

Another factor suggested by the interviewees is to increase the Situational Awareness of employees in many factors of the workplace. For example, a lack of Situational Awareness may cause an employee to become marginalised and not fully engaged in their work environment. Situational Awareness in relation to the successful implementation of ICT in e-government projects is the first predicted factor. It is one feature that helps to mitigate resistance to change and stimulate the growth of e-government to a successful conclusion (Al-Naimat *et al*., 2013).

8.6 Conclusion

This chapter has discussed the key findings relevant to the dimensions presented in Hofstede's original models of national culture and organisational culture and the workplace factors. The purpose of this study was to explore the cultural dimensions that may influence the successful implementation of ICT in Omani e-government projects. These dimensions are measured based on the level of employee satisfaction with regard to ICT project implementation and usage.

Overall, amongst the six national culture dimensions tested against the user satisfaction rating regarding the use of the systems in four public organisations, only three dimensions (Uncertainty Avoidance, Individualism/Collectivism and Indulgence/Restraint) were found to exert a significant influence on the successful implementation of ICT projects in Oman. For organisation culture, two dimensions out of four (Results-Oriented and Need for Security) were shown to have an impact on successful ICT implementation in e-government projects. In addition, all seven workplace factors (Self-Efficacy, Peer Influence, Resistance to Change, Legacy System, Top Management Support, Project Management Standards and Communication) are found to significantly influence ICT implementation.

This chapter has also explored the nature and interaction between the different dimensions/factors related to both national and organisational culture, and the workplace, and how this interaction contributes to successful ICT implementation. Further, it has presented the key findings of the qualitative data which has allowed for the capture of a number of new four dimensions/factors that may stimulate successful ICT implementation in the Omani context. These dimensions/factors are identified as Tolerance, Effective Leadership, Experts in ICT and Situational Awareness.

The chapter proposes and presents a modified model for the successful ICT implementation in e-government projects in Oman.

9.   Conclusion

9.1   Introduction

This chapter summarises the contribution of this dissertation and contains some concluding remarks and implications for research and practice from the findings of this study. In this chapter the core findings of the research are summarised in Section 9.2., and the theoretical and practical implications are presented in Sections 9.3 and 9.4 followed by the limitations and future research directions in Sections 9.5 and 9.6.

9.2   Main Outcomes of Study

This study examined the national, organisational cultural dimensions and workplace factors affecting the implementation of e-government in Oman and whether and to what extent they contribute to the success of this implementation. Fourteen of the 17 dimensions/factors examined were found to affect the implementation of e-government. Amongst the six national culture factors tested against the user satisfaction rating regarding the use of the ICT systems in four public organisations, only three (Uncertainty Avoidance, Individualism/Collectivism and Indulgence/Restraint) were found to exert a significant influence on the successful implementation of the four projects studied. For organisation culture, two out of the four (Need for Security and Results-Oriented) were shown to have an impact on the success of ICT implementation in e-government projects. All seven workplace factors (Self-Efficacy, Peer Influence, Resistance to Change, Legacy System, Top Management Support, Project Management Standards and Communication) were found to influence ICT implementation.

This study has also revealed the nature of the interaction between the different factors related to both national and organisational culture, and the workplace, and how this interaction contributes to successful ICT implementation. Further, this study identified and explored the four new factors that influence the success of ICT implementation in the Omani context. These factors are identified as Tolerance, Effective Leadership, the presence of Experts in ICT and Situational Awareness.

9.3 Contributions of the Research

9.3.1 Theoretical Contribution

This section outlines the contribution to theory made by this study. This study has addressed several issues in the current literature and in research. The main contributions of this study are as follows:

- The expansion of Hofstede's model to include an additional dimension namely 'Tolerance'. The six dimensions of Hofstede's national culture have thus been expanded to seven. The findings generally suggest that some aspects of workplace factors may be universal across cultures while others may be subject to significant cultural influence.

- While Hofstede (1980; 1991; 2010) investigated the cultural dimensions in one organisation (IBM) in the private sector, this study investigates the four quite different organisations in the public sector (HEAC, EDUP, HR and SH). The reason for choosing these four systems is discussed in Chapter 6, Section 6.3.2. To date, culture has not yet received as much concern or attention as it justifies in the world of e-government studies. Its impact on ICT implementation is still not well understood, especially when it comes to the public sector. This study has expanded to the body of knowledge of the nature of the interactions between culture and IS success.

- Specifically, this study develops an original theory of the impact of culture on the implementation of ICT in e-government projects in an Arab state, namely the Sultanate of Oman. This study contributes to the IS literature in that, using empirical data, it addresses the limitations of prior exploratory studies and explicitly establishes a theoretical link between cultural dimensions and successful ICT implementation. This goal is achieved by directly measuring the cultural values at an individual level.

- This study is the first, to the researcher's best knowledge, to utilize a mixed method approach to explore the influence of national and organisational cultural on ICT implementation in Oman. As one of the first studies to apply Hofstede model's in the context of public organisations in Oman, the knowledge obtained from this study should help IS researchers and practitioners to gain a better understanding of the

cultural impact on e-government implementation in Oman and possibly in other Arab states. This understanding should provide insights which will contribute to more effective ICT implementation in e-government in different cultural contexts.

- Furthermore, this study took a further step to employ the two cultural levels (national and organisational) to investigate their impacts on ICT in e-government projects in Oman. This is the first study to do this carried out in Oman.

- This study adds to current knowledge about a dimension recently added to Hofstede's model, namely 'Indulgence/Restraint', and its impact on ICT implementation. It is recommended that researchers should include both this factor and (possibly) Tolerance (see below) in future research on technology adoption (Nguyen, 2016; Zardosht *et al*. 2011 and Li *et al*., 2011).

- From the interviews, three additional factors which contribute to the success of ICT implementation were identified namely: Effective Leadership, availability of Experts in ICT and Situational Awareness. While the first of these, Effective Leadership, is widely discussed in the literature, the second and third are less so. Effective leadership is considered to be generated from different behavioural aspects of innovative leadership: inspiration, commitment, creation, and cooperation and integration with the employees' ideas to shape and restructure the updated system of ICT in e-government success. The availability of Experts in ICT refers to having expertise available and easily accessible when needed. The availability of real experts and specialists who can build and upgrade systems written in using tools such as Java and Oracle are emphasised by interviewees. However, this needs also applies to applications experts, i.e. people who are familiar with the organisation, its data and its processes. Situational Awareness of the employees was also considered to be among the main important factors in the workplace. The interviews showed that many employees thought that managers did not trust their work and their skills. Awareness of this lack of confidence on the part of superiors can inhibit the adoption of ICT in e-government projects. This new understanding of the latter two factors could enhance efficiency and speed up the successful implementation of ICT.

- Another important contribution derived from the empirical part of this study is that there is a correlation between the dimensions of the national and organisational cultures and the factors of the workplace in the implementation of ICT in Oman. A

theoretical contribution is that the higher the positive correlation between the dimensions/factors in the three areas (national culture, organisational culture and the workplace) is, the more efficient and successful is the implementation of ICT in e-government in Oman. See Section 8.2.2.

- Finally, this study contributes to e-government research by providing an integrated theoretical framework of successful factors in ICT implementation, which constitutes a solid foundation for future research.

In conclusion, there has been a lack of empirical studies on statistical evaluation of the influence of these constructs on the various e-government systems. This study addresses this deficiency and will help governments generally, and the Omani government in particular, to better analyse the influence of cultural values on the success of e-government systems.

9.4   Research Limitations

This study used a mixed method (a survey and follow up interviews) for data gathering as a precursor to analysing the impact of culture (both national and organisational) and workplace factors on successful e-government implementation. As with any research, this approach has limitations which at the same time creates opportunities for further exploration. From the findings of this study, some tentatively generalisations can be made for other Omani public organisation and possibly for public organisation in other Arab states.

All PhDs are limited by the time and resources of a single researcher. This PhD has been helped by the fact that researcher has personal access to the senior ranks of Omani government and has benefitted from the support of ministers and senior managers. Nonetheless, there is only so much time.

Another limitation is the absence of a major failed system from the study. Of the four case studies chosen, it would be better if one had been an unsuccessful system for comparative purposes. Unfortunately, while there are such systems in the Omani public sectors, it was not possible to identify such a system that was comparable with the other cases. A further difficulty is that it was clear from the preliminary investigation that people were reluctant to talk about failure which makes failure a much more difficult phenomenon to research. This an even greater challenge in Oman. A characteristic of Arab culture is that people are naturally reluctant to criticise authority. This is particularly so for women.

There is a modest literature on this topic that discusses cultural factors in Arab settings. This influenced the interpretation of the findings from this research in relation to 'gender'. The cultural aspects of gender imbalance in organisations characteristic of the wider Arab world contrasts with the gender balance found in Oman. In all of the four organisations studies there was a good gender balance, something that may be common in Oman, but which might not be typical of other Arab states. This may limit the generalisability of this study when it comes to findings about masculinity/femininity.

In summary, an important limitation of this study was its focus on success. This study did not look at failed systems in Oman. The comments above are not meant to imply that there are no failed or failing systems in the Omani public sector, only that they are quite different in other ways and this would have made assessment of the comparative impact of culture difficult if not impossible. Future research might examine the impact of culture on unsuccessful systems.

Lastly, data for this study were collected at over a limited time period and may reflect employees' opinion at that point in time (2016-2018). Oman is a country which has changed much during the reign of His Majesty and continues to change, particularly given the strong emphasis on education for both sexes and on technological development. In spite of the previous limitations, the study's findings are expected to be appropriate for the Arab countries that share basic characteristics with Oman, such as GCC countries.

9.5   Future Research

A number of promising lines for future research emerge from this research. An obvious one would be to carry out a similar exercise looking at failed systems the results of which could be compared to this research to see what, if any, the differences are and whether they confirm the findings of this research.

Secondly, it would be interesting to carry out this research in other Arab countries, both those adjacent to Oman and more remote countries. For example, in Saudi Arabia, United Arab Emirates or Kuwait, or may be in Tunisia or Morocco. The approach and models used in this are not, of course, limited to Arab countries and could be applied in other countries and culture as well as outside of the public sector.

The study provides a strong foundation the factors influencing the successful implementation of ICT in government organisation. All of the 14 dimensions/factors have been found to be important for managers and project leaders be aware of and to manage in order to ensure the success of e-government projects in Oman and other Arab countries. Future research might consider matching or contrasting Hofstede's dimensions' approaches to organisational culture with other existing models, e.g. Schein's organisational culture model, Hatch's model of organisational culture and configuration model of organisational culture by Dauber *et al*. (2012).

The findings of the study showed a new national cultural dimension that is 'Tolerance' which appeared to have some influence on the successful implementation of ICT projects in Oman. 'Tolerance' is a new factor emerged from the cultural model employed in the Omani context. The impacts of 'Toleration' on the successful implementation of ICT have not been examined. Further research may be undertaken to highlight the significance of 'Toleration' and its interaction with other cultural dimensions in Omani settings. The possibility that Tolerance could be added as a further dimension to Hofstede's model should be explored.

There are specific issues it will be interesting to explore in the future research:

- Resistance to Change, as a factor of the workplace, should be measured by future studies in relation to Uncertainty Avoidance with more precise questions about concepts of clarity, insecurity, ambiguity, risk, vagueness, predictability, norms, regulations and so on.

- Further research is needed to determine whether the higher rating on the Results-Oriented scale reflects employees who express a stronger desire to innovate and take risks. The findings of this study contradict some of the existing literature, for example this study found that as the Results-Oriented scale (organisational culture) score increases, so does the Uncertainty Avoidance score (national culture). This shows that there is a reciprocal relationship between national culture and organisational culture as they influence one another (Lopes & Romana 2012 cited in Rodrigues *et al*. 2014).

9.6   Recommendations for Practice

The following recommendations for practice emerge from this research:

The impact of culture and workplace factors on ICT success has a number of practical implications for the planning and management of e-government projects.

1. One clear implication is that, in drawing up any ICT strategic plan, leaders, project managers and designers need to be aware of the cultural dimensions at national and organisational levels that are likely to affect the project. To successfully implement e-government projects, this study suggests that it is important to take into account these dimensions as successful implementation indicators through strategic planning and decision-making processes.

2. An interesting implication coming from this study is that Self-Efficacy is the most influential factor in the workplace and plays an important role in the successful implementation of ICT in e-government projects in Omani public organisations (this is also supported by Al-Hujran *et al.*, 2015). To improve the level of employee satisfaction of using a system, organisations should develop a variety of training programs designed to fit the environment of the workplace and to build employee self-confidence with ICT generally and the system in particular.

3. It is well established that Top Management Support is a critical success factor for successful project (see, for example, Ziemba *et al.* (2016)). As one might expect, this study confirms this, but in Omani (and possibly by extension, Arab) culture this takes on even greater significance. The Omani government needs to consider the importance of this factor and its significant role in the successful implementation of ICT in e-government projects. Top management must actively support and participate in sharing information with users and giving advice (see also (Khanh, 2014)). Support also motivates the team to work harder in creating new ideas to speed up the processes and to face obstacles.

4. A further practical implication can be used to improve aspects of leadership in the public sector in Oman. The interviews highlighted some of the successful factors such as the need for Expertise in ICT, Effective Leadership in ICT and Situational Awareness of the significance of ICT. Al-Naimat *et al* (2013) argue that raising awareness of e-government projects is one of the methods which can be used to avoid resistance and to encourage the success of e-government, and therefore its growth.

Managers need to be aware or to be made aware of the importance of this; managers, too, need training.

5. Management in Omani public organisations needs to encourage, foster and support an open culture. This is challenging in an organisation which is traditionally closed, but an open system culture helps in creating an egalitarian culture where employees can freely communicate in an efficient way with both peers, technical staff and managers. To enhance the channels of communication for employees to be productive and innovative, the performance management must establish a carefully designed system of incentives/rewards.

6. When these practical issues cause changes in the public sector in Oman this tends to encourage the take-up of the successful implementation of ICT in e-government projects.

7. The interviewees drew attention to various barriers and challenges that may hinder the successful implementation of ICT in e-government projects in Oman. Two frequently mentioned barriers were:

   - ICT Budgeting. Effective funding is, in the view of informants, critical to excellence in ICT implementation. Inadequate funding or an unbalanced budget can be a barrier to implementing ICT successfully in e-government projects.

   - A lack of confidence. Without confidence, none of the other challenges can be properly addressed; see Section 7.4.4.

- Finally, managers and project leaders need to take steps to understand the culture of the organisation and its staff when planning ICT projects. Knowing the culture of the organisation can help in planning implementation and in the management of change. Thus, for example, in an organisation with a high Uncertainty Avoidance culture, change should be implemented over a longer time period than in an organisation with a low UA culture.

9.7   Overall Conclusion

Although there are limitations to this study, it makes a significant contribution to ICT implementation in e-government projects. The study has incorporated a combination of national and organisational culture together with workplace factors in describing the successful implementation of ICT in public organisations in Oman. In particular, the study has integrated the Hofstede's national and organisational culture dimensions with workplace factors. The research model developed in this study can be considered as a foundation for future research not only ICT implementation in e-government but also other research which is related to technology studies in both the public and private sectors.

This study has shown that the level of satisfaction in using ICT system is higher in HEAC than in other systems. Moreover, the results of this study reveal the important interactivity of national and organisational culture dimensions with the workplace factor constructs. Interestingly, the finding has suggested that national and organisational culture play an important role in the level of success of ICT implementation in e-government projects in Oman. Specifically, the dimensions of Uncertainty Avoidance, Collectivism and Indulgence in the national culture model have a significant relationship with the successful implementation of ICT. In addition, as described in the organisational culture model, the Need for Security, and Results-Oriented have a significant relationship with successful ICT implementation. Finally, on the workplace factors, all constructs, namely Self-Efficacy, Peer influence, Resistance to change, Legacy system upgrade, Top management support, Project management standards and Communication in the organisation have a significant relationship with successful ICT implementation in public organisations in Oman.

The impact of culture at all levels on ICT implementation is an area of research that is worthy of more attention than it has received to date. This dissertation is a contribution to filling this gap, but there is much scope for further informative and interesting research into this topic which hopefully this work will encourage.

10. References

Abdalla, S., 2012. An E-government Adoption Framework for Developing Countries : A Case Study From Sudan.

Abdulrab, S., 2011. The impact of culture on information technology adoption in Yemeni universities. , p.99.

Abramson, M.A. & Morin, T.L., 2003. *E-governemt: A progress report* M. . Abramson & T. L. Morin, eds., USA: Rowman & Littlefield Publishers Inc., USA.

Adam, F. & Westlund, H., 2013. *Innovation in Socio-Cultural Context*, London: Routlege. Available at: https://books.google.ie/books/about/Innovation_in_Socio_Cultural_Context.html?id= BMB3gEqCyYcC&redir_esc=y.

Agosta, L., 2010. *Empathy in the context of philosophy*, London; UK: Palgrave and MacMillan.

Agourram, H., 2009. Defining information system success in Germany. *International Journal of Information Management*, 29(2), pp.129–137.

Aida, A. & Majdi, M., 2014. National Culture and E-Government Services adoption Tunisian case. *International Journal of Business & Economic Strategy*, 1, pp.1–5.

Ajiferuke, M. & Boddetvyn, J., 1970. Socioeconomic Indicators in Comparative Management. *JSTOR*, 15(1966), pp.453–458.

Akkaya, C., Wolf, P. & Krcmar, H., 2012. Factors Influencing Citizen Adoption of E-Government Services: A Cross-Cultural Comparison (Research in Progress). *2012 45th Hawaii International Conference on System Sciences*, pp.2531–2540. Available at: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=6149321 [Accessed October 29, 2014].

Al.Kharousi, R., 2016. Enhancing Information Services in Omani Academic libraries through Web 2.0 Applications: A Soft System Methodology. *Journal of Chemical Information and Modeling*, 53(9), pp.1689–1699.

Al-Abri, A., 2010. *Attitudes to school physics laboratory in Oman*. Universityy of Glasgow. Available at: http://theses.gla.ac.uk/1980/.

Al-adaileh, R.M., 2009. An Evaluation of Information Systems Success : A User Perspective - the Case of Jordan Telecom Group. , 37(2), pp.226–239.

Aladwani, A.M., 2013. A cross-cultural comparison of Kuwaiti and British citizens ' views of e-government interface quality. *Government Information Quarterly*, 30(1), pp.74–86. Available at: http://dx.doi.org/10.1016/j.giq.2012.08.003.

Aladwani, A.M., 2016. Corruption as a source of e-Government projects failure in developing countries: A theoretical exposition. *International Journal of Information Management*, 36(1), pp.105–112. Available at: http://dx.doi.org/10.1016/j.ijinfomgt.2015.10.005.

Alateyah, S., Crowder, R.M. & Wills, G.B., 2012. Citizen Adoption of E-govemment services. , pp.182–187.

AlAwadhi, S. & Morris, A., 2012. Adoption of E-Government Services in Developing Countries. *Digital Democracy*, pp.121–145. Available at: http://services.igi-global.com/resolvedoi/resolve.aspx?doi=10.4018/978-1-4666-1740-7.ch007.

Alawadhi, S. & Morris, A., 2009. Factors Influencing the Adoption of E-government Services. , 4(6), pp.584–590.

Alawadhi, S. & Morris, A., 2008. The Use of the UTAUT Model in the Adoption of E-government Services in Kuwait. , pp.1–11.

Al-azri, A., Al-salti, Z. & Al-karaghouli, W., 2010. the Successful Implementation of E-Government Transformation: a Case Study in Oman. *European, Mediterranean & Middle Eastern Conference on Information Systems*, 2010, pp.1–11.

Albirini, A., 2006. Teachers' attitudes toward information and communication technologies: the case of Syrian EFL teachers. *Computers and Education*, 47(4), pp.373–398.

Al-busaidi, H.A.S., 2012. *A Model of Intention to Use Mobile Government Services Submitted in fulfilment of the requirements of the degree*.

Aldraehim, M., Edwards, S.L. & Watson, J., 2012. Cultural Impact on e-service Use in Saudi Arabia: Results from Focus Groups. *2012 Ninth International Conference on Information Technology - New Generations*, pp.744–750. Available at: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=6209080 [Accessed June 10, 2014].

Alenezi, H., Tarhini, A., Masa'deh, R., Alalwan, A. & Al-Qirim, N., 2017. Factors Affecting the Adoption of e-Government in Kuwait: A Qualitative Study. Electronic Journal of e-Government, 15(2), pp.84–102.

Al-Gahtani, S.S., 2004. Computer Technology Acceptance Success Factors In Saudi Arabia: An Exploratory Study. *Journal of Global Information Technology Management*, 7(1), pp.5–29.

Al-Gharbi, K. N., Gattoufi, S. M., Al-Badi, A. H. & Al-Hashmi, A.A., 2015. Al-shifa healthcare information system in oman: A debatable implementation success. Electronic Journal of Information Systems in Developing Countries, 66(1).

Al-hadidi, R., 2010. *an exploration study on adoption and diffusion of M-government services in the Sulatante of Oman*.

Al-Hujran, O. Al-Debei, M. Chatfield, A. & Migdadi, M., 2015. The imperative of influencing citizen attitude toward e-government adoption and use. Computers in Human Behavior, 53(August 2016), pp.189–203.

Al-hujran, O., Al-dalahmeh, M. & Aloudat, A., 2011. The Role of National Culture on Citizen Adoption of eGovernment Services : An Empirical Study. , 9(2), pp.93–106.

Al-kaabi, R., 2010. Critical Success Factors of e-Government: A proposal model for e-Government implementation in Kingdom of Bahrain. In E. Ruhode, ed. *Proceedings of the 6th International Conference on e-Government*. Cape Town South Africa: Academic Publishing Limited Reading UK, pp. 12–20.

Al-Khouri, A.M. & Bal, J., 2008. Electronic-Government-in-the-GCC-Countries. *International Journal of Computer, Electrical, Automation, Control and Information Engineering*, 2(5), pp.1614–1629.

Al-mamari, Q.M.A., 2013. *E-Government Adoption and Implementation in Oman : A Government Perspective*.

Almarabeh, T. & AbuAli, A., 2010. A General Framework for E-Government : Definition Maturity Challenges , Opportunities , and Success. , 39(1), pp.29–42.

Al-Naimat, A.M., Abdullah, M.S. & Ahmad, M.K., 2013. the Critical Success Factors for E-Government Implementation in Jordan. *Computing & Informatics, 4th International Conference, 2013*, (January 2013), pp.391–398. Available at: <Go to ISI>://WOS:000333716800058.

Alomari, M.K., Sandhu, K. & Woods, P., 2014. Exploring citizen perceptions of barriers to e-government adoption in a developing country. , 8(1), pp.131–150.

Al-Rahbi, I.A., 2008. an Empirical Study of the Key Knowledge Economy Factors for Sustainable Economic Development in Oman. , (August), p.246.

Al-Rashidi, H., 2010. Examining Internal Challenges to E-Government Implementation from System Users Perspective. *European and Mediterranean Conference on Information Systems 2010*, 2010(August).

Al-Shafi, S. & Weerakkody, V., 2010. Factors affecting e-government adoption in the state of Qatar. *Proceedings of the European and Mediterranean Conference on Information Systems Abu Dhabi UAE 1213 April 2010*, 2010, pp.1–23. Available at: http://bura.brunel.ac.uk/handle/2438/4395.

Alshare, K. a., Freeze, R. D., Lane, P. L., & Wen, H. J. (2011). The Impacts of System and Human Factors on Online Learning Systems Use and Learner Satisfaction. *Decision Sciences Journal of Innovative Education*, *9*(3), 437–461. doi:10.1111/j.1540-4609.2011.00321.x

Alshare, K. A., Mesak, H. I., Grandon, E. E. & Badri, M.A., 2014. Examining the Moderating Role of National Culture on an Extended Technology Acceptance Model. Journal of Global Information Technology Management, 14(3), pp.27–53. Available

at: http://www.tandfonline.com/doi/abs/10.1080/1097198X.2011.10856542 [Accessed October 14, 2014].

Al-Shboul, M., Rababah, O., Al-Shboul, M., Ghnemat, R. & Al-Saqqa, S., 2014. Challenges and Factors Affecting the Implementation of E-Government in Jordan. Journal of Software Engineering and Applications, 07(13), pp.1111–1127. Available at: http://www.scirp.org/journal/doi.aspx?DOI=10.4236/jsea.2014.713098.

Alshehri, M. & Drew, S., 2010. Challenges of e-Government Services Adoption in Saudi Arabia from an e-Ready Citizen Perspective. , pp.1039–1045.

Alshehri, M.A. & Drew, S., 2010. Implementation of e-Government: Advantages and Challenges. *International Conference E-Activity and Leading Technologies 2010*, pp.79–86. Available at: http://www98.griffith.edu.au/dspace/handle/10072/40620%5Cnpapers2://publication/uuid/09E5E6A6-EC7D-4E17-84FB-677189A5AB74.

AlShihi, H., 2006. *Critical Factors in the Adoption and Diffusion of E-government Initiatives in Oman*,

Al-smadi, M.O., 2012. Factors Affecting Adoption of Electronic Banking : An Analysis of the Perspectives of Banks ' Customers. *International Journal of Business and Social science*, 67(4), pp.294–309.

Al-Sobhi, F., Weerakkody, V. & Al-Busaidy, M., 2010. The Roles of Intermediaries in the Diffusion and Adoption of E-Government Services. *AMCIS 2010 Proceedings*, (December), pp.1–11. Available at: papers3://publication/uuid/84C8E63C-86D8-4044-8C3E-C13EB8F7534F.

Al-Sukkar, A.S., 2005. The application of information systems in the Jordanian banking sector : a study of the acceptance of the internet. *PhD thesis, School of Economics and Information Systems, University of W ollongong*, p.419.

Altameem, T.A., 2007. *The Critical Factors of E-Government Adoption An Empirical Study in the Saudi Arabia Public Sectors by Torki Abdulaziz Altameem*.

Anandarajan, M., Igbaria, M. & Anakwe, U.P., 2002. IT acceptance in a lessdeveloped country: A motivational factor perspective. *International Journal of Information Management*, 22(1), pp.47–65.

Andersen, K.N., Henriksen, H. Z., Medaglia, R., Danziger, J. N., Sannarnes, M. K. & Enemærke, M., 2010. Fads and facts of E-government: A review of impacts of E-government (2003-2009). International Journal of Public Administration, 33(11), pp.564–579.

Anderson, G. & Arsenault, N., 1998. *Fundamentals of Educational Research* 2nd ed., London: Taylor & Francis.

Anjum, M., Zia, S.M. & Raza, H., 2014. Cultural Dimensions of Pakistan : A Comparison of Sindh , Punjab , Balochistan and Khyber Paktunkhwa Provinces. *International

Journal of Management Sciences, 4(6), pp.261–276. Available at: http://www.rassweb.com.

Anthopoulos, L., Reddick, C. G., Giannakidou, I. & Mavridis, N., 2016. Why e-government projects fail? An analysis of the Healthcare.gov website. Government Information Quarterly, 33(1), pp.161–173. Available at: http://dx.doi.org/10.1016/j.giq.2015.07.003.

Antwi, S. & Hamza, K., 2016. Qualitative and Quantitative Research Paradigms in Business Research : A Philosophical Reflection Qualitative and Quantitative Research Paradigms in Business. *European Journal of Buisness and Management*, 7(3), pp.217–225.

Arokiasamy, A.R. a, bin Abdullah, A.G.K. & Ismail, A.B., 2015. Correlation between cultural perceptions, leadership style and ICT usage by school principals in Malaysia. *Turkish Online Journal of Educational Technology*, 13(3), pp.27–40. Available at: http://dx.doi.org/10.1016/j.sbspro.2015.01.478.

Arslan, A., 2009. Cross-Cultural Analysis of Europen E-government Adoption.

Ashkanasy, N.M., Bennett, R.J. & Martinko, M.J., 2016. *Understanding the High Performance Workplace: The Line Between Motivation and Abuse*, New York and London: Library of Congress Cataloging-in-Publication Data.

AL Athmay, Al.A. a, Fantazy, K. & Kumar, V., 2016. E-government adoption and user's satisfaction: an empirical investigation. *EuroMed Journal of Business Journal of Business*, 11(1), pp.57–83.

Al Obthani, H. S., Omar, R., & Bakri, N. (2013). a Preliminary Review of the Civil Service Sector in Sultanate of Oman, *2*(7), 55–63.

Aueaungkul, A., 2013. *An investigation of Critical Success Factors and Thai cultural impact*.

Avruch, K., 1998. *culture and conflict resolution*, United States Institue of Peace Press.

Azam, S. & Quaddus, M., 2013. Examining the Influence of National Culture on Adoption and Use of Information and Communication Technology : A Study from Bangladesh ' s SME Perspective. , 3(2), pp.116–126.

Bagchi, K., Hart, P. & Peterson, M.F., 2014. National Culture and Information Technology Product Adoption. *Journal of Global Information Management*, 7.

Bai, H. & Cheng, J., 2010. The Impact of Organizational Culture on ERP Assimilation: The Mediating Role of User Participation. *2010 2nd International Workshop on Database Technology and Applications*, pp.1–5.

Bailey, J. E., & Pearson, S. . W. (1983). Development of a tool for measuring and analyzing computer user satisfaction. *Management Science*, *29*(5), 530–545.

Baligh, H.H., 1994. Components of Culture : Nature , Interconnections , and Relevance to the Decisions on the Organization Structure. , (January).

Bankole, F.O. & Bankole, O.O., 2017. The effects of cultural dimension on ICT innovation: Empirical analysis of mobile phone services. *Telematics and Informatics*, 34(2), pp.490–505. Available at: http://dx.doi.org/10.1016/j.tele.2016.08.004.

Bannister, F. & Connolly, R., 2012. Forward to the past : Lessons for the future of e-government from the story so far. *Information Polity*, 17, pp.211–226.

Bannister, F. & Grönlund, Å., 2017. Information Technology and Government Research: A Brief History. *Proceedings of the 50th Hawaii International Conference on System Science (HICSS-50)*, pp.2943–2952.

Baskerville, R.F., 2003. Hofstede never studied culture. *Accounting, Organizations and Society*, 28(1), pp.1–14. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0361368201000484.

Bate, P., 1994. *Strategies for cultural change*, Linacre House, Jordon Hill, Oxford OX2 8DP.

Batteau, A.W. & Trainor, B.J., 2014. The Ethical Epistemes of Anthropology and Economics. *Journal of Business Anthropology*, (1), pp.96–115.

Bekkers, V.J.. & Homburg, V.M, F., 2005. *The Information Ecology of e-government* V. J. . Bekkers & F. Homburg, V.M, eds., Amsterdam: IOS Press.

Benbasat, I., Goldstein, D.K. & Mead, M., 1987. The Case Research Strategy in Studies of Information Systems Case Research : Definition. , (September).

Berenice, M., 2010. *A Mexico-Taiwan Comparative Study of The Impact of National Culture on Organizational Culture*. Master thesis, Ming Chuan University.

Beshay, M. & Sixsmith, A., 2008. Dimensions of Culture : A Project Perspective. *Communications of the IBIMA*, 5, pp.82–88.

Beynon-Davies, P., 2005. Constructing electronic government: The case of the UK inland revenue. *International Journal of Information Management*, 25(1), pp.3–20.

Beynon-Davies, P., 1995. Information systems "Failure": the case of the London Ambulance Service's Computer Aided Dispatch Project. *European Journal of Information Systems*, 4, pp.171–184.

Bhattacherjee, A., 2012. *Social Science Research: Principles, Methods, and Practices*,

Bisbal, J., Lawless, D., Wu, B. & Grimson, J., 1999. Legacy information system migration: A brief review of problems, solutions and research issues. Computer Sciencs Department, Trinity College, Dublin, Ireland, pp.1–18. Available at: http://www.cs.tcd.ie/publications/tech-reports/reports.99/TCD-CS-1999-38.pdf.

Bocij, P., Greasley, A. & Hickie, S., 2008. *Business Information Syystems* 4th ed., London: British Library Cataloguing in Publication Data.

Bonham, G., Seifert, J. & Thorson, S., 2001. The Transformational Potential of e-Government: The Role Of Political Leadership. In *The 4th Pan European International Relations Conference of the European Consortium for Political Research*. University of Kent, Canterbury, U.K.

Bonsón, E., Torres, L., Royo, S. & Flores, F., 2012. Local e-government 2.0: Social media and corporate transparency in municipalities. Government Information Quarterly, 29(2), pp.123–132. Available at: http://dx.doi.org/10.1016/j.giq.2011.10.001.

Boynton, A.C. & Zmud, R.W., 1987. Information Technology Planning in the 1990 ' s : Directions for Practice and Research. *Mis Quarterly*, 11(1), pp.59–71.

Bradley, R., Pridmore, J. & Byrd, T., 2006. Information Systems Success in the Context of Different Corporate Cultural Types: An Empirical Investigation. *Journal of Management Information Systems*, 23(2), pp.267–294. Available at: http://www.tandfonline.com/doi/full/10.2753/MIS0742-1222230211 [Accessed April 19, 2015].

Brake, D., 2004. *Dealing with e-mail*, London: Dorling Kindersley,.

Braun, V. & Clarke, V., 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), pp.77–101. Available at: http://eprints.uwe.ac.uk/11735.

Brdesee, H., Corbitt, B., Pittayachawan, S. & Alsaggaf, W., 2012. Organisational Culture and Adoption of Electronic Commerce A Study of the Saudi Arabian Tourism Market. , (Iccse), pp.857–862.

Bresnahan, B.T. & Yin, P.L., 2017. Adoption of New Information and Communications Technologies in the Workplace Today. *The National Bureau of Economic Resear*.

Brodie, M. & Stonebraker, M., 1995. *Migrating Legacy Systems: gateways, Interfaces and the Incremental Approach*, Morgan Kauffman Publishers.

Brown, D.H. & Thompson, S., 2011. Priorities, policies and practice of e-government in a developing country context: ICT infrastructure and diffusion in Jamaica. *European Journal of Information Systems*, 20(3), pp.329–342. Available at: http://dx.doi.org/10.1057/ejis.2011.3.

Brown, M.M. & Brudney, J.L., 2004. ADVANCED ELECTRONIC ACHIEVING SERVICES Opposing Environmental. *JSTOR*, 28(1), pp.96–113.

Bruque, S., Moyano, J. & Eisenberg, J., 2008. Individual Adaptation to IT-Induced Change: The Role of Social Networks. *Journal of Management Information Systems*, 25(3), pp.177–206. Available at: http://www.tandfonline.com/doi/full/10.2753/MIS0742-1222250305 [Accessed March 24, 2015].

Bryman, A., 2007. Barriers to Integrating Quantitative and Qualitative Research. *Journal of Mixed Methods Research*, 1(1), pp.8–22. Available at: http://journals.sagepub.com/doi/10.1177/2345678906290531.

Bryman, A. & Bell, E., 2011. *Business research methods*, Cambridge: Oxford University Press.

Bullen, C. V. & Rockart, J.F., 1981. A primer on critical success factors. *Working papers*, (69), pp.1–64. Available at: http://ideas.repec.org/p/mit/sloanp/1988.html.

Burchell, S. Clubb, C., Hopwood, A. & Hughes, J., 1980. The roles of accounting in organizations and society ☆. *Academic Journa*, 5(1), pp.5–27.

Cabinakova, J. Kroenung, J., Eckhardt, A. & Bernius, S., 2013. The importance of culture, trust, and habitual patterns - determinants of cross-cultural egovernment adoption. In *In Proceedings of the 21st European Conference on Information System., 2013.*

Cabrera, a, Cabrera, E.F. & Barajas, S., 2001. The key role of organizational culture in a multi-system view of technology driven change. *International Journal of Information Management*, 21(3), pp.245–261.

Calder, A. & Moir, S., 2009. *IT governance, implementing frameworks and standardsfor the corporate governance of IT.*, United Kingdom: IT Governance publishing.

Capece, G., Calabrese, A., Pillo, F. D., Costa, R.& Crisciotti, V., 2013. The Impact of National Culture on E-commerce Acceptance : the Italian Case. , 20(2), pp.102–112.

Carson, K.D., Baker, D.S. & Lanier, P. a., 2014. The role of individual cultural traits and proactivity in an organizational setting. *Management Research Review*, 37(4), pp.348–366. Available at: http://www.emeraldinsight.com/10.1108/MRR-12-2012-0269 [Accessed June 9, 2014].

Carter, L. & Weerakkody, V., 2008. E-government adoption: A cultural comparison. *Information Systems Frontiers*, 10(4), pp.473–482. Available at: http://link.springer.com/10.1007/s10796-008-9103-6 [Accessed August 23, 2013].

Cavana, R., Delahaye, B. & Sekaran, U., 2001. *Applied business research: Qualitative and quantitative methods*, Australia, Queensland: Wiley and Sons.

Chang, 2002. Cross-culture Differences in International Management Using Kluckhohn-Strodtbeck Framework. *Journal of American Academy of Business*, 2(1), pp.20–28.

Chang, S.C. & Tung, F.C., 2008. An empirical investigation of students' behavioural intentions to use the online learning course websites. *British Journal of Educational Technology*, 39(1), pp.71–83.

Chattopadhyay, P., 1999. Beyond Direct and Symmetrical Effects : The Influence of Demographic Dissimilarity on Organizational Citizenship Behavior Author (s): Prithviraj Chattopadhyay Source : The Academy of Management Journal , Vol . 42 ,

No . 3 (Jun ., 1999), pp . 273-287 P. *The Academy of Management Journal*, 42(3), pp.273–287.

Chau, P.Y.K. & Hu, P.J., 2001. Information Technology Acceptance by Individual Professionals: A Model Comparison Approach. *Journal of Decision Sciences*, 32(4), pp.699–719.

Chavan, G.R. & Rathod, M.L., 2009. E-governance and its Implementation. *SRELS Journal of Information Management*, 4(1).

Ciganek, A., 2010. Organisational Culture for Knowledge Management Systems: A study of Corporate Users. *Information Science Reference, Hershey, PA.*

Ciganek, A., Moa, E. & Srite, M., 2010. Organizational culture for knowledge management systems: a study of corporate users. *International Journal of Knowledge Management*, 4(1), pp.1–16.

Clark, T., 1990. International Marketing and National Character : A Review and Proposal for an Integrative Theory. *American Marketing Association*, 54(4), pp.66–79.

Collis, B. & Moonen, J., 2008. Web2.0 tools and processes in higher education: quality perspectives. *Educational Media International*, 45(2), pp.93–106.

Colomo-Palacios, R. Casado-Lumbreras, C., Soto-Acosta, P., García-Peñalvo, F. J. & Tovar, E., 2014. Project managers in global software development teams: A study of the effects on productivity and performance. Software Quality Journal, 22(1), pp.3–19.

Compeau, D. & Higgins, C., 1995. Application of Social Cognitive Theory to Training for Computer Skills. *Information Systems Research*, 6(2), pp.118–143.

Corrales, J. & Westhoff, F., 2006. Information Technology Adoption and Political Regimes. *International Studies Quarterly*, 50, pp.911–933.

Cowan, D., 2017. *Strategic Internal Communication: How to Build Employee Engagement and Performance* 2nd Editio., New York: British Library Cataloguing-in-Publication Data

Creswell, J.W., 2003. Research design. *SAGE Journals*.

Creswell, J.W., 2009. *Research design: Qualitative, quantitative, and mixed methods approaches,* USA: SAGE Publications Ltd.

Creswell, J.W., 2014. *Research Design: Qualitative, Quantitative, and Mixed Methods ApproachesNo Title* 4th ed., SAG|E.

Creswell, J.W. & Miller, D.L., 2000. Determining Validity in Qualitative Inquiry. *Theory Into Practice,*, 39(3), pp.124–130.

Creswell, J.W. & Plano Clark, V., 2007. *Designing and Conducting Mixed Methods Research*, London: Sage.

Cutting, D., 2016. Enhancing Legacy Software System Analysis by Combining Behavioural and Semantic Information Sources. , (November).

Cyr, D., 2013. Website design, trust and culture: An eight country investigation. *Electronic Commerce Research and Applications*, 12(6), pp.373–385. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1567422313000215 [Accessed June 2, 2014].

Czaja, S.J. Charness, N., Fisk, A. D., Hertzog, C., Nair, S. N., Rogers, W. A. & Sharit, J., 2006. Factors predicting the use of technology: Findings from the Center for Research and Education on Aging and Technology Enhancement (CREATE). Psychology and Aging, 21(2), pp.333–352.

Daft, R.L., 2010. *Organization theory and design*,

Danziger, J.N. & Andersen, K. V., 2002. The Impacts of Information Technology on Public Administration: An Analysis of Empirical Research from the "Golden Age" of Transformation. *International Journal of Public Administration*, 25(5), pp.591–627.

Darling, J.R. & Fogliasso, C.E., 1999. Conflict management across cultural boundaries: a case analysis from a multinational bank. *ProQuest information and learning Company*, 99(6), pp.383–392.

Dasgupta, S. & Gupta, B., 2010. Organizational Culture and Technology Use in a Developing Country : An Empirical Study by. , (2003).

Dauber, D., Fink, G. & Yolles, M., 2012. A Configuration Model of Organizational Culture. *SAGE Open*, 2(1). Available at: http://sgo.sagepub.com/lookup/doi/10.1177/2158244012441482 [Accessed October 31, 2014].

Davison, R. & Martinsons, M., 2003. Guest Editorial Cultural Issues and IT Management : Past and Present. *IEEE Journal*, 50(1), pp.3–7.

Delerue, H. & Hélène, S., 2017. Effective communication within project teams: the role of social media. *International Journal of Conceptions on Management and Social Sciences*, 5(March), pp.1–6.

Deloitte Research, 2000. *At the Dawn of e-Government: the citizen as customer*, New York: Deloitte Consulting: Libraries Australia.

Delone, W.H. & Mclean, E.R., 1992. Information Systems Success: The Quest for the Dependent Variable. , (4).

Delone, W.H. & Mclean, E.R., 2003. The DeLone and McLean Model of Information Systems Success : A Ten-Year Update. *Journal of Management Information Systems*, 19(4), pp.9–30.

Denison, D., Nieminen, L. & Kotrba, L., 2014. Diagnosing organizational cultures: A conceptual and empirical review of culture effectiveness surveys. *European Journal of Work and Organizational Psychology*, 23(1), pp.145–161.

Denison, D.R. & Mishra, A.K., 1995. Toward a Theory of Organizational Culture and Effectiveness. Organisational Science, 6(2), pp.204–223.

Denscombe, M., 2002. *Ground rules for good research: a 10 point guide for social research*, USA.

Dent, E.B. & Goldberg, S.G., 1999. Challenging " resistance to change ." *The Journal of applied behavioral science*, 35(1), p.25.

DeSantis, L. & Ugarriza, D.N., 2000. The concept of theme as used in qualitative nursing research. *Western Journal of Nursing Research*, 22(3), pp.351–372.

Dickinson, R.A., Ferguson, C.R. & Sircar, S., 1984. Critical success factors and small business. *American Journal o f Small Business*, 8(3), pp.49–57.

Didero, M. Gareis, K., Ratzke, M., Regional, E. & Mary, Q., 2008. Differences in Innovation Culture Across Europe, Information Society Technologies, pp.1-36

Diegmann, P., Basten, D. & Pankratz, O., 2017. Influence of Communication on Client Satisfaction in Information System Projects: A Quantitative Field Study. *Project Management Journal*, 48(1), pp.81–99.

Dillman, D.A., 2007. *Dillman, D.A. (2007) Mail and Internet Surveys: The Tailored Design Method* 2nd edn., Wiley: Hoboken, NJ.

Dimitrova, D. V. & Chen, Y.-C., 2006. Profiling the Adopters of E-Government Information and Services. *Social Science Computer Review*, 24(2), pp.172–188. Available at: http://journals.sagepub.com/doi/10.1177/0894439305281517.

Doll, W. J., & Torkzadeh., G. (1988). The measurement of end-user computing satisfaction. *MIS Quart*, *12*, 259–273.

Dörnyei, Z., 2003. *Questionnaires in Second Language Research: Construction, administration, and processing*, Mahwah, N.J. ; London: Lawrence Erlbaum Associates.

Downing, C.E., Gallaugher, J.M. & Segars, A.H., 2003. Information Technology Choices in Dissimilar Cultures: Enhancing Empowerment,. *Journal of Global Information Management*, 11(1), pp.20–39.

Dudovskiy, J., 2018. The Ultimate Guide to Writing a Dissertation in Business Studies: A Step-by-Step Assistance. January 2018 edition - Research Methodology. Available at: https://research-methodology.net/downloads/e-book/.

Dwivedi, Y.K., Wastell, D., Laumer, S., Henriksen, H.Z., Myera, M.D., Bunker, D., Eibanna, A., Raavishankar, M.N. & Srivastava, S.C., 2015. Institutional Repository

Research on information systems failures and successes : status update and future directions Research on Information Systems Failures and Successes : Status Update and Future Directions. Information Systems Frontiers, 17(1), pp.143–157.

Dwivedi, Y.K., Wastell, D., Laumer, S., Henriksen, H. Z., Myers, M. D., Bunker, D., Elbanna, A., Ravishankar, M. N. & Srivastava, S. C., 2015. Research on information systems failures and successes: Status update and future directions. *Information Systems Frontiers*, 17(1), pp.143–157.

Dwivedi, Y.K. Kapoor, K. K., Williams, M. D. & Williams, J., 2013. RFID systems in libraries: An empirical examination of factors affecting system use and user satisfaction. *International Journal of Information Management*, 33(2), pp.367–377. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0268401212001302 [Accessed December 22, 2014].

Dwivedi, Y.K., Wade, M.R. & Schneberger, S.L., 2012. *Information Systems Theory*, New York: Library of Congress. Available at: http://link.springer.com/10.1007/978-1-4419-9707-4.

Eberlein, M., 2008. Culture As A Critical Success Factor for successful Global Project Management in Multi-National IT Service Projects Theoretical Background: Globalization In Project Definition of Terms. *Journal of Information Technology Management*, XIX(3), pp.27–42.

Ebrahim, Z. & Irani, Z., 2005. E-government adoption: architecture and barriers. *Business Process Management Journal*, 11(5), pp.589–611.

Eckhardt, G.M. & Houston, M.J., 2002. Cultural Paradoxes Reflected in Brand Meaning: McDonald's in Shanghai, China. *Journal of International Marketing*, 10(2), pp.68–82. Available at: http://journals.ama.org/doi/abs/10.1509/jimk.10.2.68.19532.

Eisenhardt, K.M., 2016. Building Theories from Case Study Research Published by : Academy of Management Stable URL : http://www.jstor.org/stable/258557 Linked references are available on JSTOR for this article : Building Theories from Case Study Research. , 14(4), pp.532–550.

Elbanna, A., 2012. Top management support in multiple-project environments: an in-practice view. *European Journal of Information Systems*, 22(3), pp.278–294. Available at: http://dx.doi.org/10.1057/ejis.2012.16.

Erumban, A.A. & de Jong, S.B., 2006. Cross-country differences in ICT adoption: A consequence of Culture? *Journal of World Business*, 41(4), pp.302–314. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1090951606000460.

Etezadi-amoli, J. & Farhoomand, A.F., 1996. A structural model of end user computing satisfaction and user performance. *Information & Management*, 30, pp.65–73.

Eunson, B., 2012. Communicating in the 21st century. *John Wiley and Sons Australia, Milton, Qld.*

Eveleens, J.. & Verhoef, C., 2010. The rise and fall of the Chaos report figures. *IEEE Software*, 27(1), pp.69–84. Available at: http://www.few.vu.nl/~x/chaos/chaos.pdf.

Feldman, M.S.. & March, J.G., 1981. Information in organizations as signal and symhol. *Administrative Science Quarterly*, 25, pp.171–186.

Fellows, R. & Liu, A.M.M., 2013. Use and misuse of the concept of culture. *Talor & Francis*, 31(5), pp.401–422.

Fink, A., 2003. *How to Ask Survey Questions.* 2nd edn. C. S. Thousand Oaks, ed.,

Fischer, M.D., 2008. Structure and Dynamics : eJournal of Anthropological and Related Sciences. *Structure and Dynamics: eJournal of Anthropological and Related Sciences*.

Fiske, A.P., 2002. Using individualism and collectivism to compare cultures--A critique of the validity and measurement of the constructs: Comment on Oyserman et al. (2002). *Psychological Bulletin*, 128(1), pp.78–88. Available at: http://doi.apa.org/getdoi.cfm?doi=10.1037/0033-2909.128.1.78 [Accessed October 8, 2014].

Floridi, L., 2003. *Blackwell Guide to the Philosophy of Computing and Information*, Oxford: Blackwell.

Foa, U.G. & Chemers, M.M., 1967. Role Behavior Differentiation for Cross-cultural Training. *International Journal of Psychology*, 2, pp.45–57.

Ford, D.P., Connelly, C.E. & Meister, D.B., 2003. Information Systems Research and Hofstede ' s Culture ' s Consequences : An Uneasy and Incomplete Partnership. , 50(1), pp.8–25.

Ford, J.D. & Ford, L.W., 2009. Decoding Resistance to Change: EBSCOhost. *Harvard Business Review*, (April), pp.99–103.

Frankfort-Nachmias, C. & Nachmias, D., 2000. *Research Methods in the Social Sciences* 6th ed., New York: Worth Publishers.

Fuming, W., Wei, W. & Linfeng, Y., 2011. The impact of IT usage on organizational culture. *2011 International Conference on E-Business and E-Government (ICEE)*, pp.1–4.

Furnweger, A., Auer, M. & Biff, S., 2016. Software Evolution of Legacy Systems A Case Study of Soft-migration. In *In Proceedings of the 18th International Conference on Enterprise Information Systems (ICEIS 2016)*. pp. 413–424.

Gall, M.D., Borg, W.R. & Gall, J.P., 1996. *Educational research: An introduction* (6th ed., ed.). White Plains, NY: Longman.: White Plains, NY: Longman.

Garcia-Sanchez, I.M., Rodriguez-Dominguez, L. & Frias-Aceituno, J.V., 2013. Evolutions in E-governance: Evidence from Spanish local governments. *Environmental Policy and Governance*, 23(5), pp.323–340.

Garfield, M.J. & Watson, R.T., 1997. Differences in national information infrastructures: the reflection of national cultures. *Journal of Strategic Information Systems*, 6(4), pp.313–337.

Gartner, 2016. the Impact of Cloud and Emergence of Postmodern ERP Will Relegate Highly Customized ERP Systems to "Legacy" Status",. *Gartner, Newsroom Press Release*. Available at: http://www.gartner.com/newsroom/id/2658415 [Accessed June 4, 2017].

Gartner, A., 2007. *Majority of e-Government Initiatives Fail or Fall Short of Expectations*, San Diego, CA.

Geiger, D., Fielt, E., Rosemann, M. & Schader, M., 2012, Crowdsourcing Information Systems –Definition, Typology, and Design. Proceedings of the 33rd International Conference on Information Systems. 2012. Association for Information Systems/AIS Electronic Library (AISeL)., pp.1–11.

Ghosh, B.S., Forrest, D., Dinetta, T., Wolfe, B. & Lambert, D., 2012. Enhance PMBOK ® by Comparing it with P2M , ICB , PRINCE2 , APM and Scrum Project Management Standards. *PM World Today*, XIV(I), pp.1–77. Available at: http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=74028654&site=bsi-live.

Gnanlet, A. & Yayla-Kullu, H.M., 2013. *Impact of national culture on the quality of information delivery in services*,

Gole, T. & Shinsky, G., 2013. Learning from failed ICT projects. *LEXOLOGY*, p.1. Available at: http://www.lexology.com/library/detail.aspx?g=cca9ae3a-2fa7-4550-9445-39bc32a4c3ff [Accessed December 14, 2015].

Graham, S. & Aurigi, A., 1997. Virtual cities, social polarization, and the crisis in urban public space. *Journal of Urban Technology*, 4(1), pp.19–52.

Grant, G. & Chau, D., 2005. Developing a Generic Framework for E-Government. *Journal of Global Information Management*, 13(1), pp.1–30. Available at: http://services.igi-global.com/resolvedoi/resolve.aspx?doi=10.4018/jgim.2005010101.

Groeschl, S. & Doherty, L., 2000. Conceptualising Culture. *Emerald*, 7(4), pp.12–17.

Group, W.B., 2017. World Bank Group. , p.1. Available at: http://www.worldbank.org/en/topic/ict/brief/e-gov-resources#egov.

Guest, G., MacQueen, K.M. & Namey, E.E., 2011. *Applied Thematic Analysis*, Los Angeles, London, New Delhi: SAGE Publications.

Hair, J., Black, W.B. & Anderson, R., 2010. Multivariate data analysis: A global Perspective. *Journal of Research Methodology*, 22(2), pp.265–268.

Hall, E.T., 1976. *Beyond culture*, NY: Garden City,: Anchor Press∕Double Day.

Hartnell, C.A., Ou, A.Y. & Kinicki, A., 2011. Organizational Culture and Organizational Effectiveness : A Meta-Analytic Investigation of the Competing Values Framework ' s Theoretical Suppositions. , 96(4), pp.677–694.

Hatch, M.J., 2018. *Organization Theory: Modern, Symbolic, and Postmodern Perspectives*, Oxford: Oxford Publishing Services.

Hatch, M.J., 1993. The Dynamics of Organizational,. *JSTOR*, 18(4), pp.657–693.

Hayton, J.C., 2003. Strategic human capital management in SMEs: An empirical study of entrepreneurial performance. *Human Resource Management*, 42(4), pp.375–391.

Heek, R., 2002. E-government in Africa: Promise and practice. *Information Polity*, 7(2), pp.97–114.

Heeks, R. & Bailur, S., 2007. Analyzing e-government research: Perspectives, philosophies, theories, methods, and practice. *Government Information Quarterly*, 24(2), pp.243–265. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0740624X06000943 [Accessed September 20, 2013].

Hernández-Encuentra, E., Pousada, M. & Gómez-Zúniga, B., 2009. ICT and older people: Beyond usability. *Educational Gerontology*, 35(3), pp.226–245.

Hillier, M., 2003. *The role of cultural context in multilingual website usability School of Accounting and Information Systems.*, 47-55 North Terrace, Adelaide 5000, South Australia , Australia, Elsevier Science. Available at: http://www.researchgate.net/publication/222847093_The_role_of_cultural_context_in _multilingual_website_usability.

Ho, A.T.K. & Ni, A.Y., 2004. Explaining the adoption of e-government features: A case study of Iowa county treasurers' offices. *American Review of Public Administration*, 34(2), pp.164–180.

Hoffman, N. & Klepper, R., 2000. Assimilating new technologies: The role of organisaqtional culture. *Information Systems Management,*, 17(3), pp.36–43.

Hofstede, 1991. Cultural Consequences: Software of the Mind. In London: McGraw-Hill.

Hofstede, 2001. Culture's Consequences: Comparing Values, Behaviors, Institutions and Organisations Across Nations. *AUSTRALIAN JOURNAL OF MANAGEMENT*, 27(1), pp.89–95.

Hofstede, G., 1984. Culture's Consequences: International Differences in Work-Related Values. *SAGE Publications. Newbury Park, California.*

Hofstede, G. Neuijen, B., Ohayv, D.D. & Sanders, G., 1990. Measuring Organizational Cultures : A Quali- tative and Quantitative Study across Twenty Cases Geert Hofstede Brain Neuijen Denise Daval Ohayv Geert Sanders. *Administrative Science Quarterly,,* 35(2), pp.286–316.

Hofstede, G., 1998. Organizing for cultural diversity. *European Management Journal*, 7(4), pp.390–396.

Hofstede, G., 2003. What is culture? A reply to Baskerville. *Accounting, Organizations and Society*, 28(7-8), pp.811–813.

Hofstede, G., Hills, B. & Sage, C., 1980. Culture ' s Consequences : International Differences in Work-Related Values . By The International Trade Union Movement . By John P . Windmuller . Deventer , The Netherlands : Kluwer Publishers , 1980 . 174. In pp. 129–131.

Hofstede, G., Hofstede, G.J. & Minkov, M., 2010. *Cultures and Organizations Software of the Mind* 3rd ed., New York: The Mc Grow Hill. Available at: http://www.geerthofstede.nl/.

Hofstede, G. & Regout, I., 1996. Riding the waves of commerce: A test of Trompenaars' "model" of national culture differences. *International Journal of Intercultural Relations*, 20(2), pp.189–198.

Hofstede, G.J., 2015. Culture's causes: the next challenge. *Cross Cultural Management: An International Journal*, 22(4), pp.545–569. Available at: http://www.emeraldinsight.com/doi/10.1108/CCM-03-2015-0040.

Holland, C.P. & Light, B., 1999. A Critical Success Factors Model For Enterprise Resource Planning Implementation Critical Success Factors For ERP Implementation. *IEEE Software*, 16(3), pp.30–36.

Holzinger, A., 2005. Usability Engineering Developers, Methods for Software. Communications of the ACM, 48(1), pp.71–774.

Hou, C.K., 2012. Examining the effect of user satisfaction on system usage and individual performance with business intelligence systems: An empirical study of Taiwan's electronics industry. *International Journal of Information Management*, 32(6), pp.560–573.

House, R., Javidan, M., Hanges, P. & Dorfman, P., 2002. Understanding cultures and implicit leadership theories across the globe: an introduction to project GLOBE. Journal of World Business, 37(1), pp.3–10. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1090951601000694.

Hua, Y.Y., Liu, A.M.M. & Chan, I.Y.., 2014. Culture Dynamics of Information and Communication Technology (ICT) Adoption in Construction Companies. *Engineerin Project Organisation Conference*, pp.1–18.

Huang, L., 2003. The Imapact of Cultural Values on Email, Acceptance: Evidence from the PRC.

Huang, W., Siau, K. & Wei, K.K., 2005. *Electronic Government Strategies and Implementations*, London: Idea Group Publishing.

Huijgens, H., van Deursen, A. & van Solingen, R., 2016. Success factors in managing legacy system evolution. *Proceedings of the International Workshop on Software and Systems Process - ICSSP '16*, pp.96–105.

Hung, S. & Chen, C., 2014. Critical Success Factors for the Implementation of Integrated Healthcare Information Systems Projects : An Organizational Fit Perspective Critical Success Factors for the Implementation of Integrated Healthcare Information Systems Projects : An Organizati. *CAIS*, 34(39), pp.775–796.

Igbaria, M., 1997. The consequences of information technology acceptance on subsequent individual performance. *Industrial Relations Journal*, 32, pp.113–121.

Information, N.C. for S. and, 2015. Oman map.

Information Technology Authority, 2007. *Oman Digital Society Report*, Available at: <https://www.itu.int/wsis/stocktaking/docs/activities/1174296945/Oman_Digital_Society_Report.pdf>.

Inglehart, R. (1997). Modernization, postmodernization and changing perceptions of risk. *International Review of Sociology*, *7*(3), 449–459. doi:10.1080/03906701.1997.9971250

Inglehart, R., & Baker, W. E. (2000). Modernization , Cultural Change , and the Persistence of Traditional Values Author (s): Ronald Inglehart and Wayne E . Baker Source : American Sociological Review , Vol . 65 , No . 1 , Looking Forward , Looking Back : Continuity and Change at the Turn o. *American Sociological R*, *65*(1), 19–51.

Inglehart, R. F. (2016). Modernization, Existential Security and Cutural Change: Reshaping Human Motivations and Society. *Advances in Culture and Psychology*, 1–80.

International Organization for Standardization, 2004. Iso / Tmb Policy and Principles Statement Global Relevance of Iso Technical Work and Publications. *ISO*, pp.1–3. Available at: http://www.iso.org/iso/global_relevance.pdf.

Isaac, O., Abdullah, Z., Ramayah, T., & Mutahar, A. M. (2017). Internet Usage and Net Benefit among Employees Within Government Institutions in Yemen: An Extension of Delone and Mclean Information Systems Success Model (DMISM) with Task-Technology Fit. *International Journal of Soft Computing*, *12*(3), 178–198. doi:10.3923/ijscomp.2017.178.198

Ismyrlis, V. & Moschidis, O., 2015. The effects of ISO 9001 certification on the performance of Greek companies. *The TQM Journal*, 27(1), pp.150–162. Available at: http://www.emeraldinsight.com/doi/10.1108/TQM-07-2013-0091.

ITA, 2015. Information Technology Authority. *ITA*. Available at: http://www.ita.gov.om/ITAPortal/ITA/ [Accessed April 22, 2016].

ITA, 2018. Information Technology Authority. *ITA*.

ITU, 2014. ICT Facts and figures. *Committed to connecting the world*, (in 2008), pp.1–8. Available at: http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2013.aspx [Accessed July 17, 2014].

ITU, I.T.U., 2011. National e-Strategies for Development. *Committed to connecting the world*. Available at: http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2013.aspx [Accessed May 23, 2014].

ITU, I.T.U., 2010. World Telecommunication / ICT Development Report 2010. *Committed to connecting the world*. Available at: http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2013.aspx [Accessed April 14, 2015].

Jackson, S., 2011. Organizational culture and information systems adoption: A three-perspective approach. *Information and Organization*, 21(2), pp.57–83. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1471772711000133 [Accessed September 14, 2014].

Jaeger, P.T., 2003. The endless wire: e-government as global phenomenon. *Government Information Quarterly*, 20(4), pp.323–331. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0740624X03000807 [Accessed October 6, 2013].

Jarrahi, M.H. & Sawyer, S., 2013. Social Technologies, Informal Knowledge Practices, and the Enterprise. *Journal of Organizational Computing and Electronic Commerce*, 23(1-2), pp.110–137.

Jha, S., Jha, M., O'Brien, L. & Wells, M., 2014. Integrating legacy system into big data solutions: Time to make the change. *Asia-Pacific World Congress on Computer Science and Engineering, APWC on CSE 2014*, (March).

Johnson, B. & Christensen, L.B., 2000. *Educational Research: Quantitative, Qualitative, and Mixed Approaches*, Thousand Oaks: Sage Publications.

Johnson, G., 1992. Managing strategic change--strategy, culture and action. *Long range planning*, 25(1), pp.28–36. Available at: http://www.ncbi.nlm.nih.gov/pubmed/10118379.

Johnson, R.B. & Onwuegbuzie, A., 2004. Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*, 33(14), pp.14–26.

Johnson, R.B. & Onwuegbuzie, A.J., 2009. Mixed Methods Research : A Research Paradigm Whose Time Has Come. , 33(7), pp.14–26.

JR, U. G. Dull, R. Wheeler, P. R. Hill, M. C., 2018. Accounting Information Systems, Boston: Cengage Learning.

Kaba, B. & Osei-Bryson, K.-M., 2013. Examining influence of national culture on individuals' attitude and use of information and communication technology: Assessment of moderating effect of culture through cross countries study. *International Journal of Information Management*, 33(3), pp.441–452.

Kalmo, L., Huang, W. W., Wang, K.L& Le, T., 2006. Successfully implementing e-government: fundamental issues and a case study in the USA. Electronic Government, an International Journal, 3(2).

Kaplan, R.S. & Norton, D.P., 2001. Transforming the balanced scorecard from performance measurement to strategic management: part 1. *Accounting Horizons*, Vol. 15(1), pp.87–104.

Karahanna, E., 1993. *Evaluative criteria and user acceptance of end-user information technology: A study of end user cognitive and affective processes. Unpublished*. Ph.D. dissertation, University of Minnesota, Minneapolis.

Karahanna, E., Evaristo, J.R. & Srite, M., 2005. Levels of Culture and Individual Behavior : An Integrative Perspective. *Journal of Global Information Management*, 2(13), pp.1–20.

Keil, M., Tan, B. C. Y., Wei, K.-K., Saarinen, T., Tuunainen, V. & Wassenaar, A., 2000. A Cross-Cultural Study on Escalation of Commitment Behavior in Software Projects. MIS Quarterly, 24(2), p.299. Available at: http://www.jstor.org/stable/3250940?origin=crossref.

Kerne, A., 1998. Cultural representation in Interface Ecosystems : Amendments to the ACM/interactions Design Awards Criteria. *ACM*, (february), pp.37–43.

Khalil, O.E.M., 2011. E-Government readiness: Does national culture matter? *Government Information Quarterly*, 28(3), pp.388–399. Available at: http://dx.doi.org/10.1016/j.giq.2010.06.011.

Khanh, N.V.T., 2014. The critical factors affecting E-Government adoption: A Conceptual Framework in Vietnam. *European Journal of Business and Social Science*, 2(11), pp.37–54.

Khani, N., Nor, K. & Bahrami, M., 2011. IS / IT capability and Strategic Information System Planning (SISP) Success. , 7(2), pp.75–84.

Kilmann, R.H., Saxton, Mary J. & Serpa, Roy, 1985. *Gaining control of the corporate culture* Jossey-Bass, ed., University of Pittsburgh. Program in Corporate Culture.

Kim, H. & Kankanhalli, A., 2009. Investigating User Resistance to Information: A Status QUO BIAS perspective. *MIS Quarterly*, 33(3), pp.567–582.

Kluckhohn, C., 1965. Culture and Behavior. *Free Press. New York.*

Kohlbacher, F., 2006. The use of qualitative content analysis in case study research. *Forum: Qualitative Social Research*, 7(1), p.21.

Kousha, K. & Abdoli, M., 2004. "Iran"s National ICT Education plan' paper presented at the World Library and Information Congress. In *70thIFLA General Conference and Council, 22-27,August*. Buenos Aires, Argentina.

Kovacic, Z.J., 2005. The Impact of National Culture on Worldwide eGovernment Readiness eGovernment Readiness Frameworks. *Information Science Journal*, 8.

Krippendorff, K., 2012. *Content Analysis: An interoduction to its methodology*, Thaousand Oaks.,CA: Sage.

Krishnan, A. & Sreehari, K.G., 2016. A Study on e- governance and User Satisfaction through Akshaya Centers in Kerala ; with special reference to Marangattupilli Panchayath in Kottayam District . , (10), pp.1547–1558.

Kroeber, A.. & Parsons, T., 1958. The concepts of culture and of social system. *American Sociological Review*, 23(5), pp.582–583.

Kroski, E., 2007. The social tools of Web 2.0: Opportunities for academic libraries. Choice. , 44(12), pp.2011–2021.

Kuhn, T.S., 2012. *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS*, Chicago: University of Chicago Press.

Kuipers, B.S., Higgs, M.J., Kickert, W.J.M., Tummers, L.G., Grandia, J. & Van der Voet, J. 2014. The management of change in public organisations : A literature review. Public Administration, 92(1), pp.1–45.

Kurfali, M., Arifoilu, A., Tokdemir, G. & Pacin, Y., 2017. Adoption of e-government services in Turkey. Computers in Human Behavior, 66, pp.168–178.

Kvale, S. & Brinkmann, S., 2009. *Interviews Learning the Craft of Qualitative Research Interviewing* 2th edition., London: SAGE.

Kvedaraviciene, G. & Boguslauskas, V., 2010. Underestimated Importance of Cultural Differences in Outsourcing Arrangements. *Inzinerine Ekonomika-Engineering Economics*, 21(March 2009), pp.187–196.

Lagsten, J. & Goldkuhl, G., 2008. Interpretative IS Evaluation : Results and Uses. *Electronic Journal Information Systems Evaluation*, 11(2), pp.97–108.

Lallmahomed, M.Z.I., Lallmahomed, N. & Lallmahomed, G.M., 2017. Factors influencing the adoption of e-Government Services in Mauritius. *Telematics and Informatics*, 34(4), pp.57–72. Available at: http://linkinghub.elsevier.com/retrieve/pii/S073658531630404X.

Lammers, C.J. & Hickson, D.J., 1997. *Organizations alike and unlike: Toward a comparative sociology of organizations*, London: Routledge and Kegan Paul.

Lanciano, T. & Zammuner, V.L., 2014. Individual differences in work-related well-being: The role of attachment style. *Europe's Journal of Psychology*, 10(4), pp.694–711.

Laumer, S. & Eckhardt, A., 2012. Why Do People Reject Technologies: A Review of User Resistance Theories in Information Systems Theory (Eds Dwivedi et al.). *Springer, pp. 63–86.*, pp.63–86.

Lažnjak, J., 2011. Dimensions of National Innovation Culture in Coratia Content Validity of Hofstede's Dimensions. *Drustvena istrazivanja*, 20, pp.1015–1038.

Leaf, M.J., 2005. The Message is the medium: language culture, and informatics. *An International Journal*, Vol. 36(8), pp.p903–917.

Lee, S.-G., Trimi, S. & Kim, C., 2013. The impact of cultural differences on technology adoption. *Journal of World Business*, 48(1), pp.20–29. Available at: http://linkinghub.elsevier.com/retrieve/pii/S1090951612000405.

Leedy, P.D., 1997. *Practical Research: Planning and Design.*, London.: Prentice Hall.

Leidner, D.E. & Kayworth, T., 2006. Review; A Review of culture in information systes research: Toward a theory of information technology culture conflict. *Mis Quarterly*, 30(2), pp.357–399.

Leshem, S. & Trafford, V., 2007. Overlooking the conceptual framework. *Innovations in Education and Teaching International*, 44(1), pp.93–105.

Li, Y.M. & Yeh, Y.S., 2010. Increasing trust in mobile commerce through design aesthetics. *Computers in Human Behavior*, 26(4), pp.673–684. Available at: http://dx.doi.org/10.1016/j.chb.2010.01.004.

Liberato, M., Varajão, J. & Martins, P., 2015. CMMI Implementation and Results: The Case of a Software Company. *IGI Global.*, (In Modern Techniques for Successful IT Project Management.). Available at: books.google.ie/books

Liebel, G., Tichy, M. & Knauss, E., 2016. organisation and communication problems in automotive requirements engineering. *springer link*, pp.1–23. Available at: https://link.springer.com/article/10.1007/s00766-016-0261-7.

Liu, Y., Li, H., Kostakos, V., Goncalves, J., Hosio, S. & Hu, F.,2014. An empirical investigation of mobile government adoption in rural China: A case study in Zhejiang province. *Government Information Quarterly*, 31(3), pp.432–442. Available at: http://dx.doi.org/10.1016/j.giq.2014.02.008.

Loch, K.D., Straub, D.W. & Kamel, S., 2003. Diffusing the internet in the Arab world. *IEEE Transactions of Engineering Management*, 50(1), pp.45–63.

Low, S.P., 2006. Cultural influences on organizational processes in international projects : two case studies.

Luke, A.W., 1982. Office automation and the management of change. *SIGDOC: ACM Special Interest Group for Design of Communication*, pp.104–106.

Ma, L., Le, Y., He, Q. & Zhang, J., 2013. Research on Organization Integration System towards Large and Complex Building Projects-From Life Cycle Perspective. *Procedia - Social and Behavioral Sciences*, 74, pp.31–40.

Mahomed, A., 2015. Examing Email Usage Among Non-Academic Staff in Public and Private.

Maier, C., Laumer, S., Eckhardt, A. & Weitzel, T., 2013. Analyzing the impact of HRIS implementations on HR personnel's job satisfaction and turnover intention. The Journal of Strategic Information Systems, 22(3), pp.193–207. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0963868712000480 [Accessed March 17, 2015].

Maldonado, M. & Sierra, V., 2013. User Satisfaction as the Foundation of the Success Following an ERP Adoption: An Empirical Study from Latin America. *International Journal of Enterprise Information Systems*, 9(3), p.77.

Marakas, G., Yi, M. & Johnson, R., 1998. The multilevel and multifaceted character of computer of computer self-efficacy: Toward clarification of the construct and an integrative framework for research. *Information System*, 9(2), pp.126–163.

Martino, F., 2012. Cultural adaptation of web design services as critical success factor for business excellence A cross-cultural study of Portuguese, Brazilian, Angolan and Macanese web sites. *Emerald Insight*, 21(2), pp.172–190.

Matavire, R., Chigona, W., Roode, D., Sewchurran, E., Davids, Z., Mukudu, A. & Boamah-abu, C., 2010. Challenges of eGovernment Project Implementation in a South African Context. , 13(2), pp.153–164.

Matusitz, J. & Musambira, G., 2013. Power distance, uncertainty avoidance, and technology: Analyzing Hofstede's dimensions and human development indicators. *Journal of Technology in Human Services*, 31(1), pp.42–60.

Maull, R., Brown, P. & Cliffe, R., 2001. Organisational culture and quality improvment. *Interational journal of Operations & Production Management*, 21(3), pp.302–326.

Maxwell, J.A., 2005. *Qualitative Research Design: An Interactive Approach*, Thousand Oaks, CA: Sage Publications.

McCoy, S., 2003. Integrating national cultural into individual IS adoption research: the need for individual level measures. In *Proceedings of the 9th Americas Conference on Information Systems (AMCIS)*. Tampa, FL.

McCoy, S., Galletta, D.F. & King, W.R., 2007. Applying TAM across cultures: the need for caution. *European Journal of Information Systems*, 16(1), pp.81–90.

McEwan, T., 2001. *Managing Values and Beliefs in Organisations (Prentice Hall).*,

McNeill, P. & Chapman, S., 2005. *Research Methods* 3rd Ed., Rutledge London.

Meftah, M., Gharleghi, B. & Samadi, B., 2015. Adoption of E-Government among Bahraini Citizens. *Asian Social Science*, 11(4), pp.141–149. Available at: http://www.ccsenet.org/journal/index.php/ass/article/view/44273.

Meijer, A., Bannister, F. & Thaens, M., 2012. ICT , Public Administration and Democracy in the Coming Decade. , 17, pp.201–207.

Merriam-Webster, 2018. Definition of legacy. *Merriam-Webster*. Available at: https://www.merriam-webster.com/dictionary/legacy [Accessed February 22, 2018].

Ministry of Civil Service. (2018). The Annual Statistics of Civil Service Employees. Retrieved from http://www.mocs.gov.om/aboutUS.aspx

Ministry of Education. (2015). Evaluation of the Sultanate of Oman Education System (Grades 1-12). In *The New Zealand Education Consortium, Ministry of Education, Oman*.

Ministry of Information–Oman, 2017. Government - Foreigh Affairs. *Ministryy of Information*.

Ministry of Legal Affairs. (1996). SULTANI DECREE NO. (101/96) Promulgating the Basic Statute of the State. *Ministry of Legal Affairs*. Retrieved June 25, 2018, from http://www.mola.gov.om/royals.aspx

Ministry of National Economy, 2008. *Oman - The Development Experience and Investment Climate* 6 edn., Muscat, Oman: Ministry of National Economy.

Minkov, M., 2007. *what makes us different and similar: A new interpretation of the World Values Survey and other cross-cultural data*, Bulgria: Klasika y Stil Publishing House.

Moghadam, A.H. & Assar, P., 2008. The Relationship Between National Culture and E-Adoption: A Case Study of Iran. *American Journal of Applied Sciences*, 5(4), pp.369–377. Available at: http://www.thescipub.com/abstract/?doi=ajassp.2008.369.377.

Molla, A. & Licker, P.S., 2001. E-commerce Systems success: An Attempt to Extend and Respecify the DeLone And Maclean Model of IS Success. *Journal of Electronic Commerce Research*, 2(4), pp.131–141.

Molenaar, N. J. ., & Smjt, J. H. (1996). Asking and answering yes/no-questions in survey interviews: a conversational approach. *Springer*, *30 Issue 2*(2), 115.

Montesdioca, G. P. ., & Macada, A. C. . (2015). Measuring User Satisfaction to Evaluate Information Systems. *Comput. Secure., 48*, 267–280.

Mooij, M. De & Hofstede, G., 2010. The Hofstede model: Applications to global branding and advertising stratgey and research. *International Journal of Advertising*, 29(1), pp.85–110.

Morrison, M., 2012. How to write a Critical Success Factor (CSF). Available at: https://rapidbi.com/how-to-write-a-critical-success-factor-csf/ [Accessed December 11, 2017].

Morse, J.M., 2000. Determining Sample Size. *SAGE Journals*, 10(1), pp.3–5.

Müller, S.D. & Skau, S.A., 2015. Success factors influencing implementation of e-government at different stages of maturity: a literature review. *International Journal of Electronic Governance*, 7(2), p.136. Available at: http://www.inderscience.com/link.php?id=69495.

Myers, M.D. & Avison, D.E., 2002. *An Introduction to Qualitative Research in Information Systems*, Lodon.

Myers, M.D. & Tan, F.B., 2002. Beyond Models of National Culture in Information Systems Research. *Journal of Global Information Management*, 10(1), pp.24–32. Available at: http://services.igi-global.com/resolvedoi/resolve.aspx?doi=10.4018/jgim.2002010103.

Myers, M.T. & Myers, G.E., 1982. *Managing by Communication – An Organizational Approach*, New York: McGraw-Hill Book Company.

Nachmias, D. & Nachmias, C., 1992. *Research methods in the social sciences*, New York: Oxford University Press.

Nakata, C., 2009. *Beyond Hofstede: Culture frameworks for global marketing and management.*, Palgrave Macmillan.

Napitupulu, D. & Sensuse, D.I., 2014. The Critical Success Factors Study for e-Government Implementation. *Intrnational Journal of Computer Application (0975-8887)*, 89(16), pp.23–32.

Nassira, B., 2011. *Impact of national culture on perceived success of an ERP system implementation*.

Nau, D.S., 1995. Mixing Methodologies : Can Bimodal Research be a Viable Post-Positivist Tool ? Mixing Methodologies : Can Bimodal Research be a Viable Post-Positivist. *NSU*, 2(3), pp.1–6.

Needle, D., 2004. *Business in Context: An Introduction to Business and Its Environment.* 4th editio., Available at: http://www.amazon.com/Business-Context-Introduction-its-Environment/dp/1861529929.

Nelson, R.R., 2007. IT Project Management Informous Failures, Classic Mistakes, and Best Practices.*MIS Quaterly Exeutive* , 6(2).pp. 67-78.

Nelson, M. & Ravichandran, T., 2004. Repeating Failure in Large-scale Government IT Projects: A Taxing Story. In *Proceedings of the 10th Americas Conference on Information Systems*. New York, USA, p. 143.

Neuman, W., 2003. *Social Research Methods: Qualitative And Quantitative Approaches* 5th editio., Boston: Allyn and Bacon.

Ngai, E.W.T., Law, C.C.H. & Wat, F.K.T., 2008. Examining the critical success factors in the adoption of enterprise resource planning. *Computers in Industry*, 59(6), pp.548–564.

Nguyen, N.A., 2016. A Cross-Cultural Study on e-Government Services Delivery. *Electronic Journal of Information Systems Evaluation*, 19(2), pp.121–134.

Niglas, K., 2004. *The combined use of qualitative and quantitative methods in educational research.*

Norris, D.F. & Reddick, C.G., 2012. Local E-Government in the United States: Transformation or Incremental Change? *Public Administration Review*, 73(1), pp.165–175.

Nurdin, N., Stockdale, R. & 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.

Alhujran, O., 2009. Determinants of E-Government Services Adoption in Developing Countries: A Field Survey And A Case Study.

Obeidat, B.Y., Shannak, R.O., Massa'deh, R.M.T. & Al-Jarrah, I. M., 2012. Toward Better Understanding for Arabian Culture : Implications Based on Hofstede ' s Cultural Model. European Journal of Social Sciences, 28(4), pp.512–522.

Olasina, G. & Mutula, S., 2015. The influence of national culture on the performance expectancy of e-parliament adoption. *Behaviour & Information Technology*, 34(5), pp.492–505. Available at: http://dx.doi.org/10.1080/0144929X.2014.1003326.

Oliveira, T., Martins, M. F., & Lisboa, U. N. De. (2011). Literature Review of Information Technology Adoption Models at Firm Level. *Electronic Journal of Information Systems Evaluation*, *14*(1), 110–121.

Orlikowski, W.J. & Baroudi, J.J., 1991. Studying Information Technology in Organizations: Research Approaches and Assumptions.

Ozkan, S. & Kanat, I.E., 2011. E-Government adoption model based on theory of planned behavior: Empirical validation. *Government Information Quarterly*, 28(4), pp.503–513. Available at: http://dx.doi.org/10.1016/j.giq.2010.10.007.

Papke-Shields, K.E., Beise, C. & Quan, J., 2010. Do project managers practice what they preach, and does it matter to project success? *International Journal of Project Management*, 28(7), pp.650–662. Available at: http://dx.doi.org/10.1016/j.ijproman.2009.11.002.

Peansupap, V. & Walker, D., 2005. Exploratory factors influencing information and communication technology diffusion and adoption within Australian construction organizations: a micro analysis. *Construction Innovation (Sage Publications, Ltd.)*, 5(3), pp.135–157. Available at: http://10.0.4.167/1471417505ci095oa.

Pedersen, K., 2017. Transforming Government: People, Process and Policy. *International Journal of Public Sector Management*, 11(1), pp..262–285. Available at: http://www.emeraldinsight.com/doi/10.1108/ijpsm.2009.04222faa.001.

Petter, S., DeLone, W. & McLean, E., 2008. Measuring information systems success: models, dimensions, measures, and interrelationships. *European Journal of Information Systems*, 17(3), pp.236–263. Available at: http://link.springer.com/10.1057/ejis.2008.15.

Petter, S., DeLone, W. & McLean, E.R., 2013a. Information Systems Success: The Quest for the Independent Variables. *Journal of Management Information Systems*, 29(4), pp.7–62. Available at: http://mesharpe.metapress.com/openurl.asp?genre=article&id=doi:10.2753/MIS0742-1222290401 [Accessed July 27, 2014].

Pettigrew, A.M., 1979. On Studying Organiza- tional Cultures. , 24(4), pp.570–581.

Polit, D.F. & Beck, C.T., 2010. Generalization in quantitative and qualitative research: Myths and strategies. *International Journal of Nursing Studies*, 47(11), pp.1451–1458. Available at: http://dx.doi.org/10.1016/j.ijnurstu.2010.06.004.

Porumbescu, G., Vrabie, C., Ahn, J. & Im, T., 2012. Factors Influencing the Success of Participatory Egovernment Applications in Romania and South Korea. , 27(1), pp.1–21.

Qu, S.Q. & Dumay, J., 2011. The qualitative research interview. *Qualitative Research in Accounting & Management*, 8(3), pp.238–264. Available at: http://www.emeraldinsight.com/doi/10.1108/11766091111162070.

Rahim, A.A. & Al Athmay, A., 2013. E-governance in arab countries: status and challenges. , 7(5).

Rai, A., Lang, S.S. & Welker, R.B., 2002. Assessing the Validity of IS Success Models : An Empirical Test and Theoretical Analysis. , (June 2015).

Rai, A., Maruping, L.M. & Venkatesh, V., 2009. Offshore Information Systems Project Success: The Role of Social Embessedness and Cultural, *Mis Quarterly*, 33(3), pp.617–641.

Ramaprasad, A. & Prakash, a. N., 2003. Emergent project management: How foreign managers can leverage local knowledge. *International Journal of Project Management*, 21(3), pp.199–205.

Ramo, J. & T, T.A.P., 2005. E-government success factors : Mapping practical tools to theoretical foundations. , 22, pp.187–216.

Rana, N.P., Dwivedi, Y.K. & Williams, M.D., 2015. A meta-analysis of existing research on citizen adoption of e-government. *Information Systems Frontiers*, 17(3), pp.547–563.

Rana, N.P., Dwivedi, Y.K. & Williams, M.D., 2013. Evaluating the Validity of IS Success Models for the Electronic Government Research: *International Journal of Electronic Government Research*, 9(3), pp.1–22. Available at: http://services.igi-

global.com/resolvedoi/resolve.aspx?doi=10.4018/jegr.2013070101 [Accessed March 24, 2015].

Remenyi, D., Williams, B., Money, A. & Swartz, E., 2000. *Doing research in business and management: An introduction to process and method*, London.

Ribeiro, P., Paiva, A., Varajão, J. & Dominguez, C., 2013. Success evaluation factors in construction project management - some evidence from medium and large Portuguese companies. *KSCE Journal of Civil Engineering*, 17(4), pp.603–609.

Richmond, McCroskey, & M., 2005. *The Nature of Communication in Organizations*,

Rijo, R., Varajão, J. & Gonçalves, R., 2012. Contact center: information systems design. *Journal of Intelligent Manufacturing*, 23(3), pp.497–515. Available at: http://link.springer.com/10.1007/s10845-010-0389-0.

Robey, D., & Rodriguez-Diaz, A., 1989. The Organizational and Cultural Context of Systems Implementation: Case Experience from Latin America. *Information & Management*, 17, pp.229–239.

Robson, C., 2002. *Real World Research* 2nd edn., Oxford: Blackwell.

Rockart, J.F., 1979. *Chief executives define own data needs*, Harvard Business.

Rodrigues, J.S., Costa, A.R. & Gestoso, C.G., 2014. Project Planning and Control: Does National Culture Influence Project Success? *Procedia Technology*, 16, pp.1047–1056. Available at: http://www.sciencedirect.com/science/article/pii/S2212017314002862.

Rogers, E.M., 2003. *Diffusion of innovation* 5th ed., London.

Rohatgi, A., Scherer, R. & Hatlevik, O.E., 2016. The role of ICT self-efficacy for students' ICT use and their achievement in a computer and information literacy test. *Computers and Education*, 102, pp.103–116. Available at: http://dx.doi.org/10.1016/j.compedu.2016.08.001.

Rose, G., & Straub, D., 1998. Predicting general IT use: applying TAM to the Arabic World. *Journal of Global Information Management*, 6(3).

Rosenberg, J.P. & Yates, P.M., 2007. Additional actions: Book Cart Email Export to EndNote Schematic representation of case study research designs. *Journal of Advanced Nursing*, 60(4), pp.447–452.

Rubinstein, D., 2007. "Standish group report: there's less development chaos today",. *Software Development Times,*.

Ruppel, C.P. & Harrington, S., 2001. Sharing Knowledge Through Intranets : A Study of Organizational Culture and Intranet Implementation. , 44(1), pp.37–52.

Saarinen, T., 1996. An expanded instrument for evaluating information system success. *Information & Management*, 7206(96).

Sabherwal, R., Jeyaraj, A. & Chowa, C., 2006. Information System Success: Individual and Organizational Determinants. *Management Science*, 52(12), pp.1849–1864. Available at: http://pubsonline.informs.org/doi/abs/10.1287/mnsc.1060.0583 [Accessed April 19, 2015].

Sackmann, S.A., 1992. Culture and Subcultures : An Analysis of Organizational Knowledge. *Administrative Science Quarterly,*.

Salem, F. & Jarrar, Y., 2011. *Learning from failure: Braving the multifaceted challenges to e-government development*, in Handbook of Research on E-Services in the Public Sector:Advancements, E-governemnt Strategies and.

Sanakulov, N. & Karjaluoto, H., 2017. A cultural comparison study of smartphone adoption in Uzbekistan, South Korea and Turkey. *International Journal of Mobile Communication*, 15(1), pp.85–103.

Santos-reyes, J. & Beard, A.N., 2001. *A systemic approach to " re safety management*,

Sarrayrih, M. a. & Sriram, B., 2015. Major challenges in developing a successful e-government: A review on the Sultanate of Oman. *Journal of King Saud University - Computer and Information Sciences*, 27(2), pp.230–235. Available at: http://dx.doi.org/10.1016/j.jksuci.2014.04.004.

Saunders, M., Lewis, P. & Thornhill, A., 2009. *for business students fi fth edition*,

Saunders, M., Lewis, P. & Thornhill, A., 2012. *research Methods for Business Students* Sixth edit., Edinburgh.

Schein, E.H., 1984. Coming to a new awareness of organizational culture. *Sloan Management review*, 2.

Schein, E.H., 2004. *Organisation Culture and Leadership* 3rd ed., San Francisco: Jossey-Bass.

Schein, E.H., 2010. *Organisation culture and leadership* 4 th., San Francisco: Jossey-Bass. Available at: http://books.google.ie/books?hl=en&lr=&id=kZH6AwTwZV8C&oi=fnd&pg=PR9&dq=organisational+culture+and+leadership+schein&ots=9na_kJyyOh&sig=_nsM-plAtG5kzO.

Scholz, C., 1990. *The Symbolic Value of Computerized Information Systems.in Symbols and Artifacts: Views of the Corporate Landscape*, P. Gagliardi (ed,). Aldine de Gruyter, New York,.

Schuppan, T., 2009. E-Government in developing countries: Experiences from sub-Saharan Africa. *Government Information Quarterly*, 26(1), pp.118–127.

Schuts, M., Hooman, J. & Vaandrager, F., 2016. Refactoring of Legacy Software using Model Learning and Equivalence Checking: an Industrial Experience Report. In *In: Ábrahám, E.; Huisman, M. (ed.), Integrated Formal Methods: 12th International*

Conference, IFM 2016, Reykjavik, Iceland, June 1-5, 2016, Proceedings. pp. 311–325.

Schwartz, S.H., 1999. A Theory of Cultural Values and Some Implications for Work. *Applied Psychology*, 48(l), p.23. Available at: Schwartz, S.H., 2012. An Overview of the Schwartz Theory of Basic Values An Overview of the Schwartz Theory of Basic Values. *Online Readings in Psychology and Culture*, 2, pp.1–20.

Schwartz, S.H., 1994. *Beyond individualism-collectivism: New cultural dimensions of values.* & G. Y. (Eds. . U. Kim, H. C. Triandis, C. Kagitcibasi, S.-C. Choi, ed., Newbury Park: Newbury Park, CA: Sage.

Schwester, R., 2009. Examining the Barriers to e-Government Adoption. *Electronic Journal of e-Government*, 7(1), pp.113–122.

Seddon, P.B., 1997. ARespecification and Extension of the DeLone and McLean Model of IS Success. *Information System Research*, 8(3), pp.240–253.

Seddon, P.B. & Kiew, M.-Y., 1996. A Partial Test and Development of DeLone and McLean's Model of IS Success. *Australian Journal of Information Systems*, 4(1), pp.90–109.

Seifert, J.W., 2003. A Primer on E-Government : Sectors, Stages, Opportunities, and Challenges of Online Governance. *Report for Congress*, p.24.

Seifert, J.W. & McLoughlin, G.J., 2008. *E-Government in High Gear* R. B. Ventura, ed., New York: Nova Science.

Seri, P. & Zanfei, A., 2012. The Coevolution of ICT , Skills and Organizations in Public Administrations : Evidence from new European country. , 27, pp.160–176.

Shanks, G. & Parr, A., 2000. Differences in critical success factors in ERP systems implementation in Australia and China: a cultural analysis. In *in: Proceedings of the Eighth European Conference on Information Systems*. Vienna.

Shareef, M.A. Kumar, V., Kumar, U. & Dwivedi, Y.K., 2011. e-Government Adoption Model (GAM): Differing service maturity levels. *Government Information Quarterly*, 28(1), pp.17–35. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0740624X10000985 [Accessed August 20, 2013].

Shatat, A.S. & Dana, N., 2016. Critical Success Factors across the Stages of ERP System Implementation in Sohar University : A Case Study. , 3(1).

Sheatsley, P.B., 1983. Questionnaire construction and item writing. In R. Peter H., James D, Wright, & A. B. Anderson, eds. *Handbook of Survey Research*. A Subsidary of Harcount Brace Jouanovich, Publishers.

Shenton, A.K., 2004. Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22(2), pp.63–75. Available at:

http://www.medra.org/servlet/aliasResolver?alias=iospress&doi=10.3233/EFI-2004-22201.

Shore, B. & Venkatachalam, A.R., 1995. The role of national culture in systems analysis and design. *Journal of Global Information Management*, 3(3), pp.5–14.

Silverman, D., 2005. Instances or Sequences? Improving the State of the Art of Qualitative Research. *ualitative Social Research*, 6(3).

Singhapakdi, A. & Vitell, S.J., 1994. A Cross-cultural Study of Moral Philosophies , Ethical Perceptions and Judgements A Comparison of American. *International Marketing Review,*, 11(6), pp.65–78.

Sivarajah, U., Irani, Z. & Weerakkody, V., 2015. Evaluating the use and impact of Web 2.0 technologies in local government. *Government Information Quarterly*, 32(4), pp.473–487. Available at: http://dx.doi.org/10.1016/j.giq.2015.06.004.

Solinthone, Phonepaseuth Rumyantseva, T., 2016. E-Government Implementation. *Proceedings of the Annual Conference of the South African Institute of Computer Scientists and Information Technologists on - SAICSIT '16*, 01066, pp.1–10. Available at: http://dl.acm.org/citation.cfm?doid=2987491.2987499.

Søndergaard, M., 1994. Hofstede's consequences: A study of reviews, citations and replications. *Organization Studies*, 15(3), pp.447–456.

Spencer-Oatey, H., 2008. *Culturally speaking: culture, communication and politeness theory, second edition* second edi. 1952 Spencer-Oatey, Helen, ed., London, U.K. / New York, NY, U.S.A.: Continuum International Publishing Group.

Srinivas, M., Ramakrishna, G., Rao, R. & Babu, E. S.,2016. Analysis of Legacy System in Software Application Development: A Comparative Survey. *International Journal of Electrical and Computer Engineering*, 6(1), pp.292–297. Available at: http://www.iaesjournal.com/online/index.php/IJECE/article/view/8367.

Sriwindono, H. & Yahya, S., 2012. Toward Modeling the Effects of Cultural Dimension on ICT Acceptance in Indonesia. *Procedia - Social and Behavioral Sciences*, 65(ICIBSoS 2012), pp.833–838. Available at: http://dx.doi.org/10.1016/j.sbspro.2012.11.207.

Stahl, B.C. & Elbeltagi, I., 2004. Cultural Universality Versus Particularity in CMC. *Journal of Global Information Technology Management*, 7(4), pp.47–65. Available at: http://www.tandfonline.com/doi/abs/10.1080/1097198X.2004.10856384 [Accessed October 14, 2014].

Stefanovic, D., Marjanovic, U.Delić, M.Culibrk, D. & Lalic, B., 2016. Assessing the success of e-government systems: An employee perspective. Information and Management, 53(6), pp.717–726.

Stewart, R. a. & Mohamed, S., 2003. Evaluating the value IT adds to the process of project information management in construction. *Automation in Construction*, 12(4), pp.407–417.

Stoltzfus, K., 2004. Motivations for Implementing E-Government : An Investigation of the Global Phenomenon SCIENTIFIC INVESTIGATIONS OF E-. , pp.333–338.

Straub, D. Loch, K., Evaristo, R,. Karahanna, E. & Strite, M., 2002. Toward a Theory-Based Measurement of Culture. , 10(1), pp.13–23.

Straub, D., Keil, M. & Brenner, W., 1997. Testing the technology acceptance model across cultures: A three country study. *Information & Management*, 33(1), pp.1–11. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0378720697000268.

Straub, D.W., 1994. The Effect of Culture on IT Diffusion: E-Mail and FAX in Japan and the U.S. Information Systems research, 5, pp.23–47.

Stroh, L., Loch, K., Evaristo, R., Karahanna, E. & Strite, M., 2002. Organizational Behavior: A Management Challenge Third Edit., 10 Indurstrial Mahwah, New Jersy: Lawrence Erlbaum Associates, Inc, Publishersl.

Strong, B.D.M. & Volkoff, O., 2010. Research Articale Understanding Organisation-Entepsise System Fit: A Path to Theorizing The. *Mis Quarterly*, 34(4), pp.731–756.

Suki, N.M. & Ramayah, T., 2010. User acceptance of the e-Government services in Malaysia: Structural Equation Modelling approach. *Interdisciplinary Journal of Information, Knowledge, and Management*, 5, pp.395–413

Sun, H., 2004. *Expanding the Scope of Localization : A Cultural Usability Perspective on Mobile Text Messaging Use in American and Chinese Contexts*.

Swaidan, Z., 2011. Culture and Consumer Ethics. *Journal of Business Ethics*, 108(2), pp.201–213. Available at: http://link.springer.com/10.1007/s10551-011-1070-z [Accessed May 29, 2014].

Sylvester, B.D., 2011. ISO 38500 — Why Another Standard ? *COBIT Focus*, 2(April), pp.1–3.

Szopiński, T. & Staniewski, M.W., 2017. Manifestations of e-government usage in post-communist European countries. *Internet Research*, 27(2), pp.199–210. Available at: http://www.emeraldinsight.com/doi/10.1108/IntR-01-2015-0011.

Tam, C. & Oliveira, T., 2016. Understanding the impact of m-banking on individual performance: DeLone & McLean and TTF perspective. *Computers in Human Behavior*, 61, pp.233–244. Available at: http://dx.doi.org/10.1016/j.chb.2016.03.016.

Tang, L. & Koveos, P.E., 2008. A framework to update Hofstede's cultural value indices: Economic dynamics and institutional stability. *Journal of International Business Studies*, 39(6), pp.1045–1063.

Taras, V., Steel, P. & Kirkman, B.L., 2011. Three decades of research on national culture in the workplace. *Organizational Dynamics*, 40(3), pp.189–198.

Tarhini, A., Ammar, H., Tarhini, T. & Masa'deh, R., 2015. Analysis of the Critical Success Factors for Enterprise Resource Planning Implementation from Stakeholders' Perspective: A Systematic Review. International Business Research, 8(4), pp.25–40.

Tarhini, A. Hone, K., Liu, X. & Tarhini, T., 2016. Examining the moderating effect of individual-level cultural values on users' acceptance of E-learning in developing countries: a structural equation modeling of an extended technology acceptance model. Interactive Learning Environments, 25(3), pp.306–328.

Tarhini, A. Masa'deh, R., Al-Badi, A., Almajali, M. & Alrabayaah, S. H., 2017. Factors Influencing Employees' Intention to Use Cloud Computing. Journal of Management and Strategy, 8(2), p.47. Available at: http://www.sciedu.ca/journal/index.php/jms/article/view/11577.

Tashakkori, A. & Teddlie, C., 2010. SAGE Handbook of Mixed Methods in Social & Behavioral Research (2 nd Edition). *Sage*, 14(1), pp.1–6.

Tavakoli, A.A.A. & Keenan, J.P., 2003. Culture and Whistleblowing An Empirical Study of Croatian United Hofstede ' s and States Managers Cultural Utilizing Dimensions. *Springer*, 43(1), pp.49–64.

Tayeb, M., 1994. Organizations and National Culture: Methodology Considered. *Organization Studies 1994,15/3*, 15, pp.429–446.

Techopedia, 2016. Techopedia Dictionary. Available at: https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=techopedia dictionary [Accessed August 1, 2016].

Thatcher, S.M.B., Foster, W. & Zhu, L., 2006. B2B e-commerce adoption decisions in Taiwan: The interaction of cultural and other institutional factors. *Electronic Commerce Research and Applications*, 5(2), pp.92–104.

The Education Council, 2018. *The national strategy for education*, Muscat, Oman: The Education Council, Oman.

The Hofstede centre, 2014. The Hofstede centre. , p.19/9/2014. Available at: https://geert-hofstede.com/the-hofstede-centre.html [Accessed May 12, 2016].

The Middle East Information Network, 2015. Mideastinfo.

The Standish Group, 2014. The Standish group: the chaos report. *Project Smart*, p.16. Available at: http://www.infoq.com/articles/standish-chaos-2015 .... https://www.standishgroup.com/store/services/chaos-report-2015-blue-pm2go-membership.html#fndtn-product_info.

Thowfeek, M.H. & Jaafar, A., 2010. Integrating national culture into information and communication technology adoption model. *IEEE Journal*, pp.1601–1605. Available at: http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=5561462.

Treadwell, D. (2011). *Introducing Communication Research: Paths of Inquiry*. London: SAGE Publications Ltd.

Trompenaars, F., 1996b. Resolving International Conflict: Culture and Business Strategy. *London Business School*, 7(3), pp.51–68.

Trompenaars, F. & Hampden-Turner, C., 1993. *Riding the waves of cultures*,

Tummers, L. & Rocco, P., 2015. Serving Clients When the Server Crashes: How Frontline Workers Cope with E-Government Challenges. *Public Administration Review*, 75, pp.817–827.

Turner, P., Turner, S. & Van De Walle, G., 2007. How older people account for their experiences with interactive technology. *Behaviour and Information Technology*, 26(4), pp.287–296.

Udo, G.J., 2001. Privacy and security concerns as major barriers for e-commerce: a survey study. *Information Management & Computer Security*, 9(4), pp.165–174. Available at: http://www.emeraldinsight.com/doi/10.1108/EUM0000000005808.

United Nations, 2012. *E-Government Survey 2012*,

United Nations, 2016. *E-government survey 2016. E-Government in Support of Sustainable Development*, Available at: http://workspace.unpan.org/sites/Internet/Documents/UNPAN96407.pdf.

United Nations, 2014. *E-Government Survey: e-Government for the Future We Want*, Available at: http://www.unpan.org/egovkb/global_reports/08report.htm.

Vaismoradi, M. Jones, J., Turunen, H. & Sherrill, S., 2016. Theme development in qualitative content analysis and thematic analysis. Journal of Nursing Education and Practice, 6(5).

Varajão, J., Colomo-Palacios, R. & Silva, H., 2017. ISO 21500:2012 and PMBoK 5 processes in information systems project management. *Computer Standards and Interfaces*, 50(May 2016), pp.216–222. Available at: http://dx.doi.org/10.1016/j.csi.2016.09.007.

Veenstra, A.F. Van, Klievink, B. & Janssen, M., 2011. Barriers and impediments to transformational government: insights from literature and practice. *Electronic Government, an International Journal*, 8(2/3), p.226. Available at: http://www.inderscience.com/link.php?id=39838.

Wallach, E.J., 1983. Individals and Organisations: The Cultural Match. *training & Development Journal*, 2(1), pp.29–36.

Walsham, G., 2002. Cross-Cultural Software Production and Use: A Structurational Analysis. *MIS Quarterly*, 26(4), p.359. Available at: http://www.jstor.org/stable/10.2307/4132313?origin=crossref.

Walsham, G., 2006. Doing interpretive research. *European Journal of Information Systems*, 15(3), pp.320–330.

Walsham, G., 1993. *Interpreting Information Syystems in Organisations* 1st ed., New York: Jhon Wiley & Sons.

Wang, Y.S. & Liao, Y.W., 2008. Assessing eGovernment systems success: A validation of the DeLone and McLean model of information systems success. *Government Information Quarterly*, 25(4), pp.717–733.

Wargin, J. & Dobiey, D., 2001. E-business and change - Managing the change in the digital economy. *Journal of Change Management,*, 2(1), pp.72–82.

Warkentin, M. Gefen, D., Pavlou, P. a. & Rose, G. M., 2002. Encouraging Citizen Adoption of e-Government by Building Trust. Electronic Markets, 12(3), pp.157–162. Available at: http://www.tandfonline.com/doi/abs/10.1080/101967802320245929.

Watson, R.T., Ho, T.H. & Raman, K.S., 1994. culture - A Forth Dimension of Group Support Systems. *Communications of the ACM*, 17, pp.45–55.

Weis, D. & Willems, H., 2017. Aggregation, Validation, and Generalization of Qualitative Data - Methodological and Practical Research Strategies Illustrated by the Research Process of an empirically Based Typology. *Integrative Psychological and Behavioral Science*, 51(2), pp.223–243.

Welzel, C., Inglehart, R. F., & Klingemann, H.-D. (2003). The theory of human development: A cross-cultural analysis. *European Journal of Political Research*, *42*, 341–379. doi:10.1111/1475-6765.00086

Whitehead, H. & Rendell, L., 2014. *The Cultural Lives of Whales and Dolphins*, Chicago.: University of Chicago Press.

Williams, R., 2012. Tolerance understanding, coexistence- Oman's message of Islam. *International Resonance*. Available at: http://www.islam-in-oman.com/en/international-resonance [Accessed February 28, 2018].

Wilson, J., 2014. *Essentiala of Business Research, A Guide to doing your Research Project* J. Seaman, ed., London: SAGE Publications Ltd.

Wimmer, M.A., Codagnone, C. & Ma, X., 2007. Lecture Notes in Computer Science. In *Electronic Government*. pp. 1–12.

Wirtz, B.W., Weyerer, J. C., Thomas, M-J. & Möller, A., 2017. E-Government Implementation: Theoretical Aspects and Empirical Evidence. Public Organization Review, 17(1), pp.101–120. Available at: http://dx.doi.org/10.1007/s11115-015-0330-2.

World Bank, 1994. *Sultanate of Oman Sustainable Growth and Economic Diversification*, Washington DC.

Wrona, T., 2006. Fortschritt in den Wirtschaftswissenschaften. *Wiesbaden (Deutscher Universitätsverlag*, (January). Available at: http://link.springer.com/10.1007/978-3-8350-9199-3.

Yeniyurt, S. & Townsend, J.D., 2003. Does culture explain acceptance of new products in a country?: An empirical investigation. *International Marketing Review*, 20(4), pp.377–396.

Yildiz, M., 2012. Big questions of e-government research. *ICT, Public Administration and Democracy in the Coming Decade*, 17, pp.132–144.

Yildiz, M., 2007. E-government research: Reviewing the literature, limitations, and ways forward. *Government Information Quarterly*, 24(3), pp.646–665. Available at: http://linkinghub.elsevier.com/retrieve/pii/S0740624X07000056 [Accessed August 23, 2013].

Yin, R.K., 1994. *Case Study Research: Design and Methods*, London: SAGE Publications.

Yin, R.K., 2014. *Case Study Research: Design and Methods* 5th ed., London.

Yin, R.K., 2009. *Case Study Research: Design and Methods*, Sage Publications.

Yin, R.K., 2014. *Case Study Research: Design and Methods*, London: SAGE Publications.

Yin, R.K., 2011. *Qualitative Research from Start to Finish*, New York, London.

Zaidi, S.F.H. & Qteishat, M.K., 2012. Assessing E-government Service Delivery (Government To Sitizen) Syed Faizan Hussain Zaidi. *International Journal of eBusiness and eGovernment Studies*, 4(1), pp.45–54.

Zakour, a, 2004. Cultural differences and information technology acceptance. *7th Annual Conference of the Southern Association for Information Systems*.

Zardosht, Mahboobe and Ghasem-Aghaee, N., 2011. Culturally enhanced collaborative filtering. *World Academy of Science, Engineering and Technology*, 5(11), pp.1941–1947.

Zeng, S.X. Xie, X. M., Tam, C. M. & Sun, P. M., 2009. Identifying cultural difference in R&D project for performance improvement: A field study. *Journal of Business Economics and Management*, 10(1), pp.61–70.

Zhang, H., Xu, X. & Xiao, J., 2014. Diffusion of e-government: A literature review and directions for future directions. *Government Information Quarterly*, 31(4), pp.631–636. Available at: http://dx.doi.org/10.1016/j.giq.2013.10.013.

Zhao, F., 2013. An empirical study of cultural dimensions and e-government development: implications of the findings and strategies. *Behaviour {&} Information Technology*,

32(3), pp.294–306. Available at:
http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=85760068&site=e
host-live.

Zhao, F., 2011. Impact of national culture on e-government development: a global study. *Internet Research*, 21(3), pp.362–380. Available at: http://www.emeraldinsight.com/doi/10.1108/10662241111139354.

Zhao, F., Shen, K.N. & Collier, A., 2014. Effects of national culture on e-government diffusion-A global study of 55 countries. *Information and Management*, 51(8), pp.1005–1016. Available at: http://dx.doi.org/10.1016/j.im.2014.06.004.

Zhu, Y., & Augenbroe, G. (2006). A conceptual model for supporting the integration of inter-organizational information processes of AEC projects. *Automation in Construction*, *15*(2), 200–211. doi:10.1016/j.autcon.2005.05.003

Ziemba, E. Papaj, T., Żelazny, R. & Jadamus-Hacura, M., 2016. Factors Influencing The Success Of E-Government. Journal of Computer Information Systems, 56(2), pp.156–167. Available at: http://www.tandfonline.com/doi/full/10.1080/08874417.2016.1117378.

Zikmund, W., 2003. *Business Research Methods*, Ohio, USA: Thomson Southwestern.

Zikmund, W.G. et al., 2013. *Business Research Methods* 9th editio., Canada: South-westren, Cengage Learning.

Zimmermann, K.A., 2012. History of Computing. *Live Science*.

Zucker, A., 2016. What We Really Know About Successful Projects. Available at: https://www.scrumalliance.org/community/articles/2016/october/what-we-really-know-about-successful-projectstml.

Appendices

Appendix A: School of Computer Science and Statistics (Research Ethics Application)

<table>
<tr><td colspan="3" align="center">School of Computer Science & Statistics
Research Ethics Application</td></tr>
</table>

CHECKLIST

The following documents are required with each application:

1.	• SCSS Ethical **Application Form**	
2.	• **Participant's Information Sheet** must include the following: a) Declarations from Part A of the application form; b) Details provided to participants about how they were selected to participate; c) Declaration of all conflicts of interest.	
3.	• **Participant's Consent Form** must include the following: a) Declarations from Part A of the application form; **b)** Researchers contact details provided for counter-signature (your participant will keep one copy of the signed consent form and return a copy to you).	
4.	• **Research Project Proposal** must include the following: a) You must inform the Ethics Committee **who** your intended participants are i.e. are they your work colleagues, class mates etc. b) How will you recruit the participants i.e. **how** do you intend asking people to take part in your research? For example, will you stand on Pearse Street asking passers-by? c) If your participants are under the age of 18, you must seek both parental/guardian AND child consent.	
5.	• Intended **questionnaire**/survey/interview protocol/screen shots/representative materials (as appropriate)	
6.	• **URL** to intended on-line survey (as appropriate)	

Notes on Conflict of Interest
1. If your intended participants are work colleagues, you must declare a potential conflict of interest: you are taking advantage of your existing relationships in order to make progress in your research. It is best to acknowledge this in your invitation to participants.
2. If your research is also intended to direct commercial or other exploitation, this must be declared. For example, *"Please be advised that this research is being conducted by an employee of the company that supplies the product or service which form an object of study within the research."*

Notes for questionnaires and interviews
1. If your questionnaire is **paper based**, you must have the following **opt-out** clause on the top of each page of the questionnaire: *"Each question is optional. Feel free to omit a response to any question; however the researcher would be grateful if all questions are responded to."*
2. If you questionnaire is **on-line**, the first page of your questionnaire must repeat the content of the information sheet. This must be followed by the consent form. If the participant does not agree to the consent, they must automatically be exited from the questionnaire.
3. Each question must be **optional**.
4. The participant must have the option to '**not submit, exit without submitting**' at the final submission point on your questionnaire.
5. If you have open-ended questions on your questionnaire you must warn the participant against naming **third parties**: *"Please do not name third parties in any open text field of the questionnaire. Any such replies will be anonymised."*
6. You must inform your participants regarding **illicit activity**: *"In the extremely unlikely event that illicit activity is reported I will be obliged to report it to appropriate authorities."*

UNIVERSITY OF DUBLIN, TRINITY COLLEGE

Faculty of Engineering, Mathematics and Science

School of Computer Science and Statistics

<u>RESEARCH ETHICS PROTOCOL</u>

When is Ethical Approval Needed?
Ethical approval is required <u>before</u> any studies involving human participants can commence. This requirement applies to studies to be undertaken by staff, postgraduate and undergraduate students. In the case of collaborative projects involving researchers from outside the School, ethical approval obtained from an external research ethics body may suffice – evidence of same must be submitted to the SCSS Research Ethics Committee prior to the commencement of the study (see procedures below). In the absence of such external approval, approval must be obtained as per this document. Additional ethical approval may be required if the project involves or is funded by an external body, for example, studies under FP7 automatically require such approval.

For the purpose of this document a "study" may be understood to involve a potentially staged series of different experiments to be conducted over a period of time. If substantive changes are made to a study following receipt of ethical approval, this will constitute a new study for which further ethical approval must be obtained.

Procedure
Completed application forms together with supporting documentation should be submitted electronically to research-ethics@scss.tcd.ie To submit, if the proposal is from an undergraduate or postgraduate students, the **completed** application package must be presented to the academic supervisor who will sign after verifying completeness. These signed originals may be scanned and emailed. Please use TCD e-mail addresses only. When your application has been reviewed and approved by the Ethics committee hardcopies of the application form with original signatures should be submitted to the School of Computer Science & Statistics, Room F37, O'Reilly Institute, Trinity College, Dublin 2.

The Committee will consider each application and normally provide a response within two weeks but not more than one month later. Applications that are considered not to have significant ethical implications may be evaluated by the Committee Chair without reference to the full Committee. Applications will otherwise be considered at a meeting of the SCSS Research Ethics Committee. When approval has been obtained from an external research ethics committee, and School approval is not required, a copy of the external ethical approval must be submitted to the School's Research Unit, prior to commencement of study, for noting by the SCSS Research Ethics Committee.

Please note that in signing the approval form one is making a commitment to review the provisions of the Data Protection Act, like legislation and College Policy on Good Research Practice. Please ensure that your study conforms to the standards of anonymity preservation and data retention set in those documents. Those provisions suggest a default proscription against making digital or photographic recordings of participants. A study which requires such records must include in the research ethics approval application a justification and documentation of the methods by which the statutory provisions and research practice guidelines will be met.

Note: These procedures may be amended from time-to-time following recommendation by the SCSS Research Ethics Committee and with the approval of the SCSS Research Committee.

Before seeking ethical approval researchers should:
- identify actual and potential ethical issues that might arise;
- reflect on how these will be addressed; and
- formulate procedures to deal with all such issues.

During the research project researchers should:
- implement the ethical procedures;
- obtain continuous feedback from participants about ethical issues;
- periodically review the ethical strategy in the light of feedback received; and
- if required, update their ethical procedures;
- retain copies of consent forms signed by the participants.

Composition of the SCSS Research Ethics Committee
The Committee will consist of a Chairperson/Convenor appointed by the Director of Research and two other experts – a member of the School's academic staff and external advisors. The internal and external members will be selected from a panel approved by the Director of Research from time to time. Members will be selected on a case by case basis by the Chairperson subject to their availability. Researchers will be precluded from the Committee considering ethical approval for their study.

SCSS Research Ethics Application Form August 2014

School of Computer Science and Statistics
Research Ethical Application Form

Part A

Project Title: **The Influence of Culture on the Successful Implementation of ICT Projects in Omani E-government**

Name of Lead Researcher (student in case of project work): Zamzam Allamki

Name of Supervisor: **Dr. Frank Edward Bannister**

TCD E-mail: Allamkiz@tcd.ie   Contact Tel No.: **12262623**

Course Name and Code (if applicable): **Doctor in Philosophy, Computer Science (Full-Time)**

Estimated start date of survey/research: 20/10/2015

I confirm that I will (where relevant):

- Familiarize myself with the Data Protection Act and the College Good Research Practice guidelines http://www.tcd.ie/info_compliance/dp/legislation.php;
- Tell participants that any recordings, e.g. audio/video/photographs, will not be identifiable unless prior written permission has been given. I will obtain permission for specific reuse (in papers, talks, etc.)
- Provide participants with an information sheet (or web-page for web-based experiments) that describes the main procedures (a copy of the information sheet must be included with this application)
- Obtain informed consent for participation (a copy of the informed consent form must be included with this application)
- Should the research be observational, ask participants for their consent to be observed
- Tell participants that their participation is voluntary
- Tell participants that they may withdraw at any time and for any reason without penalty
- Give participants the option of omitting questions they do not wish to answer if a questionnaire is used
- Tell participants that their data will be treated with full confidentiality and that, if published, it will not be identified as theirs
- On request, debrief participants at the end of their participation (i.e. give them a brief explanation of the study)
- Verify that participants are 18 years or older and competent to supply consent.
- If the study involves participants viewing video displays then I will verify that they understand that if they or anyone in their family has a history of epilepsy then the participant is proceeding at their own risk
- Declare any potential conflict of interest to participants.
- Inform participants that in the extremely unlikely event that illicit activity is reported to me during the study I will be obliged to report it to appropriate authorities.
- Act in accordance with the information provided (i.e. if I tell participants I will not do something, then I will not do it).

Signed: Zamzam Allamki   Date: 4/7/2015
                Lead Researcher/student in case of project work

Part B

Please answer the following questions.		*Yes/No*
Has this research application or any application of a similar nature connected to this research project been refused ethical approval by another review committee of the College (or at the institutions of any collaborators)?		NO
Will your project involve photographing participants or electronic audio or video recordings?		Yes (audio rec)
Will your project deliberately involve misleading participants in any way?		NO
Does this study contain commercially sensitive material?		NO
Is there a risk of participants experiencing either physical or psychological distress or discomfort? If yes, give details on a separate sheet and state what you will tell them to do if they should experience any such problems (e.g. who they can contact for help).		NO
Does your study involve any of the following?	Children (under 18 years of age)	NO
	People with intellectual or communication difficulties Patients	NO

SCSS Research Ethics Application Form August 2014

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
School of Computer Science and Statistics
Research Ethical Application Form

Details of the Research Project Proposal must be submitted as a separate document to include the following information:

1. Title of project
2. Purpose of project including academic rationale
3. Brief description of methods and measurements to be used
4. Participants - recruitment methods, number, age, gender, exclusion/inclusion criteria, including statistical justification for numbers of participants
5. Debriefing arrangements
6. A clear concise statement of the ethical considerations raised by the project and how you intend to deal with them
7. Cite any relevant legislation relevant to the project with the method of compliance e.g. Data Protection Act etc.

Part C

I confirm that the materials I have submitted provided a complete and accurate account of the research I propose to conduct in this context, including my assessment of the ethical ramifications.

Signed: Zamzam Allamki   Date: 4/7/2015
                 Lead Researcher/student in case of project work

There is an obligation on the lead researcher to bring to the attention of the SCSS Research Ethics Committee any issues with ethical implications not clearly covered above.

Part D

If external or other TCD Ethics Committee approval has been received, please complete below.

External/TCD ethical approval has been received and no further ethical approval is required from the School's Research Ethical Committee. I have attached a copy of the external ethical approval for the School's Research Unit.

Signed: .... Date: ....
                 Lead Researcher/student in case of project work

Part E

If the research is proposed by an undergraduate or postgraduate student, please have the below section completed.

I confirm, as an academic supervisor of this proposed research that the documents at hand are complete (i.e. each item on the submission checklist is accounted for) and are in a form that is suitable for review by the SCSS Research Ethics Committee

Frank E. Bannister

Signed:... Date: ....8th July 2015......................
           Supervisor

Completed application forms together with supporting documentation should be submitted electronically to research-ethics@scss.tcd.ie Please use TCD e-mail addresses only. When your application has been reviewed and approved by the Ethics committee hardcopies with original signatures should be submitted to the School of Computer Science & Statistics, Room F37, O'Reilly Institute, Trinity College, Dublin 2.

TRINITY COLLEGE DUBLIN
INFORMED CONSENT FORM - Interview

LEAD RESEARCHERS: Zamzam Allamki

BACKGROUND OF RESEARCH:
This research investigates the effect of cultural factors upon the diffusion and successful implementation of ICT in public organisations in Oman. This study involves a mixed methods research approach that combines questionnaires and interviews. The questionnaire will take around 10 minutes to complete. The interview is expected to take about one hour and will be recorded using a digital voice recorder if that is acceptable to you. Otherwise, hand written notes will be taken. If a voice recorder is in use, you may ask at any time to stop recording temporarily or permanently.

PUBLICATION:

The results of this project may appear in papers, books chapters, journal articles and in presentations at conferences, but you will not be identified in any of these reports. No audio or video recordings will be made available to anyone other than the researcher, nor will any such recordings be replayed in any public forum or presentation of the research. Individual results may be aggregated anonymously and research reported on aggregate results.

Please take your time to read the following declaration and sign it please

DECLARATION:
- I am 18 years or older and am competent to provide consent.
- I have read, or had read to me, a document providing information about this research and this consent form. I have had the opportunity to ask questions and all my questions have been answered to my satisfaction and understand the description of the research that is being provided to me.
- I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity.
- I understand that if I make illicit activities known, these will be reported to appropriate authorities.
- I understand that I may stop electronic recordings at any time, and that I may at any time, even subsequent to my participation have such recordings destroyed (except in situations such as above).
- I understand that, subject to the constraints above, no recordings will be replayed in any public forum or made available to any audience other than the current researchers/research team.
- I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.
- I understand that I may refuse to answer any question and that I may withdraw at any time without penalty.
- I understand that my participation is fully anonymous and that no personal details about me will be recorded.
- I have received a copy of this agreement.

PARTICIPANT'S NAME:

PARTICIPANT'S SIGNATURE:

Date:

Statement of investigator's responsibility: I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

RESEARCHERS CONTACT DETAILS: E-mail: **Allamkiz@tcd.ie**   Tel No: **0096899824481, 00353873598293**

INVESTIGATOR'S SIGNATURE: Zamzam Allamki   **Date:**

TRINITY COLLEGE DUBLIN

INFORMATION SHEET FOR PROSPECTIVE PARTICIPANTS - Interview

This sheet should inform participants of the following, as appropriate to the study:

- The background context of the research explaining its relevance
- The procedures relevant to the participant within this particular study
- Declarations of conflicts of interest
- The voluntary nature of participation: the right to withdraw and to omit individual responses without penalty
- The expected duration of the participant's involvement
- Anticipated risks/benefits to the participant
- The provisions for debriefing after participation
- Preservation of participant and third-party anonymity in analysis, publication and presentation of resulting data and findings
- Cautions about inadvertent discovery of illicit activities
- Provision for verifying direct quotations and their contextual appropriateness
- No audio or video recordings will be made available to anyone other than the research/research team, nor will any such recordings be replayed in any public forum or presentation of the research.

Of course, the information sheet for participants will vary with the study at hand. It should provide all information necessary for informed consent.

TRINITY COLLEGE DUBLIN

INFORMATION SHEET FOR PROSPECTIVE PARTICIPANTS - Interview

My name is Zamzam Allamki. I am a PhD student in the School of Computer Science and Statistics in Trinity College Dublin. You are being invited to take part in a research study investigating that how, and to what extent do cultural factors influence the successful implementation of ICT in Omani public organisations. Please take your time to read the following information.

I am asking about 40 people to take part in interviews to investigate their views on organisational culture and successful ICT implementation of e-government in their work environment. Your participation in this study is voluntary and you can withdraw from the study at any time without penalty.

If you decide that you would like to take part, I will hold the interview in your workplace at a time that suits you. The interview will last about an hour. You will not have to do anything special to prepare for this interview. Each question is optional, however, I would be grateful if you could respond to all.

You may or may not benefit directly from participating in this research, but you will be helping to advance knowledge and understanding of making better use of ICT in public organisation. However, the full results of this research will be available to you on request.

Conflict of interest

This research should not conflict with any participants' interest. This is because its objective is to grain a deep understanding the effect of cultural factors upon the diffusion and successful implementation of ICT in public organisations. There are no anticipated ethical issues in this project other than respecting the confidentiality of your comments. There are no sensitive social, political, medical or sexual issues involved in this research.

Privacy and confidentiality

With your permission, I will record the interview on a digital voice recorder to make sure that I remember what we talked about. I will turn off the recorder, temporarily or permanently, at any time if you are not comfortable with a particular part of the discussion being recorded. The results of this project may appear in papers, books chapters, journal articles and in presentations at conferences, but you will not be identified or identifiable in any of these reports unless you wish to be so identified. No audio or video recordings will be made available to anyone other than the researcher, nor will any such recordings be replayed in any public forum or presentation of the research. The audio will be stored in the researcher's computer and will be password protected. Research data may be retained by the university in a secure location for up to ten years. Individual results may be aggregated anonymously and research reported on aggregate results.

Further information

If you have any questions about this research you can ask now or at any point during the study.

Zamzam Allamki   E-mail: Allamkiz@tcd.ie   Tel No: 0096899824481, 00353873598293

TRINITY COLLEGE DUBLIN
INFORMED CONSENT FORM - Survey

LEAD RESEARCHERS: Zamzam Allamki

BACKGROUND OF RESEARCH:
This research investigates the effect of cultural factors upon the diffusion and successful implementation of ICT in public organisations in Oman. This study will involve mixed methods research approach that combines questionnaires and interviews. This questionnaire will take around 10 minutes to complete.

PUBLICATION:

The results of this project may appear in papers, books chapters, journal articles and in presentations at conferences, but you will not be identified in any of these reports. Individual results may be aggregated anonymously and research reported on aggregate results.

Please take your time to read the following declaration and sign it please

DECLARATION:
- I am 18 years or older and am competent to provide consent.
- I have read, or had read to me, a document providing information about this research and this consent form. I have had the opportunity to ask questions and all my questions have been answered to my satisfaction and understand the description of the research that is being provided to me.
- I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity.
- I understand that if I make illicit activities known, these will be reported to appropriate authorities.
- I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.
- I understand that I may refuse to answer any question and that I may withdraw at any time without penalty.
- I understand that my participation is fully anonymous and that no personal details about me will be recorded.
- I have received a copy of this agreement.

PARTICIPANT'S NAME:

PARTICIPANT'S SIGNATURE:

Date:

Statement of investigator's responsibility: I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

RESEARCHERS CONTACT DETAILS: E-mail: **Allamkiz@tcd.ie**   Tel No: **0096899824481, 00353873598293**

INVESTIGATOR'S SIGNATURE: Zamzam Allamki   **Date:**

TRINITY COLLEGE DUBLIN

INFORMATION SHEET FOR PROSPECTIVE PARTICIPANTS - Survey

This sheet should inform participants of the following, as appropriate to the study:

- The background context of the research explaining its relevance
- The procedures relevant to the participant within this particular study
- Declarations of conflicts of interest
- The voluntary nature of participation: the right to withdraw and to omit individual responses without penalty
- The expected duration of the participant's involvement
- Anticipated risks/benefits to the participant
- The provisions for debriefing after participation
- Preservation of participant and third-party anonymity in analysis, publication and presentation of resulting data and findings
- Cautions about inadvertent discovery of illicit activities
- Provision for verifying direct quotations and their contextual appropriateness

Of course, the information sheet for participants will vary with the study at hand. It should provide all information necessary for informed consent.

TRINITY COLLEGE DUBLIN

INFORMATION SHEET FOR PROSPECTIVE PARTICIPANTS -
Survey

https://www.surveymonkey.com/r/6RLHML3

My name is Zamzam Allamki. I am a PhD student in the School of Computer Science and Statistics in Trinity College Dublin. You are being invited to take part in a research study investigating that how, and to what extent do cultural factors influence the successful implementation of ICT in Omani public organisations. Please take your time to read the following information.

I am asking between 300 and 800 people to take part in this survey to investigate views on organisational culture and successful ICT implement in e-government work environment. Your participation in this study is voluntary and you can withdraw from the study at any time without penalty.

If you decide that you would like to take part, I would like to ask you to fill in this survey at your convenience. You will not have to do anything special to prepare for this survey. Each question is optional, however, I would be grateful if you could respond to all.

You may or may not benefit directly from participating in this research, but you will be helping to advance knowledge and understanding of making better use of ICT in public organisation. However, the results of this research will be available to you on request.

Conflict of interest

This research should not conflict with any participants' interest. This is because its objective is to grain a deep understanding the effect of cultural factors upon the diffusion and successful implementation of ICT in public organisations. There are no anticipated ethical issues in this project other than respecting the confidentiality of your comments. There are no sensitive social, political, medical or sexual issues involved in this research.

Privacy and confidentiality

The results of this project may appear in papers, books chapters, journal articles and in presentations at conferences, but you will not be identified or identifiable in any of these reports unless you wish to be so identified. Individual results may be aggregated anonymously and research reported on aggregate results. In the extremely unlikely event that illicit activity is reported I will be obliged to report it to appropriate authorities.

Further information

If you have any questions about this research you can ask now or at any point during the study.

Zamzam Allamki   E-mail: Allamkiz@tcd.ie   Tel No: 0096899824481, 00353873598293

Research Project Proposal

1. **Title of project**

   The Influence of Culture on the Successful Implementation of ICT Projects in Omani E-government

2. **Purpose of this project including academic rationale**

   This research aims to offer a rich and deep understanding of the impact of cultural factors upon the diffusion and successful implementation of ICT in public organisations in developing countries in general and Oman in particular. For Omani governments, the results of this study will provide insights into the various aspects of national and organisational cultural that can affect the success of ICT implementation within public organisations in Oman. It is anticipated that this research will provide decision-makers insights which will support decision making and the development of appropriate IS strategy policies to achieve a successful transformation towards e-government across all public organisations in Oman.

3. **Brief description of methods and measurements to be used**

   This study involves mixed methods and multiple case studies. The primary data gathering will be done using two approaches. Firstly, questionnaires will be distributed to participants in each organisation in paper form or softcopy. The quantitative data analysis will be done using the SPSS software package. Secondly, semi-structured interviews will be conducted face-to-face in Oman. The qualitative data analysis will be done through transcribing the interviews texts to be analysed in terms of categories/themes based on the factors of culture and work environment. The qualitative data analysis software (Maxqda) will be used for the data analysis.

4. **Participants - recruitment methods, number, age, gender, exclusion/inclusion criteria, including statistical justification for numbers of participants**

   The number of participants for the quantitative study is approximately 300 - 800 employees drawn from four public organisations in Oman. This is based on the estimate that each Ministry in Oman has an average of 1000 employees. The number of employees who will be interviewed is approximately 40 participants including: directors, assistant directors, IT professionals, heads of departments and other employees from four Omani public organisations. There are no exclusion criteria.

5. **Debriefing arrangements**

   I have already met some of the officials and specialists in government organisations who will be interviewed. I have already asked them if they are interested in participating in this research and they have agreed to do so. The remainder of my informants will be identified using snowball for questionnaire and purposeful sampling for semi-structured interviews and from employees names listed in each organisation. Summaries of interviews will be checked with informants to ensure their accuracy.

6. **A clear concise statement of the ethical considerations raised by the project and how you intend to deal with them**

There are no ethical considerations in this project other than respecting the confidentiality of the interviewees' comments. There are no sensitive social, political, medical or sexual issues involved in this research. All interviewees will be adults.

I confirm that I will abide by the School of Computer Science and Statistics Ethical Guidelines and I will inform the Committee if there is any ethically relevant variation to the project as described in this application.

Signature of Applicant: Zamzam Allamki   **Date: 20/9/2015**

Email to Informants - Interview

Dear Mr/Mrs,

My name is Zamzam Allamki. I am currently doing a full time PhD at Trinity College Dublin. My area of research is the successful implementation of ICT in e-government by public organisations in Oman.

The objectives of my research are to develop a framework for e-government work environment in Oman and to understand how different organisational and national cultural factors affect the success of ICT implementation within public organisations in Oman. By studying this, I hope to obtain a deep understanding of relationships between culture and successful ICT implementation in Omani public organisations.

I am contacting you because [*here the reason for the approach will be entered, e.g. you are an employee in this organisation*] and would like to request an interview. The interview should only take around an hour and all information gathered will be secured and remain confidential.

If you are willing to be interviewed to participate in this study, please contact me by return via email: Allamkiz@tcd.ie or feel free to call me on Tel No: 0096899824481, 00353873598293.

Kind Regards
Zamzam allamki

Email to Informants – Survey

Dear Mr/Mrs,

My name is Zamzam Allamki. I am currently doing a full time PhD at Trinity College Dublin. My area of interest is the successful implementation of ICT in e-government by public organisation.

The objectives of my research are to develop a framework for e-government work environment in Oman and to understand how different organisational and national cultural factors affect the success of ICT implementation within public organisations in Oman. By studying this, I hope to obtain a deep understanding of relationships between culture and successful ICT implementation in Omani public organisations.

I am contacting you because [*here the reason for the approach will be entered, e.g. you are an employee in this organisation*] and would like to take part in a survey. The survey should only take around 10 minutes and all information gathered will be secured and remain confidential.

If you have any further queries regarding this study, please contact me via email: Allamkiz@tcd.ie or feel free to call me on Tel No: 0096899824481, 00353873598293.

Kind Regards
Zamzam allamki

Interview Protocol

To answer the research question:

How, and to what extent do cultural factors influence the successful implementation of ICT in Omani public organisation?

Two categories of informants will be interviewed:

1. Leaderships or general directors in each organisation.
2. Employees from technical and business departments.

Each interview will be commenced with the following statement.

I would like to get your opinions on how, and to what extent do cultural factors influence the successful implementation of ICT in Omani public administration. Specifically, I would like to identify how successful ICT implementation is defined and perceived in Omani public organisations at the system, user and organisation levels? What are the Omani cultural factors, barriers and enablers that affect the successful adoption and use of ICT by Omani public organisations and their employees? What do organisations need to do to support ICT adoption in Oman? Finally, I would like you to tell me what are the optimum factors that create the best working environment for implementing e-government initiatives?

Please note that each question in the interview is optional. Feel free to omit a response to any question, however, I would be grateful if all questions are responded to.

Then the proposed questions for each category will be as shown in table 1. These questions may be modified as the research proceeds, but will remain broadly along the lines set out.

Appendix B: The Questionnaire

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

The Influence of Culture on the Successful Implementation of ICT Projects in Omani E-government

https://www.surveymonkey.com/r/6RLHML3

Information

This study is part of a Doctor of Philosophy, carried out by the researcher Zamzam Allamki and supervised by Dr. Frank Bannister at Trinity College of Dublin. Thank you for taking the time to answer the following questions. Your answers will contribute to research aimed at recognizing the factors of successful ICT implementations. The objectives of my research are to develop a framework for e-government ICT project successful implementation in work environment in Oman. As well as to understand how different cultural factors affect the success of ICT implementation within public organisations of Oman. By studying this, I hope to obtain a better understanding of the relationships between culture and successful ICT implementation in Omani public organisations.

Your participation in this study is voluntary and you can withdraw from the study at any time without penalty.

The survey should only take around 10 minutes to complete.

I would welcome any comments or suggestions you have, please add them in the space provided at the end of the survey.

Confidentiality

The information you provide is anonymous and you cannot be identified from this questionnaire. The completed survey will only be accessed by the researcher (see below) and the data will be destroyed after two years. The information will be collated statistically and anonymously and no specific names will be identified. The purpose of collecting this data is to help the researcher gather information for the study and there will be no direct benefit to the participants. Neither will there be any risk to them. This survey is ethically approved by TCD.

Thank you again for taking the time to respond to this survey. If you have any further questions please contact me at:

Mrs. Zamzam Allamki
Dept. of Information Systems
School of Computer Science and Statistics, TCD, Ireland
Tel: 00353873598293, 0096899824481
Email: Allamkiz@tcd.ie

Or my *Principal Supervisor*:
Dr. Frank Bannister
Dept. of Information Systems
School of Computer Science and Statistics, TCD, Ireland
Email: Fbnnistr@tcd.ie

Or *Co-Supervisor:*
Dr. Aideen Keaney
Dept. of Information Systems
School of Computer Science and Statistics, TCD, Ireland
Email: Akeaney@tcd.ie

Each question is optional. Feel free to omit a response to any question; however the researcher would be grateful if all questions are responded to.

Please mark your response from Question 1 to 5 by ticking only one answer for each question as shown:

✓

1.1   **What is your gender?**   □₁   Male   □₂   Female

1.2   **In which range does your age fall?**

□₁   18-28

□₂   29-39

□₃   40-50

□₄ 51-61

□₅   62+

1.3   **What is your level of Education?**

□₁   Primary

□₂   Secondary

□₃   Undergraduate degree

□₄   Post-graduate degree

□₅   Other (Please specify) …………………………………………………….

1.4   **Which of the following your organisation?**

□₁   Ministry of Higher Education

□2   Ministry of Education

□3   Ministry of Health

□4   Ministry of Civil Serve

1.4   **Which of the following categories best describes your occupation?**

□₁   Executive Top Management

□₂   Director

□₃   Assistant director

□₄   Head of department

□₅   IT professional

□₆   Administrative

□₇   Other (Please specify) ………………………………………………….

1.5   **What is your Citizenship, Omani?**

□₁   Yes

□₂   No   (Please specify your Citizenship) ……………………………….

Section 2: Computers Experience

Each question is optional. Feel free to omit a response to any question; however the researcher would be grateful if all questions are responded to.

Please mark your response from Question 1 to 4 by ticking only one answer for each question as shown:

✓

2.1 **Do you have computer at your home?** $\Box_1$ Yes $\Box$2 No

2.2 **Do you have computer at your work?** $\Box_1$ Yes $\Box_2$ No

2.3 Which of the following computer systems do you currently use at your work? **(Check as many as apply)**

$\Box_1$ Word Processing

$\Box_2$ Spreadsheets

$\Box_3$ Databases

$\Box_4$ Electronic-Mail

$\Box_5$ Voice-Mail

$\Box_6$ None

$\Box_7$ Other (specify) ……………………………………………………………

2.4 **How much time do you spend using a computer in an average week?**

$\Box_1$ More than 15 hours

$\Box_2$ Between 10 and 15 hours

$\Box_3$ 5 to 10 hours

$\Box_4$ Less than five hours

$\Box_5$ None

Section 3: Workplace Factors

Each question is optional. Feel free to omit a response to any question; however the researcher would be grateful if all questions are responded to the new admission system and its predecessor referred to in the questionnaire as the legacy system.

Please circle the degree to which you agree or disagree with the following statements as a key factor for the successful implementation of an ICT project.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

Self-Efficacy						
3.1	I have the necessary skills to use the new computerized system.	1	2	3	4	5
3.2	Using the new system I am able to customize outputs to my needs.	1	2	3	4	5
3.3	I find the system easy to use.	1	2	3	4	5
3.4	I have received sufficient training on how to use the systems.	1	2	3	4	5
Importance of peer influence						
3.5	My perception of our computer systems generally is influenced by my colleagues.	1	2	3	4	5
3.6	In my use of systems, I am more influenced by their value to me than by others' views about a system.	1	2	3	4	5
3.7	My colleagues' views of our computer systems are influenced by my views.	1	2	3	4	5

3.8	In my organisation, peer pressure to conform is strong.	1	2	3	4	5

Resistance to change: In my organization…

3.9	…change tends to be welcomed.	1	2	3	4	5
3.10	…new technologies are quickly adopted.	1	2	3	4	5
3.11	…my colleagues prefer to stick to the tried and tested ways of doing their daily tasks.	1	2	3	4	5
3.12	…people are anxious about the introduction of new technology.	1	2	3	4	5
3.13	…staff are sceptical about the ability of computerized systems to help them work more efficiently	1	2	3	4	5

Legacy system upgrade: In my organization…

3.14	…the legacy system is easy to use.	1	2	3	4	5
3.15	…a satisfactory level of support is still available for the legacy system.	1	2	3	4	5
3.16	…it is possible to export data easily from the legacy system to the new system.	1	2	3	4	5
3.17	…the capabilities of the new system make the legacy system redundant.	1	2	3	4	5
3.18	…data can be used easily interchangeable between the old and the new system.	1	2	3	4	5
3.19	…the current legacy system is well documented.	1	2	3	4	5

Top management support: In my organisation, senior managers…

3.20	…recognize the benefits that can be achieved with the use of the new system.	1	2	3	4	5
3.21	…support and encourage the use of the new system for my work.	1	2	3	4	5
3.22	…support and encourage employees to adopt the new system.	1	2	3	4	5
3.23	…invest a lot of effort and resources to improve systems generally.	1	2	3	4	5
3.24	…provide good access to various types of software when employees need them.	1	2	3	4	5
3.25	…involve employees during the early stages of new systems development or implementation project.	1	2	3	4	5

Project management standards (e.g. Prince 3 and PMBOK)

3.26	Project management standards are important for the success of system development project.	1	2	3	4	5
3.27	I am satisfied with the application of project management methodology in my organisation.	1	2	3	4	5
3.28	The project management methodology we use have been suitably adapted to the specific needs of my organisation.	1	2	3	4	5
3.29	The project management standards followed in my organisation are good.	1	2	3	4	5

Communication in the organisation: In my organisation, communication…

3.30	…is actively encouraged by senior management.	1	2	3	4	5
3.31	…can be done using several different channels.	1	2	3	4	5
3.32	…is recognised by all staff as important to effectiveness and efficiency.	1	2	3	4	5
3.33	…staff are sometimes reluctant to approach more senior colleagues.	1	2	3	4	5
3.34	…communication tends to be from the top down rather than two-way.	1	2	3	4	5
3.35	…problems often hinder the implementation of changes.	1	2	3	4	5
3.36	…people are widely consulted when new changes are introduced into my organisation.	1	2	3	4	5

Section 4: Organisational culture

Each question is optional. Feel free to omit a response to any question; however the researcher would be grateful if all questions are responded to.

Please circle the degree to which you agree or disagree with the following statements as a key factor for successful implementation of ICT projects in your organisation.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

A. Work Value (V)- Need for Security

4.1	In my organisation, employees should not be afraid to disagree with managers.	1	2	3	4	5
4.2	In my organisation, having low tension and stress at work is important.	1	2	3	4	5
4.3	In my organisation, being consulted by managers is important.	1	2	3	4	5

4.4	In my organisation, a job you like is <u>not</u> more important than a career.	1	2	3	4	5
4.5	In my organisation, you need to be able to trust other employees.	1	2	3	4	5

    B. **Work Practices (P) –** Results-Oriented, Job-Oriented and Closed System
    Where / work:

4.6	Employees need to be comfortable in unfamiliar situations.	1	2	3	4	5
4.7	Each day brings new challenges to employees.	1	2	3	4	5
4.8	People put in maximum effort in the workplace.	1	2	3	4	5
4.9	In my organisation important decisions are made by individuals.	1	2	3	4	5
4.10	Organisations are only interested in the work of employees.	1	2	3	4	5
4.11	There is little concern for the personal problems of employees.	1	2	3	4	5
4.12	Only specific kinds of people fit in the organisation.	1	2	3	4	5
4.13	My organisation is closed and secretive.	1	2	3	4	5
4.14	Employees in my organisation are closed and secretive.	1	2	3	4	5
4.15	New employees need more than a year to feel at home.	1	2	3	4	5

Section 5: National culture

Each question is optional. Feel free to omit a response to any question; however the researcher would be grateful if all questions are responded to.

To what extent do you agree or disagree with each of the following statements in relation to the Omani culture? (Please circle one answer in each line across):

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

5.1	Managers should not ask the opinion of subordinates too frequently, otherwise the manager might appear to be weak and incompetent.	1	2	3	4	5
5.2	Managers should make most decisions without consulting subordinates, because managers should look powerful and authoritative.	1	2	3	4	5
5.3	Employees should not question their manager's decisions.	1	2	3	4	5
5.4	Employees should not show their disagreement to managers.	1	2	3	4	5
5.5	Decision-making power should stay with top management in the organisation and not be delegated to lower-level employees.	1	2	3	4	5
5.6	It is important to have job requirements and instructions spelled out in detail so that employee always know what they are expected to do.	1	2	3	4	5
5.7	Employees should avoid making changes to work practices because things could get worse.	1	2	3	4	5
5.8	Rules and regulations are important because they inform workers what the organisation expects of them.	1	2	3	4	5
5.9	It is better to have a bad situation that I know about, than to have an uncertain situation that might get better.	1	2	3	4	5
5.10	Working in a structured environment (with rules and regulations) is better than working in an unstructured work environment.	1	2	3	4	5
5.11	It is more important for men to have a professional career than it is for women to have a professional career.	1	2	3	4	5
5.12	It is preferable to have a man in a high-level position rather than a women.	1	2	3	4	5
5.13	Men usually solve problems with logical analysis; women usually solve problems with intuition.	1	2	3	4	5
5.14	Solving organisational problems usually requires an active forcible approach which is typical of men.	1	2	3	4	5
5.15	Women do not value recognition and promotion in their work as much as men do.	1	2	3	4	5
5.16	There are some jobs in which a man can always do better than women.	1	2	3	4	5
5.17	Individual rewards are not as important as group welfare.	1	2	3	4	5

5.18	Group success is more important than individual success.	1	2	3	4	5
5.19	Working within a team is better than working alone.	1	2	3	4	5
5.20	Being accepted as a member of a group is more important than having autonomy and independence on the job.	1	2	3	4	5
5.21	It is more important for a manager to encourage loyalty and a sense of duty in rather than it is to encourage individual initiative.	1	2	3	4	5
5.22	Respect for tradition does not hamper performance.	1	2	3	4	5
5.23	The exchange of favours and gifts is not necessary in order to excel.	1	2	3	4	5
5.24	Upholding one's personal image contributes in goal achievement.	1	2	3	4	5
5.25	It is important to keep time free for fun.	1	2	3	4	5
5.26	It is important to have moderation: having few desires.	1	2	3	4	5
5.27	I'm a happy person in the workplace.	1	2	3	4	5
5.28	There are no other people or circumstances that ever prevent me from doing what I really want to do at the workplace.	1	2	3	4	5

Section 6: Satisfaction of Using System

Each question is optional. Feel free to omit a response to any question; however the researcher would be grateful if all questions are responded to the new admission system and its predecessor referred to in the questionnaire as the legacy system.

Please circle the degree to which you agree or disagree with the following statements as a key factor for the successful implementation of an ICT project.

Please mark your response by ticking only one answer question as shown: ✓

- **I am satisfied with system.**   **Agree** ☐   **Disagree** ☐

Please do not name third parties in any open text field of the questionnaire. Any such replies will be anonymised.

If you feel there are other factors that are important to the successful ICT implementation which were not listed in the above table and are pertinent to Oman public sector, please list them and indicate why you see them as relevant.

....
....
....
....

In your opinion, are their other factors that impede the success of ICT implementation? If so what are they?

....
....
....
....

Your Time and Effort are appreciated
Thank you for completing this questionnaire

Appendix C: Studies that Used Hofstede's National Culture Dimensions

Author	Topic	Dimensions	Finding
Zhao (2013)	An empirical study of cultural dimensions and e-government development: implications of the findings and strategies	Power distance, uncertainty avoidance, individualism/collectivism masculinity/femininity long-term orientation	The empirical results show that, **individualism**, **power distance** and **long-term orientation** are significantly correlated with e-government development. These three cultural dimensions would contribute to greater e-government development.
Capece _et al._, (2013)	The impact of national culture on E-commerce acceptance: the Italian Case	Power distance, uncertainty avoidance individualism/collectivism masculinity/femininity long-term orientation	The empirical results show that **Power distance** and **individualism** affect significantly the relationship between trust and intention to use e-commerce in Italy. Contrary to expectations **masculinity**, **uncertainty avoidance** and **long term orientation** have no significant effect on the diffusing of e-commerce.
(Thowfeek and Jaafar, 2010)	Integrating National Culture into Information and Communication Technology Adoption Model	Power distance uncertainty avoidance individualism/collectivism masculinity/femininity	National culture influences the actual behaviour and it can provide additional explanatory power in explaining the variation of the behaviour towards adopting a technology.
(Sriwindono and Yahya (2012)	Toward modelling the effects of cultural dimension on ICT acceptance Indonesia	Power distance uncertainty avoidance individualism/collectivism masculinity/femininity long-term orientation	The findings indicate that both **PDI** and **UAI** have significant effect on PEOU, while **LTO** has significant effect on PU, and SI significantly influenced by **PDI** only.
(Cyr 2013)	Website design, trust, and culture: An eight-country investigation	Uncertainty avoidance, trust and security	He found users of **low uncertainty**, in high institutional trust and in social capital countries, such as Canada and the USA which have the most favourable perceptions of website design. **Overall culture is a stronger predictor.**
Al-hujran, Al-dalahmeh,	The Role of National Culture on Citizen	Power distance and uncertainty avoidance	The results show that the two cultural dimensions: **power distance** and **uncertainty**

Author	Topic	Dimensions	Finding
and Aloudat (2011) **Jordan**	Adoption of e-Government Services: An Empirical Study	individualism, masculinity, and long/ short-term orientation	**avoidance** have significant impacts on citizens' intention to adopt e-Government results, the other three cultural dimensions: **individualism, masculinity**, and **long-term orientation** had no discernible impacts.
Azam and Quaddus (2013)	Examining the influence of national culture on adoption and use of information and communication technology: A study from Bangladesh's SME perspective	Power distance, uncertainty avoidance, in-group collectivism	It is believed that a significant development will be evident if the government considers the cultural issues and motivates SMEs owners and other parties concerned to overcome the traditional hierarchical organisational systems where the authority and power are concentrated at the top of the hierarchy.
(Omar E.M. Khalil 2011)	E-Government readiness: Does national culture matter?	Power distance, uncertainty avoidance, individualism/collectivism, long/short-term orientation	Values and practices of the national culture correlated negatively and positively with e-government readiness. In addition, gender egalitarianism, institutional collectivism, performance orientation, and uncertainty avoidance values were found to be the key determinants of e-Government readiness
(Nassira 2011)	Impact of national culture on perceived success of an ERP system implementation	Power distance, uncertainty avoidance Individualism/Collectivism Long/short-term orientation	There is a strong evidence that culture plays a role in the way users do perceive an ERP implementation
(Martino 2012)	Cultural adaptation of web design services as critical success factor for business excellence A cross-cultural study of Portuguese, Brazilian, Angolan and Macanese web sites	Power distance, uncertainty avoidance individualism/collectivism masculinity/femininity	This result strongly recommends that culture awareness is necessary to improve management of cross-cultural online communication.
(Kaba and Osei-Bryson, 2013)	Examining influence of national culture on individuals' attitude and use of	Power distance, uncertainty avoidance individualism/collectivism long/short-term orientation	The findings suggest that ease of use and usefulness are sensitive to cultural influence. However, the hypotheses relative to the moderating

Author	Topic	Dimensions	Finding
	information and communication technology: assessment of moderating effect of culture through cross countries study		effects of culture on the social pressure, Image, average calls made and average turnaround time spent on the call are not supported
Bagchi *et al.* **2014**	National culture and information technology product adoption	Power distance and uncertainty avoidance individualism, masculinity	The results show that even after controlling of national economic and social differences, **national culture dimensions** significantly predict most IT product adoptions.
Nguyen (2016)	A Cross-Cultural Study on e-Government Services Delivery	Power distance uncertainty avoidance long/short-term orientation indulgence versus restraint	The result suggests that management optimization process, government IT leadership, ICT legislation framework and **national culture** have influences on the e-service provision. Power distance and indulgence/ restraint are found to be not significantly correlated to the provision level of e-service. However, uncertainty avoidance and long/short-term orientation are significantly related to e-service.
Lee *et al.* **(2013)**	The impact of cultural differences on technology adoption	Uncertainty avoidance long / short-term orientation individualism	The results show that in type I culture, innovation factor has a significantly higher level of effect on the adoption than it does in type II culture. In type II culture, imitation factor has a high degree of effect on adoption than it does in type I culture. These findings imply that in **individualistic cultures**, people tend to seek information on their own from direct and formal sources, whereas in **collectivistic cultures**, people rely more on subjective evaluation of an innovation, conveyed from other-like-minded individuals who already have adopted the innovation

Author	Topic	Dimensions	Finding
Abdulrab (2011)	The impact of culture on information technology adoption in Yemeni Universities	Power distance, uncertainty avoidance, individualism/collectivism masculinity/femininity	The empirical results show that power distance, individualism, uncertainty avoidance, and masculinity/femininity are significantly correlated with IT adoption
Bentracha (2011)	Impact on national culture on perceive an ERP system implementation.	Power distance, uncertainty avoidance, individualism/collectivism masculinity/femininity	There is strong evidence that culture plays a significant role in the way users do perceive an ERP implementation.

Appendix D: Interview Questions

At the beginning of each interview, there will be a clarification of the main terms used in the study (mainly, national culture, organisational culture and work place factors) as well as the overall objective of the study.

Main question:

How, and to what extent do cultural factors influence the successful implementation of ICT in Omani public administration?

Table   Interview Guide for Semi-Structured Interviews

Components	Research Sub-questions	Interview guiding questions
National culture	What are the cultural factors that support or hinder the successful implementation of ICT projects in public organisations in Oman?	How does the national culture affect the success of using ICT in the work environment? It is widely held that top-down and bottom-up communication are important and useful for the success of the organisation. what do they think about the state of communications in your organisation? To what extent do you think clarity of the system, rules, regulations and job requirements are important for the success of the organisation? - How satisfied do you think the employees with their workplace? How do you see the influence of the national culture in terms of the general attributes and characters of the Omanis in the performance and relationships of employees in your organisation? Do you think there is anything unique or distinctive in the Omani culture in this regard? What are the challenges? Obstacles? Difficulties that your organization face when trying to introduce new ICT projects or systems? Are there any cultural factors/aspects that hinder the performance of employees in your organization and/or the success of the ICT projects? in your opinion how can or should these factors/aspects be dealt with? Solved? Have you tried different ways to overcome this?

Components	Research Sub-questions	Interview guiding questions
Organisational culture	To what extent do organisational culture interact with other factors in workplace and how this interaction influences the successful implementation of ICT?	- In your opinion, to what extent does the organisation culture affect the success of using ICT in the work environment? How? - One view is that employees who feel secure and confident in their jobs tend to be more positive and productive at work. Others feel that employees who are less secure try harder. What do you think of these views? What implications, if any, does this have in the successful implementation of ICT projects? What do you believe is the best approach to handling conflicts between organisational goals and employees' goals or concerns? - To what extent do you see the work environment in your organisation supportive of accepting and welcoming changes in the organization in general and ICT projects in particular? - How can the organisational culture be changed in a way that will lead to the successful implementation of ICT in public organisations? (e.g incentives, encouragement) - In your organisation, are there any challenges arising from the organisational culture which hinder the success of ICT? - If yes, are these challenges being addressed? And if so, why?
Workplace factors	To what extent do Omani national culture interact with other factors in workplace and how this interaction influences the successful implementation of ICT?	In the organisation, to what extent do peers have influence on others when implementing ICT government projects? How do you make use of this? Generally speaking, to what extent there is resistance to new technologies in your organisation? Why? How do you react to this? What is the position of the legacy system in your organisation? To what extent do you think the support of top management is important in the success of ICT projects in the organizations? What sort of support can or should be provided by top management your organisation? How are ICT projects introduced in your organisation so they are welcomed by employees? How do you go about obtaining user and employee buy-in?

Appendix E: Basic Information about Interviews

	Interviewee	Sex	Venue	Date	Length
1	Expert in Higher Education Admission Centre	M	Ministry of Higher Education	10/4/2016	01.30
2	Assistant Director Electronic Administration Department	F	Ministry of Higher Education	11/4/2016	01.00
3	Director Information Technology	F	Ministry of Civil Service	12/4/2016	01.00
4	Assistant Director General Information Technology	M	Ministry of Civil Service	12/4/2016	01.45
5	Director of Information Technology	M	Ministry of Civil Service	12/4/2016	02.00
6	Director General of Information Technology	M	Ministry of Education	13/4/2016	01.00
7	Director of networks	M	Ministry of Education	13/4/2016	01.36
8	Director of Information Technology	M	Ministry of Education	13/4/2016	01.14
9	Director General of Information Technology	M	Ministry of Health	13/4/2016	01.29
10	Director General of Higher Education Admission Centre	M	Ministry of Higher Education	14/4/2016	01.30
11	Director of Admission	F	Ministry of Higher Education	14/4/2016	01.00
12	Director of Administration	F	Ministry of Higher Education	14/4/2016	01.00
13	Director General of Information Technology	M	Information Technology Authority	17/4/2016	02.21
4	Director of Electronic Health	F	Ministry of Health	18/4/2016	01.00
15	Assistant Director General of Information Technology	F	Ministry of Education	19/4/2016	01.45
16	Education Expert	M	Ministry of Education	19/4/2016	01.00
17	Teacher	F	Ministry of Education	19/4/2016	01.05
18	Systems Developer	M	Ministry of Education	20/4/2016	01.17
19	Director of Science, Technology and Knowledge Transfer Office	M	Ministry of Foreign Affairs	20/4/2016	01.00
20	Assistant Director General of Education Evaluation	M	Ministry of Education	21/4/2016	02.30
21	Director of Education Evaluation	M	Ministry of Education	21/4/2016	01.00
22	Director of Research Department	M	Scientific Research Council	24/4/2016	01.38
23	Vice-Premier of the State Council	M	Council of State	24/4/2016	01.00
24	Director of Admission	M	Sultan Qaboos University	25/4/2016	01.17
25	Minister of Transfer and Communication	M	Ministry of Transfer and Communication	26/4/2016	00.42
26	Minister of Higher Education	F	Ministry of Higher Education	27/4/2016	00.33
27	Dean of Admission and Registration	M	Sultan Qaboos University	28/4/2016	01.42
28	Expert	F	Sultan Qaboos University	28/4/2016	01.02
29	Head of Information Security Sector	M	Information Technology Authority	2/5/2016	01.20

	Interviewee	Sex	Venue	Date	Length
30	Director General of Private Hospitals	M	Ministry of Health	1/5/2016	01.22
31	Doctor	F	Ministry of Health	2/5/2016	00.30
32	Secretary General of the Education Council	M	Education Council	2/5/2016	01.00
33	Director General of Recruitment	M	Ministry of Civil Service	3/5/2016	01.00
34	Assistant Director of Information Technology	M	Ministry of Civil Service	3/5/2016	00.40
35	Director General of Human Resources Development	M	Ministry of Civil Service	4/5/2016	02.32
36	Assistant Director General of the Royal Hospital	M	Ministry of Health	8/5/2016	01.30
37	Director General of Education and Training	M	Ministry of Health	10/5/2016	02.02
38	Expert Education Council	M	Education Council	12/5/2016	02.11
39	Expert	F	Ministry of Higher Education	15/5/2016	01.40
40	Minister of Education	F	Ministry of Education	19/5/2016	01.50
41	Minister of Civil Service	M	Ministry of Civil Service	25/5/2016	00.30

Subjects	Factors	Text
The Impact of the national culture on the work environment	The educational and perceptional level of the senior staff.	The national and the community culture for each country determines the scale of success and failure in projects. The educational and perceptional level of the senior staff and their involvement in information technology influence the rate of success/failure of the project. (ET3) I believe cultural components like values, traditions and customs must be respected when applying any system. Adherence to these components leads to a successful system. Sometimes, we inaugurate projects but we find no participation or interest from users because their opinions were not surveyed to know their attitude for such services. Some people just do not trust technology and are accustomed to human interaction. When a service is introduced in a system and we explain to the public that the system has changed, the public will begin to accept and adopt to the new concept. It is very important to get feedback from those who benefit from the service. (ET3) Cultural aspects have both negative and positive influence on this matter. Strangely, it has nothing to do with the educational level of people. Some studies on knowledge in the Oman show that it is merely a case of confidence in the internet applications and e-transactions in the banking sector (ET2) Cultural aspects has an impact on this matter, the way we deal with it, our rationales, our values and environment. (ET2) Institutional culture must be based on competitiveness to provide the best service rather than destroying what is best. Positive competition and managing efforts to achieve goals that serve the institution and the people. (ET2) There is awareness on the importance of IT systems at work and that such systems are effective tools. We have to keep up with current developments. It is time to convince them and I believe we should show firmness in the institution. (EA1) Culture plays a role in electronic applications and is reflected clearly in the literature, practices and what we observe every day at work. (A13) The national culture of Oman is a community-based culture that promotes trust, closeness and cooperation. (ET4)

		Leaders pay attention to all details in work processes. Senior staff are concerned with operations, strategies and the impact of such elements on IT work strategies (ET4)
		Senior staff are imposing themselves on others and assume complete control over work excluding others in the process and making them lose their sense of responsibility. (ET4)
		IT sector depends on innovation. If we are just taking orders, things would not work out. (ET4)
The gap between senior and junior staff	Closeness and synergy between senior and junior staff lowers the gap It persuades employees Confidence Building to accept the situation Evaluating the staff performance The senior staff trust in the project Compatibility between the institution's strategy and its vision	I think the gap between the new generations of staff who have started to obtain high management position is getting small and I think the gap is shrinking because people are exposed and reading about new management methods. It is getting better but we need time for such culture to impose itself. (ET3) Closer distance between the senior and junior staff provides a better ground for high-pace IT projects that require quicker decision taking. If the gap is bigger between the decision makers or one who sets the project plan and the one who applies such plan or decision, it will require a considerable time to reach to a decision or for a piece of information to reach correctly to the decision maker. (ET1) If the leader is oriented towards modern technology and has no fear to use such technologies, he or she will be closer to the staff. This will contribute to the success of IT application. Each staff member has their own ideas and opinions to solve particular issues or update certain areas in the system. Each one would like to be close to express their opinions and perspectives. If they hold a meeting to exchange their ideas, the system will be complete. I believe we should have shorter level of hierarchy between decision makers and the staff regardless of their level of occupation. This will be fruitful (ET1) Gap is a relative concept. It depends on the institution itself. Innovative structures do not include the typical administrative structures. Communication is horizontal and rapid. It does not contain bureaucratic complications and committees. (ET2) If the top official is convinced about the importance of such technology, it will be reflected positively on the staff and will boast their confidence to adopt any electronic application at work. This synergy and affinity between the head and the employees will fill the gap and reinforce such attitude. It will boast their self-confidence to accept such technology since they find that the head of the unit has adopted it, followed up with its progress and evaluated the

| | | staff performance. You will find the staff highly motivated due to the high affinity and closeness. (A13)

Yes, it have a profound influence since the high management has a particular vision that the staff at the bottom of pyramid do not grasp. Junior staff have programs and plans to realize the vision. If there is no connection between the vision and work plans due to the huge gap, we require linking the vision to work plans developed by the staff at the bottom of the pyramid. There should be continuous meetings and feedback between junior staff and the management. (EA1)

Success is realized in an IT-based project, if the institution has a strong will and there is a compatibility between the institutional strategies and the vision and everyone is working on the same page from the high management, executive team and users. (EA3)

If the gap is small, the matter will be clearer and more accurate in terms of requirements, execution, and work mechanisms. Even if there are some challenges, it will be easy to deal with them because the distance between the execution and decision-making is very short and the matter are more highlighted. (EA3)

If the gap between the senior and junior staff is huge, the administrative levels and hierarchy will much longer and complicated. People would try to rely on others and issues will be scattered. (EA3)

They always say (passing a judgment is part of its perception). However, some employees who do not have the complete picture of the matter begin to have a negative attitude towards the application of the matter because they do not have faith or they are not convinced of its use. On the other hand, if those staff with the negative attitude attend a meeting where they are being oriented about the matter, they would admit that they did not have a clear picture or that they were not informed through the media or in training. This is why we are facing problems during execution. (EA3)

Decision makers should be more aware of the system objectives, its services, merits, components and optimal use. (EA3)

Political support requires understanding the system. The more aware the decision maker and management they, the more powerful the project will be during execution (EA3)

What I mean by understanding is the comprehension of the basics and not the detailed expert-level perception. Decision |

| | | makers should be able to grasp system basics; they should know the objectives, services, utilities, components and how to reach to its optimal use because all matters in the projects depend on what the senior management believe in. (EA3)

If the gap is big, there will not have the same vison, opinions, work priorities, communication and exchange of experience. (ET4)

Closer distance means more affinity and more discussions to find solutions and arrive at decisions (ET4)

It is a common belief that requests are coming from the director, director general or the minister and that I will not work unless there are directives. This is a big problem. This field depends on being innovative and we are depending on commands to arrive. There will not be any innovation at all because the staff do not have a suitable environment to express their ideas and come up with innovations since no one will help and even if they come forward with something, they will be repressed by senior staff. (ET4)

Sharing and trust from a security perspective is sometimes harmful to the institution due to the sensitivity of information. This line of thinking has an impact. We need to have this kind of awareness. (ET4)

Role models are always close to deliver the institution vision and objectives. They are close to staff and proactive to give other a chance to be creative and surprised by the outcomes. (ET4) |
|---|---|---|
| Avoiding uncertainty | Being ignorant about something keeps you from taking risks toward it

Reading about success stories broaden your awareness

Taking risks leads to success in IT

Old generation changes but with caution | If someone is unaware of ICT potentials and reluctant to take any step or risk, he would fear or have no desire to take such risk. On the other hand, people who have none of that would not have any problem. I think that in the last five years we are witnessing some rapid changes in technology and culture. People are more ready to change. (ET1)

Information that a person gets is little unless he or she aims at reading more and expand his or her intellectual capacity. (ET1)

With these rapid changes, there is no solution except venturing ahead even with small risks. This is the way to succeed in the ever-changing IT field. If you stop, you are left behind. (ET1)

Learning from trial and error, there is no absolute correct. (ET2) |

	The new generation are willing to embrace change	If the head is avoiding uncertainty, it will be reflected on junior staff. The gap and the number of rejecters will increase. (ET2)
	We learn from trial and error	Resistance rate increases with the adaptation of new ideas or the change in the conventional work routine. It also increases with age and experience. Long-standing employees show more resistance compared to junior employees due to what they have been accustomed through life, education, training and practices that give them different perspective and methods to deal with electronic means. (A13)
	Engaging the staff	
	Confidence building	
	Changing existing perceptions and visions	The old generation are accustomed for a long time to the conventional methods. They want to hold to such methods. They have concerns with e-transactions or content management. They have little faith and confidence towards such technology or switching to electronic work. (A13)
	Persuading the management	
	Management awareness about the importance of IT	Avoiding uncertainty means that the top executive is able to drastically change the situation or routine or create another engaging work environment that does not make the staff feel strange. He needs to work on a number of areas like persuasion, setting up the conditions and decision-making. (EA3)
	Engaging experts in the decision making	It is important to engage experts in the decision-making process even if it poses some risks for the decision maker to have a stronger position with the group support. It is very important to establish his decision for the project on the discussion and consultations with the experts. (EA3)
	Administrative potentials in taking risks and bold decision making	
	Executing the project	Avoiding uncertainty means to show initiative, face threats, achieve progress and quickly arrive at digital transformation. However, lacking readiness to move forward means we are afraid of risks and we are moving slower. (ET4)
	Staff confidence building	
	Participating in the authority	
	Participating in the decision taking	
Femininity and masculinity	Combination of both gender is best.	Showing equal treatment to both genders requires a hard-to-obtain leadership skill. (ET1)
	Equal to both genders	Sometimes we need results to set up the place and the environment and sometimes we need to set up the place and the environment to get better results. (ET1)
	Females are the best.	Leadership is the responsibility of supervising the staff regardless of their gender. It is the same responsibility but it requires charisma and personal traits for leaders. (A13)

	• Creating harmony among the staff • Showing high respect • Senior staff are becoming closer to junior staff • Respecting time • Showing initiative and accepting what is new • Creating a convenient setting • Considering humanitarian aspects • Changing the work environment	Social and interpersonal aspects are important. If there are good leaders and affinity among the staff or inside the institution, there will be more competiveness, a stronger harmony and mutual respect among the staff. These aspects also promote establishing a good relationship between the staff and management and increase productivity, loyalty to the institution and appreciation to work hours. You will find them showing initiatives of their own, accepting what is new, and what they have proposed. (A13) Work environment is very critical, not just important. We have to consider social aspects at work and how to provide a convenient work place offering some change of pace for the staff. (EA3) For example, google company tends to change the workplace when discussing change. They go to places outside the office like beach clubs, hotels and outside the work hours. The company would want its staff to feel some kind of change so that they are able to grasp the subject and become more creative, innovative and clear-minded. People by nature require change. (EA3) For example, the Prophet (PBUH) migrated from Macca to Al-Madina. The kibla was switched to Jerusalem from Macca because people in the pre-Islamic era were worshiping in the Kaaba and it was not a good time for them to join another religion in the working and in honoring the Kaaba. Jerusalem was the kibla for sometimes until the right time arrived to switch back to Mecca. (EA3) Female staff should pay attention to the organizational aspects. Social aspects must be respected. A work environment that is based on emotional intelligence is more productive. (ET4)
Individual and collective	Collective effort is the best method to succeed in IT Individual efforts exist in high management	In general, I prefer teamwork and I can distribute tasks to individual-based and team-based according to the work level. At low levels, it is preferable to have a good a work team. (ET1) At high levels, work is individual-centered. This is the reality but not what I prefer. (ET1) What causes systems to fail and never continue is that a single person at the high management level takes decisions. (ET1) Teamwork in the institution or between various institutions to complete projects leads to success because there is a collaborative effort. An example of which includes "invest easy" portal by Ministry of Commerce and Industry. (ET1)

		The second project is IT infrastructure for spatial data that is collected by a single infrastructure. Such data is related for more than one body like the Ministry of Housing and Ministry of Transport and Telecommunication and telecommunication companies (ET1)
		Such a joint venture from various institutions requires effort, time and high efficiency. Teamwork in ITC projects is geared towards collaborative efforts. Such field require joint work. (ET1)
		Working as a team is essential. It requires a collaborative effort from different parties: the technical party that provides the technical elements, the business party that offers the service and a specimen of people that will use the service. They need to sit together to understand the project, its problems and possible scenarios. This helps to arrive at successful application. (ET2)
		In IT projects, working in groups are better than dealing with individuals. We exchange ideas, help setting the right requirements and build the electronic systems. (A13)
		We need to promote a culture for teamwork for all structures and all staff at all levels because there are different levels, various experiences and people with different perspectives. We are looking forward to dealing with groups rather than individuals. We build confidence and positive elements in individuals but when there is a teamwork, there is exchange of ideas, taking the right requirements for the available vacancies from the concerned staff. This helps a lot in building and improving the system with all right requirements. (A13)
		Teamwork in the base of the pyramid means engaging the staff who execute the work and have a direct contact in the decision making process to persuade them and make them fully aware to adopt the project because at the end they are advocates for the system and proud of it. They will save no effort because they believe (EA3)
Short term and long term	Short-term plans are better of IT projects. Long-term plans are for strategies, future IT perspectives and research. Long term vision and short-term execution plans divided on phases	In my opinion, short-term plans are the best for IT projects. It should not last more than two to three years because information technology is witnessing rapid changes. If we have a long-term plan and we plan to commence a project for five year, we may discover by that time better methods to arrive at the target that we have planned to reach after five years. (ET1) Short-term plans works for IT projects. However, strategies, perspectives and future studies in IT require going beyond project execution. (ET1) I think IT project should be for a short term. (A13)

		First: because integrated applications change with changes in technology. Second: we need to finish works as soon as possible. It will be more binding for institutions if it was shorter, more solid and time-bound. There should be measurements and we can gradually know the good aspects in the staff. If there are challenges, we should address them. If we prepare long-term plans for a project, people will be lazy to execute the project when needed. (A13)
		There is a vision that grows with each phase. Technical components are executed in phases. At the end of each phase, we move on to the next stage according to a certain plan. There should be a long-term vision and short-term plan for development. This will create a sense of achievement for the staff at the end of each phase (EA3)
		If we manage to provide the same services at cheaper prices, we are successful. IT is just a means to achieve greater visions. (ET4)
		When building a technology, the goal should not be utilizing the state-of-art technology rather than helping the institution perform better. (ET4)
Indulgence VS Restraint	Balance between the two values is the best option for IT Communication between the senior and junior staff overlook mistakes and seek improvement Tolerance is the best option	I think modern technology has offered us the chance or a means for communication and discussions for the interest of work. It has broken the ice between the head and the staff and offered us the chance to exchange ideas and opinion to promote work (ET1) I find it useful to open accounts for officials in social media. It provides a chance for the staff to give feedback to develop the work, detect negligence and reinforce other aspects of work. I say the new generation when they assume such positions would have such attitude because they are engaged in social media. (ET1) Higher communication between senior and junior staff means more productivity. Meetings break barriers and work routine. It gives the staff a sense of relief, boasts confidence, enriches initiatives, proposals and innovations to promote and develop work. (A13) Avoidance is partially important. We are not in a military institution or in a factory. When we talk about government bodies and deal with individuals and institutions that highly depend on work force to perform tasks and offer service, you need to strike a balance between avoidance and tolerance. (EA3) Tolerance has many good aspects that affect the success of system integration. It requires skills, patience and

		overcoming surprises that may occur during system setup or upgrade. (EA3)
		Tolerance must be sometimes a calm informal discussion outside the work. (EA3)
		Tolerance has a psychological impact on the employee because he would appreciate the effort that the official is putting. (EA3)
		Tolerance is connected to administrative and leadership skills for officials. (ET4)
		Creating a casual respecting work atmosphere for the staff. (ET4)
Communication	All types of communications: (Fahad) • Top-down communication • Horizontal communication • Bottom-up communication Interpersonal skills Knowledge transfer inside the institution. Framework to pass information upwards Shorter and easier communication Administrative and horizontal communication Horizontal and vertical communication is vital in ICT setting	I think IT uses all types of communication. Ideas always come from policy makers. It starts as an idea. Of course, they are not the ones who come up with these ideas. They have mechanisms to survey and follow up with the community needs. They start by setting the priorities that serve the vast majority of the community by decreasing the load on the institution and providing a better service to the community. (ET3) It starts as an idea or a plan from the top management and goes downwards. It is translated as work paths, sectors, beneficiaries, audience and technology. The type of technology determines the methods. We start with the main components to provide any service. At the bottom of pyramid, communication is horizontal. By that, we mean all sectors discuss with one another. (ET3) If there is no communication between the top and the base, a huge failure is bound to happen. (ET3) If there is some feedback especially negative feedback, this means there is a problem we need to solve, there is negligence or some crucial units have not been involved despite having a pivotal role. (ET3) The administrative system that adopts a horizontal-communication approach is the best. Huge companies adopt such approach. They aim at finding ideas; they always do. Top management always tries to be close to the base because they believe and have faith that junior staff are the source of ideas. They follow such ideas. In our system, we are not just trying to search for the best applications. Ideas come ready. Ideas usually come from the base because junior staff interact with day-to-day assignments and are in touch with the reality and conditions at work. The majority of the society is searching for the basics but the high management does not considers that. There is no participation in setting the goals and decision-making.

			Horizontal communication is the best option but we require a framework in which officials and staff sit together. (ET3)
			Horizontal communication at the administrative level is the best electronic work setting. (EA1)
			Projects start from the top to the bottom and concludes from the bottom to the top. (ET1)
			Horizontal communication is the best method for work environment. (ET3)
			There is some kind of bureaucracy and routine at work in Oman. Many employees do not depend on horizontal communication. Second generation may have it also but it is not found in the majority of staff who reach such level of communication. (ET3)
			We need a platform. We need to start an awareness campaign for the people to commend role models or spread successful stories worth following. (ET3)
			Shorter and easier communication contributes in raising productivity and accomplishing ITC projects. (ET1)
			Bi-directional communication between administrations creates an opportunity for holding meetings at all levels to exchange ideas and opinions for solving a problem or upgrading a technical element. (A13)
			We have a very big communication problem in Oman. I feel we have some successes at the individual level. If we go to each department or administration, we feel there is success. At the same time, there are failures due to lack of coordination and communication. (EA3)
			We have many problems at the inter/intra-institutional level, at the upward communication level and at the downward communication level. At the downward communication level, senior management may hear or read something in the newspapers. It does not reach them directly. At the upward level, messages may reach the management or may not. If it does not reach hithem, there is an error in the communication and even if it does, it is kept aside. This is a big problem. (EA3)
			We must set a communication plan that contains clear goals and a vision for the institution. It should be clear for the employees. The method of communicating their ideas to the management should be in a regulated method and not haphazardly. (ET4)

| Clarity of rules, regulations and work requirements | Clear systems lead to better productivity. Promoting awareness about the rights and obligations for citizens/ beneficiaries.

Building trust with people

Smart government management

Clear systems create satisfaction

Creating transparency

Assuring service continuity with efficiency and quality

Ensuring knowledge transfer

Unclear requirements create dissatisfaction

Unclear systems create unsubstantiated claims like corruption | Clear system, rules and regulations are very essential in the management of an institution. How smart are they to manage the government? We have many successful examples in the country. I recall the story of consumer protection. How did they manage to protect the consumer? Basically by doing two things. First, by informing consumers of their rights and obligations and how would they evaluate the product and assure its quality. Second, by promoting the concept in the media (radio and TV). They started building the trust with people by initiating an e-report application. (ET3)

Clear systems and regulations promote productivity. A clear vision and daily work routine contribute to realize such vision. It provides us with a guideline to which we can refer. This will lead to the success of the electronic systems (ET1)

In my opinion, providing clear laws, regulations and systems for new employees in the institution so that they will be well aware is very important. These are essential work principles that employees should be aware of to recognize their rights and obligations, the institutional perspectives and their roles and their accountabilities. Such roles are parts of the existing institutional groundworks and productivity in the work system. (A13) |
| Job satisfaction | Providing a suitable environment for ICT.

Providing privacy to IT staff

A casual environment filled with intimacy and friendship | It is very important to provide a suitable environment for the e-system and make the staff comfortable at work. (ET1)

We are lacking a very important element in information technology, which is IT staff who possess high IT capacity and skills should receive a special treatment compared to non-technical staff. If we are treating them the same in terms of incentives and promotion, we are going to lose them to the private sector where they are appreciated. (ET1)

Giving IT staff a special treatment in terms of the incentives, promotions and leaves, flexible work hours and an |

A unique characteristic of Omanis	Tolerance. A sense of nationalism, pride and achievement. Tolerating differences of opinions Cooperation, collaboration and participation	opportunity to pursue studies to put a stop to their transfer to other places (ET1) Environment and convenience are important. They encourage the staff to perform their duties and exercise tolerance and innovation. (EA3)
		Tolerance is a good trait. We always value people for their character. At work, we require both. Some jobs require tolerance and others require the opposite. Jobs that demand face-to-face interaction require some level of tolerance. Other jobs that are behind the desk require firmness and do not tolerate mistakes. In general, we are known to be forgiving and generous. We do not like the noise. We love peace and quiet. (ET3) I think patriotism exists to highlight the country. That is why IT government projects are awarded and recognized internationally such as the admission system, consumer protection and Muscat Municipality. There is a covert motif for Omanis to promote for their countries in whatever form. Patriotism exist. (ET1) There is a sense of patriotism and pride in achievements. The history of Oman is full of events. Omanis in the past were bold and high achievers. After that, it underwent a stagnation. Nowadays, we are feeling that we have a proud history. We want to rise again. We have connections to our proud past. What we need to do is to continue achieving and aspire for more progress. (ET1) The high tolerance level for differences in opinion can help us in IT projects in a different way i.e. by not sticking or take a side to a single idea, opinion or body. (ET1) For example, today we have an IT project. In this project, we want to integrate a system. There are two offers, one from Microsoft company and the other from an open source. There are people who opt for close source system and there are those who believe in open source programming. If we in Oman hold to tolerance and accept differences in opinions, then we put all options under discussion and the most appropriate choice will be selected. (ET1) In other countries, you will some people who are partial to a particular company even if evidence is against it. They will hold to their belief even if evidence is against such company, which is reflected in the success or failure of the system. (ET1) The high tolerance level for differences in opinion can help us in ICT projects. (ET1)

		Omanis in general tend to cooperate, collaborate and participate in. They like serving others. This makes them ready to accept anything or cooperate for something. This is reflected on the nation's culture at the political level. Oman likes others and cooperate with them. They show initiative in this regard. It is in their blood and this nature can help. (EA3) Omanis are obedient and forgiving. You would not have any difficulty to change their perceptions. Tolerance is a culture in Oman. They can easily switch to another opinion. They are flexible.(EA3) Example, Abd and Jaifar were told to convert to Islam and they converted to Islam willingly. This is a historic trait in Oman under the umbrella of tolerance, collaboration and cooperation. (Nabhan) Tolerance influences change. They have the potential to change and tolerate the use of electronic systems. Patience, tolerance, following instructions, listening to others and even overlooking mistakes and so on are all linked to tolerance, which has an impact on the success of IT integration. (EA3)
Challenges and obstacles	No boldness to make the decision Lack of trust with the staff. Leaders and administrations are not decision makers hasty decision making Middle management concern of losing powers Persuading management of the importance of providing sufficient budget for IT projects Slow internet speed Lack of efficiency from	I think we have a problem with our leaders and administrations. They are hesitant and not taking any decision due to lack of information and background, lack of trust with the people around them or simply they have no power to take the decision. They became in the management position simply through years of services or high degrees that qualified them for their positions. We lack strong decision making in our government and community. Sometimes, there are quick decisions. It could work both ways for the project, success or failure. Sometimes, decisions are made and they create problems at the short run but succeed in the end. We lack bold decision taking. (ET3) There is the problem of directors and directors general whose power are withdrawn and they cannot take any decision or make any exception. They have signatory powers. They cannot determine the number, the volume or the type. (ET3) The biggest problem is persuading the official of the importance of providing a sufficient budget for ICT projects. Internet service needs upgrading considering geographic isolation and remote scattered villages. Companies value profit above everything else. Any tower erected yields in profits. (ET1) TRA role is ineffective. They do not have fruitful communication with telecommunication companies. They are in clashes. This is a severe problem. Each one is blaming

	Telecommunication Regulatory Authority	the other party leaving citizens and government projects in a dire jeopardy. (ET1)
	Unclear economic identity for the country	Unclear economic identity for the country does not provide us with clear institutional performance identity because we are just depending on oil. The government say our economy is built on innovation but we are totally away from the subject. We are talking about economic diversity and we are creating sectors and projects here and there but the vision is not clear. (ET2)
	Unclear institutional performance identity	For example, Oman vision 2020 aims at economic diversity. Nothing has been achieved in this regard. In general, unclear subject lead to unclear structure for government institution and unclear roles in the public sector. There is no harmony between these public units. We do not have sectors but there are ministries and authorities. Each one of these units does not know the role of other units or its own role. (ET2)
	Unclear vision, missions and strategies	
	No harmony in the plans	E-government is not just computer. It is a logical work. Nothing that defies logic should be in the system. (ET2)
	No unity or unified integrated vision approved by all in the institution	Internet, communication and huge data volumes are challenges. (EA1)
	Duplication of tasks between departments and administrations of a single institution	Rough terrains that are not easy to connect. Fiber-optic connection everywhere would require tremendous effort. (EA1)
		Work force: Despite having many IT graduates, we are lacking quality IT specialists who can build and upgrade systems. We are lacking fine specialties like java and oracle programmers and database management specialists who can set up a huge specialized IT database. (EA1)
	Unclear role distribution among government bodies	
	Information volume	Current IT and computer specialists know little about their subject. They have generic knowledge of side subjects. Public and private institutions are recruiting specialists from outside. It is very expensive and institutions are willing to substitute them because they are going to pay the same salaries for the expats. However, employers notice that specialists from India have specialized expertise and they can tell the difference. (EA1)
	Rough terrains	
	Scarce professional specialization	
	No interest in Omani talents and their initiatives	
	No faith in the importance of transformation	ITA is a government body established for noble purposes. Did it play its role? Should it play its role based on a clear plan with defined goals and communication with all concerned parties to determine their need or set up a framework for each one? There is a general framework for the state and special frameworks for each institutions. We are executing these frames. Are these requirements and
	Lack of awareness of the importance	

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	electronic applications in terms of facilitating procedures and cost cutting	plans made for particular phases at particular level and for well-defined time lines? What are the roles entrusted to ITA and other agencies? I think if we follow such narrative from the establishment of ITA until nowadays, we may have made a huge progress and built Omani talents that can be a reference for the state or any other agency. (A13)
	No clear work plan in terms procedures, timeline, performance indexes and evaluating bodies	ITA did not play its role. Efforts made by different institutions are scattered. Our skills and capacities have not find a suitable ground to flourish. Some Omani specialists show initiatives and have talents in this regard. Such talents withered with time because they do not receive encouragement or support from anyone. (A13)
	ITA did not do its job	We should avoid wrong starts. Involving the executive staff and the media is very important. We establish a ground to be acquainted with the project to avoid many things that may occur afterwards. (A13)
	Scattered efforts from concerned authorities	Involving the project staff in the decision-making process makes us avoid many challenges and obstacles that may face any project. It lowers staff non-compliance with the project.
	No emergence for new talents or capacities	Work force is very important. Those who will support the project or are involved in the project should be included; even if the project faces difficulties during development stage, it will be easier to deal with. (A13)
	Enforced systems Imported systems Lack of participation in system upgrade	
	Financial challenges	
	Scattered efforts	
Challenges and how to address them	No interest in middle management	The role of the director is not limited to make exceptions. It is to enhance the work and to plan. The reason for the failure e-government failure is the middle link. They need to be made aware that their roles are not day-day follow up. They are in the bottleneck positions. How do you do your job? What are the work procedures and tracks? I think this middle link is overlooked. The solution is to make some administrative changes. (ET3)
	Lack of attitude towards administrative change	
	No feedback from the previous five-year plans	How many project managers do we have in the country in the e-government project management and digital transformation? In ITA, they are few. We did not give trust, support, training and qualification to the middle link. We are missing some professional specialties in the country. We should illuminate students about these professional jobs. We promote for such economic aspects for such professional jobs. (ET3)
	Lack of e-government project managers	

	Lack of professional specialties	Initial remedies include establishing a public company for broadband services to set up internet networks in places where internet companies cannot invest in. (ET1)
	No confidence in middle management	
		There should be more communication at three levels: legislators, regulators and operators.
	Lack of training, qualification and support for middle management	Legislator: Ministry of Transport and Telecommunication Regulator: ITA and RTA Operator: telecommunication companies. There should be communication between these three parties to provide the service at any time and place at affordable rate. (ET1)
	Establishing a public company for broadband services	Telecommunication companies require permits from many bodies to set up towers. We require easy procedures from such bodies. This is what prevents setting up high internet speed towers. (ET1)
	Tri-level efficiency: the project, the regulator and the operator	Knowing the system services and how to operate them and the new means to provide the service (ET2)
	Facilitating the procedures between telecommunication stakeholders	Broadmindedness: This institution needs to open up and move outwards whether outside the country or inside. It should open up to other agencies, listen, and benefit from them in terms similar application and their feedback. It will learn, develop and benefit a lot if it is open to the world. (ET2)
	Awareness of the system services and how to deal with them	The government network project is about connecting 62 public institutions, ministries and authorities with fiber optic cables. The speed is over 1 GB per second. This will be a huge transformation. It is expected to finish in the coming months, October 2016. We expect all institutions to be connected with a single network. We commenced this new project in the last year in 2015. We still have the issue of many institutions outside Muscat. We need to come up with internet solutions. (EA1)
	Considering the feedbacks	
	Innovation and out-of-box ideas	
	Broadmindedness	The national strategy for broadband was made to increase the speed. The strategy, its goals and work force are clear. It has been approved by the cabinet. This strategy adopts an advance technology. (EA1)
	Provision of financial sources and time	For example, we use fiber optics in the main cities. It is hard to apply it to remote rural villages because of the rough terrains. The idea is to use it to connect it to towers and then normal cables are used. This will enhance the speed. There is an execution plan to use satellites for remote places for ten years. (EA1)
	Establishing the government network	
	Establishing a national broadband strategy to increase internet speed	Oman Broadband company is established. It was given the responsibility to execute the strategy and to extend to fiber optics networks. It has started to work. People will notice

	Establishing Oman Broadband Company	the difference this year. Some houses in Muscat are connected to this network. (EA1)
	Manpower Training and qualification	Our students still lack such experience in dealing with e-systems. This is a good promising field. We require training and qualifying the human capital in this sector. (EA1)
	Privatization of IT sector	The current economic crisis urges us to find solutions like privatizing the IT sector instead of letting the government make huge expenditures. The private sector can develop this sector. What we are doing currently in ITA like establishing information centers can be carried out by the private sector because it is profitable to them. The government is not required to finance such sector. Public services and programs can be privatized. Instead of binding the government to have such responsibility within fixed hours and in bureaucratic fashion, the private sector can be more efficient. The role of ministries will be setting the legislations and policies and companies execute them. Such laws and regulations must be clear to them. This is the option that we started now and we expect it will give us a boast to the IT sector. (EA1)
	Establishing an authority with clear vision and accountabilities	
	Early participation of operators to get their opinions	
	Facilitation, media and marketing	
	Participating with project holder in the decision-making process	I think we need this aspect. We need a responsible body that has a clear vision and knows exactly what it needs from such technology, what it need from e-government, how far it will go and when it will realize such vision. It must be clear and reviewed. We have to believe in something even if we lose our faith in our institutions, to believe in the importance of such transformation, change, applications, facilitating procedures and cost cutting in this field. We cannot move forward without believing in. (A13)
	Regular staff meetings	
	System review and update	
	Recruiting youth leader	I think if we gather these scattered efforts from all ministries and other public agencies, we would have made a big progress in cutting down the expenses, increasing work rate, capacity building for Omani talents and laying a firm ground for our institutions. We would have reached a very advance stage nowadays. (A13)
		Examples: regular meetings to ensure there are no obstacles or challenges for the staff. Another example includes holding review sessions after one year from setting up the system. After six months, we start another phase and take their opinions: Do we need to update something? That is because IT projects do not work if they remain unchanged. It requires a regular update after every interval. Updating creates innovation and overcomes any challenges resulting from routine or boredom. (EA3)
Cultural aspects hindering staff performance	There are no cultural aspects	

	hindering the use of technology	
The impact of institutional culture	Strong desire by leader for IT Volume of system service beneficiaries Open-door Career guidance: o Performance criteria o Task management capabilities o Technical and professional efficiencY The need for job security Close-door policy is still used	Organisational culture essentially has an impact on the success rate. (ET3) Do leaders in the institution have strong desire for IT use? Do they feel that IT is an instrument that help developing their works, enhancing procedures, raising the quality standard to serve faster and a larger audience? If leaders believe it is possible, they will lead wisely. Leadership is about keeping up with the pace and taking steps to benefit from other similar institutions inside or outside Oman. This is where leaders and executives step in. (ET3) The pressure to use technology and be more innovative increases with more users accessing the service. (ET3) It is very important to have an IT tolerant and accepting culture and to have strong affinity among the staff so they would provide a better service. An open-door policy is the best ICT work environment. (ET1) Career guidance is without doubt important. However, can the high management determine and put the best person in the best place? I do not know. (ET1) The need for safety and job security influences the success of IT projects. (ET1) Career guidance or what I call career development includes talents management inside this institution. We have talents in the institution that we should be aware of. I guide people through career guidance once I detect their talents. I develop such talents and then direct them to the right paths. I work continuously to develop the institution's capacities to be an innovative institution capable of generating new ideas every day. (ET2) We should aim at recruiting talents to provide new ideas and not the opposite, to devote everything for the man in charge, the management, finance, legislators and media. Everything should be devoted to serve individuals who are productive. How do we be become productive? First by making the right choice. Second, by developing his skills in the right direction. Third, by guiding him right. Fourth, by empowering him and giving him access to resources (money and time) that he needs. We need to motivate him and keep him in the institution. We must consider all these points. Job security is very essential at work. (ET2)

		Open door policy creates harmony and affinity between the head and the staff. (A13)
		Creating a convenient work environment that encourages innovation and creativity promotes for more productivity. (A13)
		We are still holding conventional beliefs at institutions. Close door policy is applied more frequently compared to open door policy. If someone wishes to meet the director, he cannot meet him or meet any of the staff let alone meeting the director general. He will find more than thirty individuals like him waiting with no clue where to go. (EA3)
		These institutions do not know how to minimize the frequency of citizen visits to their institution or how to ease their suffering. Open-door policy is the best application for successful ICT projects (EA3)
		Career guidance is essential for the institution and any electronic project. We have some officials commend the achievements and comment on the staff errors. This creates concerns and influence everything. On the other hand, if such officials say that they want to start a project, that that they are with the staff in good and bad times and that they will take responsibility, the staff will feel secure and they will achieve the most successful projects. (EA3)
		Career guidance is essential for two reasons: putting the right person in the right position i.e. distributing staff according to tasks forming a main work cell and offering training and technical support at all levels. (EA3)
		Open door policy is good but it requires regulations. Officials cannot listen every day to problems and issues that are not part of their job. There should be a communication plan with goals and institutional vision. Staff ideas should reach official in a regulated manner and not haphazardly. (ET4)
Job security and confidence	Job security is the best	Staff who feel secure are more productive, which in return achieve success in IT field. (ET4)
	Job security exist in Oman	Staff who feel secure and confidence are more positive and productive. (ET1)
	Accountability increases productivity	Job security is available in Oman but it is counterproductive. Other countries that have no job security are more productive. If you are managing a directorate general and have goals and quality to aspire for, deadlines and performance metrics to apply and have employees and departments that are not doing their duties. You cannot stop, suspend or terminate their contracts. (ET2)
	Evaluating job performance enhance productivity	

		What you can do to someone that you do not want in your administration is to report them. If other administrations catch a glimpse of the situation, they will avoid them. At the end, their positions are completely secured. They get their salary at the end of the month and every four years, they get promotion. We have this issue of excessive job security. We do not have hire and fire policy. This big issue needs to be reconsidered. (ET2)
		Recruiting Omanis should be through a contract between the institution and the staff. In the contract, job description and performance are determined. Terms and conditions are set. What we have as job performance metrics is whether you have arrived at 7:30. If you are late, they will deduct little. If you get out earlier by one hour and half, your salary is deducted a little. After deducting their salary, they will be reproached. We do not have performance indexes to commend staff who arrive early or submit innovative ideas. Even if the minister wants to reward them, another employee may complaint that he wants to rewarded despite not contributing anything. This is the situation in the government bodies. (ET2)
		Job security is the biggest obstacle for innovation, progress and performance. It is not just the public sector even the private sector suffers. This is why we are suffering from administrative flabbiness and negligence because staff are not recruited based on production plans or goals and values. (ET2)
		Feeling secure is one the most important factors that increase productivity and innovation. (EA3)
		Example, when the Ministry of Education applied the electronic marking system, it supported the project and the teachers. It has assured them that they would take the blame for any errors or problems. This empowered them to be more confident, innovative and productive. (EA3)
Resolving conflicts between institutional and staff goals	These conflicts are being resolved in Oman Awareness and explaining rationales behind taking decisions Engaging the staff in the decision making and setting the goals	I think when it comes to institutional goals, you find yourself in dispute with the institution because of the system that it uses. Since you understand why it has opted for this system and why it has applied it in this manner, you will find an excuse, cooperate and support it. Awareness, taking decision and communication are very important. (ET3) We must explain why decisions are taken by the institution. We need to involve staff in the decision-making process and setting institutional goals. This will resolve the conflicts because they have set the goals themselves and they will show more interest. (ET3)

	Redirecting staff goals to fit with the institutional goals	Staff goals and interest are redirected to fit with the institutional goals. It starts at the interview where he must readjust his goals to fit with the institutional goals. It is very important to engage the staff in setting and developing the institutional goals. (ET1)
	Conformity among staff to realize the goals	I think it depends on the middle or high management. Staff aspiration must be studied. (ET2)
	Studying staff aspirations	There is a need to connect institutional goals to that of individuals and to fill the gap to avoid frustration. We must engage them when drafting staff and institutional goals so it would be easy to execute. (ET2)
	Connecting institutional goals to that of the staff	In principle, there should not be any conflict. Institutional goals are realized through a plan, which is executed according to phases and tasks performed by individuals, departments and various administrative units. Each one plays his role but each one has rights, obligations and requirements. These elements must be included as part of institutional goals and work processes. Such processes cannot be done by the institution itself. It is shared by the institution and staff. (EA3)
	Understanding the institution goals	
		Laws comes and goes. Cooperation yields in mutual cooperation. (EA3)
		Engaging staff in setting institutional goals resolves conflicts that may occur since they feel loyal and responsible for the goals that they have set. They will help to find a common ground where their goals concern to that of the institution. (EA3)
Workplace tolerance and integration of ICT	Gradual acceptance of information technology.	I think there is tolerance and changes in IT field in the coming days. (ET1)
		A perfect example for change tolerance is higher education admission center (HEAC) system. I hope that the Hajj e-registration will make a huge success and reach its targets because there is a huge acceptance for such change from a group of people who were accustomed for years to apply in conventional ways. There are very few and they are getting used to it. I think there is a high level for ICT tolerance. (ET1)
		Lack of interest in e-system due to change in work routine, decrease in jobs and responsibilities and fear from failure all the points are within the grasp of the high management. The management should show resolution and support to the project and recruit the staff with appropriate capacity to lead the progress and achieve success. (EA1)

		Tolerance happens if the appropriate conditions and potentials are available, if individuals are involved in establishing the projects and if there is support and acceptance. This will lead to success. Otherwise, problems are to occur. (EA3)
Changing the culture of the institution for successful application of ICT	Encouraging the staff Adopting the project by the official Commending staff achievements Convenient environment for the staff Promoting institutional loyalty and passion for development Give attention to the staff and institution image persuasion and interactive participation Highlighting works on new initiatives and projects Recruiting efficient and rational leaders capable of filling the gap between them and junior staff The society does not tolerate change Managing change in an organized manner	Encouraging the staff: Management should have clear goals for the project. He should be able to instill such goals in his staff who would feel that the success of the project is very essential and depends on them. (ET1) For example, if the management is not convinced about a project, it would not matter to him if 100 or 7% of goals are achieved. You would also find the staff do not care that much. However, if the management wants to achieve 100% success in the project, he would create the appropriate environment for the staff. He will approach them ad explain to them how to achieve 100% and how important it is. When he talks to others before the staff outside the institution about the project and milestones achieved, the staff would feel that the director care about the institution and staff reputation. (ET1) Upholding the project by the management makes the staff feel loyal to the institution and have a desire for IT development. This lowers resistance in the institution. (ET1) Incentives: If we have a proactive employee who wants to change the work from a traditional method to a digital method, we should encourage this employee to provide a better service by holding competitions or award ceremonies. (ET2) Motivation is the magic word that keeps innovative individuals on the track. (ET2) We must motivate the staff to work and give them a drive. (EA1) For example, when we were developing a mailing system, we were accustomed to have big corporations and consultants develop programs. We were surprised to find Omani youths who were willing to develop the program and who said there was no need for a tender. Within four months, they managed to develop the program. (EA1) To tell you the truth, there are hidden potential but we require care and empowerment from the officials and the head of the unit; this gives them a cause. Employees possess technical knowledge and they are experts in the field. (EA1) I think it is not impossible to change the work environment. We are working in changing settings. To be able to

	Need for awareness and more effort in communication Changes in services Confidence building	introduce such changes, we must first have a wise leadership that can lead the change and are capable of filling the gap between them and junior staff. I think this will help a lot. (A13) Leaders' role is very essential in building a new culture through meeting, gatherings and occasion outside the work. These things take time. (A13) The most important thing is to persuade the top of pyramid and other leaders in the institution. They should be well aware and have faith because that is the source of guidance. (EA3) Whoever comes with an idea should be honored. Their names should be included in the project. This will create a sense of competitiveness between them. (EA3) Society still does not readily accept changes. In other communities, there are means to measure that in economy. You find people who accept changes easily and there are those who have reservations and concerns until they see larger groups adopt it. Such attitudes are very important. Our community does not tolerate change; this has an influence on the rapid developing IT sector. (ET4) Changes are introduced through surprise decisions without waiting leveling it. It is not managed in the right way. In my opinion, it should be managed appropriately and ready staff should be invested in to try anything new. The institution should benefit from them to introduce change through social influence. (ET4) We noticed there are some changes lately. They are consulting others and engaging them in power. (ET4)
Challenges resulting from institutional culture that may hinder ICT success	No appropriate leaders to lead the change The difference between the former generation and the current one With cooperation, participation and harmony between the head and the staff, challenges are overcome Mentalities	Decisive leaders who have a clear vision can overcome the current challenges (A13) The biggest challenge as I always see is the rigid old-fashioned mentalities that stick to "the old teachings". They complain sometimes that IT has negative aspects (EA3) For example, you can find a single person who can manage to convince all employees in the department and administration or come up with a template. This is one of the most prominent aspects. (EA3) Financial capabilities: another important aspect is having well-aware experts and talents and having the capabilities and the supports from concerned authorities or partners that are qualified to handle the system in terms of quality and function. (EA3)

	Financial capabilities Full awareness campaign	We have to cover the basics like promoting awareness and education to change the staff's perception and attitude. (EA3)
Peer influence on the successful application of ICT	Peer pressure is very important Motivating and supporting Increasing e-government projects Projects are managed at the ministerial level Engaging skilled employees Peers are instruments to create convictions and be close to others. Peers are an auxiliary component to introduce change Making him part of the team, empowering him to lead and creating a place for him Making use of individuals who have passion for ideas	Peer pressure is very important. When the HM Award for Electronic Excellence was announced, the ministers were competing with each other and express their congratulations to the wining parties in the newspapers through their colleagues or companies that have worked with them. This has influenced a lot. As a result, The Award holds a conference and people are eagerly waiting for it. They are contacting the Authority to know the rules and how to win. This has created competitiveness and the number of e-government projects have increased. More support and motivation are provided for project. Project managers are selected at the ministerial level. (ET3) I think engaging skilled employees with others motivates the remaining employees to be innovative and this is reflected on upgrading electronic systems. (ET1) Peer pressure influences a lot especially in Omani community where the mass is influenced by the opinion of individuals. (ET2) Whoever wants to apply new application should work on peer training. Peers can send positive messages each other and push towards innovation and initiatives. (ET2) Peers who have motives and high tolerance level can be an instrument to create convictions and be close to others (A13) Peers who have motives and high tolerance level can be an instrument to create convictions and be close to others who show resistance to IT use. They can make a difference in introducing change (A13) Peer pressure is very significant. Most people are led by example. Peer pressure can work for people who leadership traits or who anarchy traits. They can make fragile people rebel. (EA3) Methods to deal negative peer pressure: (EA3) 1- Introducing someone who is more charismatic and positive to control them. This is an easy approach. 2- Getting rid of this negative character. 3- Making him part of the team and empowering him to lead the matter by commending and consulting him. This will transform him to a better person. (EA3)

		Having role models is vital in the institution. For example, when employees gather in one place and one of them is shrewd, you will find others follow and learn from him not only the skills but also beliefs, loyalty and desire. Management can use such employee during a meeting to consult him or request him to do some tasks. (EA3)
Ways to resist rejection of new technologies	More confidence decreases resistance Many methods to make the staff accept new technologies: • Informing the staff of their need to enhance the service • Engaging the staff in leading the change • Adopting the idea by the management • Launching internal initiatives to highlight ideas • Lack of promotion for new projects • Lack of awareness for any new service	I think it is a trust issue. People nowadays understand. You have passed the trust stage and people trust you because you are following the right procedure, serving the right audience by the right staff and using the right systems. If there is trust between the public and the institution, the process will grow and become more interactive. (ET3) Notifying the staff about the need for innovations and methods for better execution of the e-service. You come up with the idea, budget, time and everything else. However, if it comes from the staff, they will embrace the project better. (ET3) Unfortunately, in Oman we rarely engage the staff when building any electronic project. Mostly new ideas come from the man in charge. It think ideas should come from the base because there is a strong cooperation between staff members and they will defend and work to realize their ideas. However, if they arrive from the management, they will say he does not know. He made an error. It cannot be done this way. There will be resistance. High management should always encourage innovations and staff initiatives. (ET3) We have an Omani saying. "From where the fish stinks? It stinks from its head". We always give the institution time through its leaders. If such leaders welcome the idea with both hands and work hard to enhance it, you will see rapid changes like what is happening in neighboring countries. You find them always seeking progress and raising the bar. You need to monitor leaders whether they are leading or being led. If they are lead, one option is to replacing them with leaders who have a desire for change and improvement and have the required deep understanding. This is one of the reasons why you need to make changes. (ET3)
Top management support	The criticality of top management support Promoting awareness about the importance of technology Support from top management	High management emotional and financial support is very essential for the success of the project (ET1) Support is important and the management should be aware of its importance for ICT projects. It is not superficial. It is essential for all other kinds of development like social, cultural and economic development if there is an infrastructure for that, which will come in the future. (ET1) The application of the electronic systems lies in the first place on the high management. If they is a determination to

	Top management is the compass for the use of electronic applications Financial and emotional support and communicating with the concerned authority Reference and discussion about the project Appreciating and commending the efforts	see it through, we will see some progress regardless of the obstacles. (Ahmed) High management can provide substantial financial support i.e. budgets and can take big decisions with other ministries and institutions. While others cannot take any step further, high management can take actions through support and embracement. (EA1) The management has a fundamental role in this process. If there is no faith or awareness of the importance of IT projects, it will have a negative impact on every member of the institution. The role of high management is very crucial. It is the compass for the use of electronic applications. Its role will have either a negative or a positive impact based on the vision and the line director's perception of IT applications. (A13) Political support is very important. There should many forms of support including ensuring the continuity. (EA3) Types of support From time to time, I refer to the subject in my own words (EA3) Appreciating and commending the efforts, recalling such efforts in conferences, meetings and events under the political leadership. (EA3) Financial support Showing appreciation (emotional support) especially continuous support for development. When I say to a hundred employees "we depend on you and we thank you for this symposium that you have organized. I am here just to express my appreciation for your efforts. Three of you make substantial contribution and we are here to award them. We hope that in the next year we see others", they will work on increasing the system efficiency and capacity. (EA3) Emotional support is stronger than financial support. It aids in continuing with development. (EA3) If the management does not show support, the IT project will not succeed. (ET3)
How to introduce ICT projects to staff in an acceptable way?	Method of discussing with the team leader Creating a belief in the staff about the importance of the project	I think establishing a reciprocal relationship between management and staff and building a common ground for culture, awareness and discussion promote tolerance for anything new. This relationship is built on a good start and managed rationally and with proper justifications and rationales in order to create a need for a transition from one phase to another and switching from current mechanisms to new methods. We have a project in front of us. We need to

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		uphold it. It will help us a lot in dealing with many challenges (A13)
	Guidance based on challenges	
		Briefing, raising awareness and engaging employees is very essential at the beginning. As they say, "a human is an enemy to what he is ignorant of" and they say "passing a judgment is part of its perception" what we mean by the latter is that you cannot pass a judgment against something before you comprehend it. (EA3)
	Providing a change to discuss and meet	
	Sharing your opinions	
	Briefing, promoting awareness and engaging the employees in the basics	For example, some of the staff who have not attended the quality system workshop when asked about the quality system, would say "what quality!" Others who attended the workshop would say that it is a good system and we hope it will be integrated. You can tell the difference between the two groups. It teaches us a lesson that it is important before the execution of any system to consider these elements: briefing, raising awareness and engagement. (EA3)
The possibility of getting accurate and appropriate data	Sophisticated systems improve with time	In general, I hear complaints about infrastructure that has nothing to do with the system: problems about written reports showing more figure than digital reports and not give a quick reading and the issue of Ashifa system. I do not interfere with minute details. I am talking about how to deal with these programs. I think the issue is not related to the system. We have a bigger problem which is the infrastructure. (ET2)
	Developed by Omani talents	
	Built on actual institutional needs	I heard about all systems. Some of which are during my line of work or previous experience. These systems are very sophisticated and develop with time. The positive thing about it is that it was developed by Omani talents who made their marks and managed these elements based on facts, processes and procedures in these institutions. I think it was built on actual needs for these institutions. These systems are capable of coping with new developments and meeting the requirements of the users wherever or whoever they are. All these systems provide tangible services and easy access to these institutions. (A13)
	Capable of dealing with new developments	
	Tangible services and ease of access	
	Keeping abreast with changes required by users	
	Educational Portal is not user-friendly	The Educational Portal system, as I understand, offers many services in its list (EA3)
	Classifications in the portal are poor	Just a whole ago, they started upgrading the system. I hope to see it more interactive and that many will benefit from it. (EA3)
	Old information with no updates	
	No feedback from the staff	It is still upgradable in terms of capabilities and components in the system. (EA3)

|	No content or component management uneasy data retrieval	
The extent of satisfaction of the system	I never used the systems directly (Fahad) ○ It is a big jump for educational institutions and normal citizens ○ Ease of use and convenient ○ Quick response for inquiries ○ It is easy for the government, individuals and institutions ○ Lowered the expenses for individuals, families and institutions ○ More transparency ○ Persuading people Instilling confidence in the scholarship mechanism Educational Portal ○ Updated annually ○ A lot of services for parents, students, supervisors and teachers ○ Statistical readings for decision makers in ministry ○ More comprehensive	As for the educational portal, I heard there are problems like disconnection, data lose and low quality system outcomes. (ET3) I have not heard or dealt with Al-Mawrid system from Ministry of Civil Service. HEAC system has made a remarkable success. People always say everything you need is there and available. The public attitude is that the system is effective, operational and transparent. The most important thing is that people trust it. I used though my brothers. When I ask them, they say do not worry and you do not need to interfere. If we have any problem, we will tell you. This means that it became a common knowledge and students have become aware and have experience through colleagues and brothers who used the system before. We have developed a common knowledge that the system is integrated and will lead you to whatever you want in the right way. This is a good kind of trust. (ET3) We talk about Shifa system a lot but it is not according to what we have explained. It is not what we know and hear. It is no connected. They are trying to connect it with each other. The reasons are related to the infrastructure, remote health centers and inexperienced staff who are working in remote places. Shifa system is functional for nine years in hospitals but without any connection or data exchange. They are working on this issue for the last five years. They are yet to connect all hospitals. It is still incomplete until this day. People do not know about the system because they are not using it. Only the medical officers who use the system internally. (ET3) The reason behind that is ITA since it is responsible for e-government and establishing inter-government network. Establishing the network is like a river. You can put all the ships and boats and they will sail but they will sail slowly. What is required from ITA to join forces with Ministry of Health and discuss their requirements from the network and what ITA can do for them if they want to connect with Tiwi, Salalah or Ibri Health Centers. All must invest: Ministry of Health, OmanTel and ITA. We do not need high data cables. Simple cables will do since we are dealing with small data like names, figures, medications and not with movies and applications. We need a decision and hardworking men. (ET3)

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	○ Upgradable ○ Some success for some components: ➤ Student transfer ➤ Performance report ➤ The forum Shifa system ○ Delayed for the following reasons: ➤ Geographic isolation ➤ Technical and Financial aspects to connect health centers ➤ Huge project ○ It will be a big step for the health system once completed	I think all system are successful. There might be some challenges in some areas and components but as long it is upgradable and editable, I think it is successful. (A13) I find it hard to obtain information. I have to use more than one link and even if I locate it, it is hard to save or transfer the information. No notification for anything new in the interface. Classification in the portal is bad. (EA3) Information accuracy: the portal has old data. There is no content or component management. There is no update. There are some useful information but it is no organized even the organizational structure of the ministry and the names are not updated. For example, the integrated system was deleted from 2012 to 2015. It is still in the portal. I do not know why it was not changed until now. There is no update. (EA3) The portal is full of data and services. Regardless of its nature and whether it has reached its maximum traffic, it should be possible to provide more service and enhance its capabilities. We should be able to control the current components in terms of its structure and ease of access before we ask ourselves if we are able to add new components. (EA3) I find it hard to continue using the system to retrieve my information as an employee. I am trying benefit from it or get my children details to see their reports. It is not easy and convenient to use. There is success for some components like student transfer, performance report and the forum. I was hoping to have them activated to consider them successful like indexes, locations, options, transparent system and updated documents. (EA3) If it remains as it is, I cannot say it is successful because it does not interact with users effectively in terms of their needs and ease of access. (EA3)
How can I say that the system is successful?	Designing the system requirements and success criteria	We have to set success criteria before executing the system to evaluate success factors after the execution. If the requirements are met, the system is considered (ET1) If the system is designed to allow users whether they are staff at different levels or normal citizens to access information and they are able to obtain such information. The system is considered system is considered successful. For example, I could not know the lowest accepted grade for scholarship. The high education admission center allow me access to this information. I consider it one of the successful things in the system. (ET1) The success or failure of a system depends on pre-determined set of criteria. It is not prepared later on. For

		example, I have five components for system review. I omit two components and replace them with other two just to say that the system have achieved all five components and it has high performance (ET1)
Do you consider project management criteria one of the factors contributing to the success of electronic system?	Being aware of project management criteria	I cannot picture a project manager who does not understand project management criteria, time management principles or cost management rules for any project especially in IT field because government projects are tied to specific deadlines, budgets and timeline. (ET1)
leadership	Leadership adopts ideas Appropriate leaders work on closing the gap and achieving success The difficulty of finding appropriate leaders: o Due to Civil Service's procedures	Leaders must have faith in IT and adopt ICT initiatives and projects. Having an organizational structure that is decentralized and away from bureaucracy is very important. In addition, leadership is very crucial. (EA1) I stress the importance of selecting leaders. To execute the plan, we should put the right person with strong personality and high caliber in target delivery, planning and communication in the right place. This solves half of the problem. (EA1) We did not pick the right leaders because of the public service procedures. We cannot recruit the right talents. Choosing the right leaders helps to fill the gap and achieve success. (EA1)

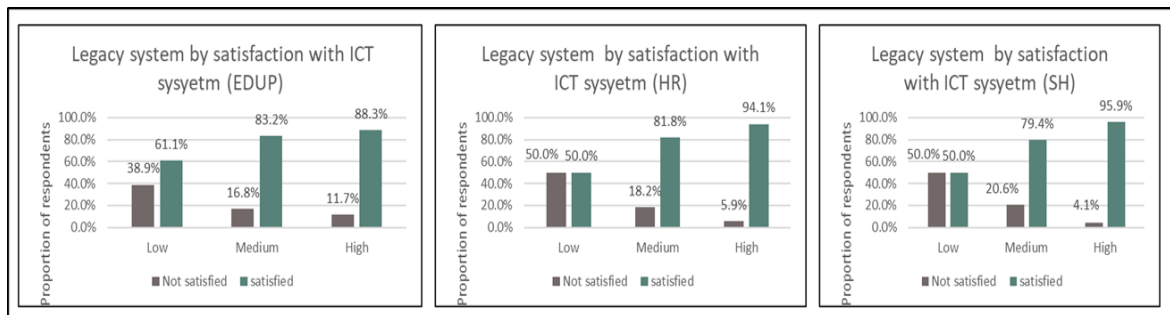# Appendix G: Relationship between Dimensions/Factors and Satisfaction with use of ICT Systems

Chart 7.37 examines in more detail the statistically significant relationships for the two ICT systems (EDUP and HR).
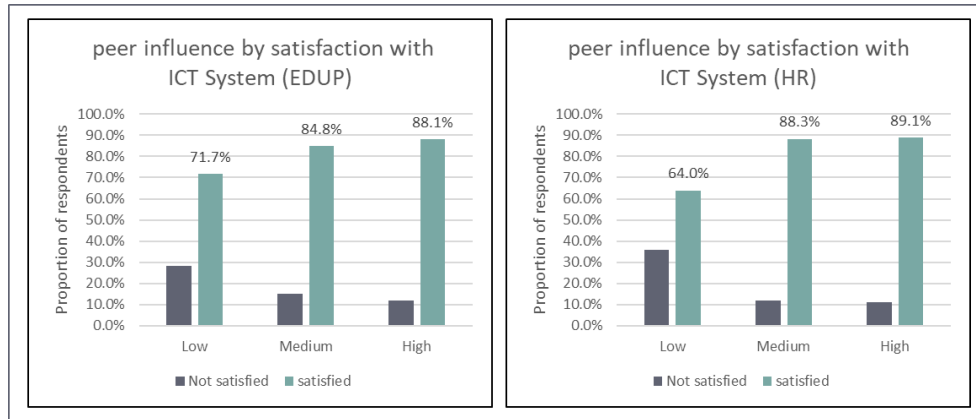
Chart 7.37: **Peer Influence by Satisfaction with Four ICT Systems**

It shows that as the Peer Influence scale increases the level of satisfaction with the two ICT systems (EDUP and HR) also increases. Both systems show similar ratings.
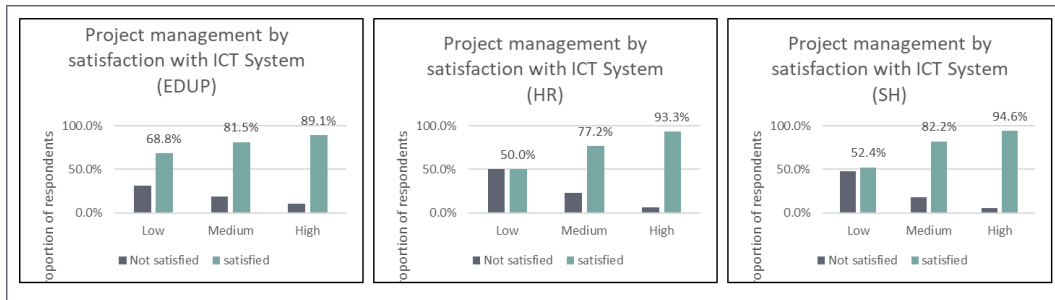
Chart 7.38 examines in more detail the statistically significant relationships for the three ICT systems (EDUP, HR and SH).

Chart 7.38: Legacy System by Satisfaction with Four ICT Systems
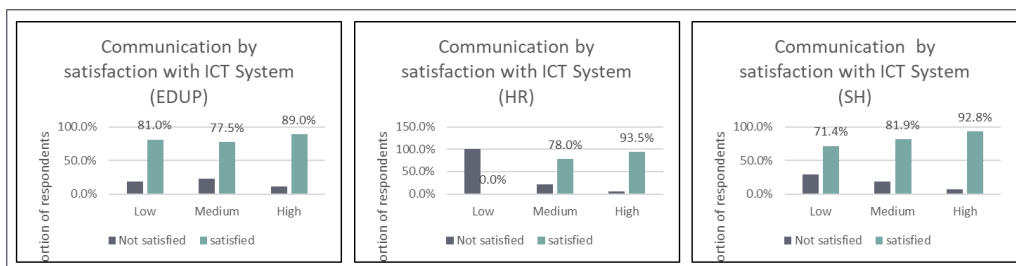
It shows that as the Legacy System scale increases the level of satisfaction with the four ICT systems also increases. HR and SH systems express a higher rating on the Legacy System scale than the rate of EDUP system, this reflects that for both the HR and SH systems the Legacy System functions at a higher level in the workplace.

Chart 7.39 examines in more detail the statistically significant relationships for the three ICT systems (EDUP, HR and SH).

Chart 7.39: Project Management by Satisfaction with Four ICT Systems

It shows that the higher score on the scale for quality of Project Management, the higher the satisfaction with the ICT system.

Chart 7.40:   Communication by Satisfaction with Four ICT Systems

Chart 7.40 shows that as the Communication scale increases the level of satisfaction with two ICT systems (EDUP and SH) also increases. This indicates that if an employee thinks communication in the organisation is effective, the higher the ICT satisfaction level.

Chart 7.41:   Resistance to Change by Satisfaction with Four ICT Systems

Chart 7.41 examines in more detail the statistically significant relationships for the two ICT systems (SH and HR). It shows that as the Resistance to Change scale increases the level of satisfaction with the two ICT systems also increases.

Appendix H: The comments from pilot study

Section	From		To
Introduction	**Rephrase**: The objectives of my research are to develop a framework for e-government ICT project successful implementation in work environment in Oman.		My research objectives are to develop a framework for the successful implementation of e-government ICT projects in Oman work environment.
	Remove: The survey should <u>only</u> take around 10 minutes to complete.		The survey should take around 10 minutes to complete.
	Change: TCD		Trinity College Dublin
	I would welcome any comments or suggestions you have, please add them in the space provided at the end of the survey.		Where?
Top management support	1.22	…. support and encourage the use of the new system for my work.	Same meaning
	1.23	…. support and encourage the use of the new system for my work.	
Open questions	**Shorten**: If you feel there are other factors that are important to the successful ICT implementation which were not listed in the above table and are pertinent to Oman public sector, please list them and indicate why you see them as relevant.		Do you feel there are other factors …? If so, describe why you see them relevant>
	What do you think are the most critical factors for a successful ICT implementation?		