THE IMPACT OF SOCIO-CULTURAL AND RELIGIOUS VALUES ON THE ADOPTION OF TECHNOLOGICAL INNOVATION: A CASE STUDY OF SAUDI ARABIA

BY

ABDULLAH ALSHEDDI

FACULTY OF SCIENCE AND TECHNOLOGY

UNIVERSITY OF CANBERRA

SEPTEMBER 2020

THE IMPACT OF SOCIO-CULTURAL AND RELIGIOUS VALUES ON THE ADOPTION OF TECHNOLOGICAL INNOVATION: A CASE STUDY OF SAUDI ARABIA

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

By

ABDULLAH ALSHEDDI

Bachelor of Information Systems, (King Saud University, KSA)

Master of Business Informatics (University of Canberra, Canberra, Australia)

Primary Supervisor

PROF. DHARMENDRA SHARMA

Secondary Supervisor

DR. MAJHARUL TALUKDER

FACULTY OF SCIENCE AND TECHNOLOGY

UNIVERSITY OF CANBERRA

SEPTEMBER 2020

ABSTRACT

The main purpose of this research is to investigate the impact of socio-cultural and religious values on the adoption of technological innovation in Saudi Arabia. Although many studies have been conducted on the adoption of technology in developed nations, only a few analyses have focused on the Middle East, and particularly Saudi Arabia (Al-Saggaf, 2004; Alomari, 2014). Specifically, there has been little research published specifically on the impact wielded by socio-cultural and religious values on technology adoption (Sedikides 2010; Al-Sharif, 2014; Ab. Wahab, 2016). This study addresses the gap in our knowledge on this subject by examining the impact of socio-cultural and religious factors on the adoption of technological innovation in a Middle Eastern country.

The study develops a comprehensive theoretical framework based on existing relevant theories and models, namely the following: Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh, Morris, Davis & Davis (2003); the Innovation Diffusion Theory Model (IDT) by Rogers (2003); the Theory of Reasoned Action (TRA) by Ajzen & Fishbein, 1980; the Technology Acceptance Model (TAM) by Davis (1989); and the Cultural Dimensions Theory (CDT) by Hofstede (1973). The research model of this study comprises several new variables and several adapted variables that were not fully captured in the existing theories. New variables are added to the model to overcome the limitations of the current models. The selection and combination of factors in this study go beyond previous research in an attempt to create a better model by bringing together relevant factors into a coherent model that investigates innovation adoption by individual employees within an organization in Saudi Arabia.

This study also expands on the current technology adoption studies within a developing country. It addresses a substantial knowledge gap by addressing cultural, social and religious influences in a comprehensive model. The study asserts that religious, cultural and social values have significant influence on the adoption of technological innovation. A solid contribution is made to theory and practice in the context of a Middle Eastern country. Furthermore, six research questions were developed to cover the areas of cultural values, social values, religious values, demographics and expected benefits in addition to the attitude effects. Twenty hypotheses were proposed for these six categories. The study uses quantitative methods to collect and analyze the data. Online questionnaires were used to collect information regarding the attitude to the

adoption and usage of Government Resource Planning (GRP) Systems and the outcomes for employees working at the Ministry of Foreign Affairs in Saudi Arabia.

A pilot study was conducted to establish the validity and reliability of the survey instruments. The questionnaire was then sent to 1677 employees to the Ministry of Foreign Affairs (in Saudi Arabia). In total, 377 completed questionnaires were received of which 340 were deemed usable, making a response rate of 22.48%. Statistical Package for Social Sciences 23.0 (SPSS) was used to analyze the data. Data was analyzed using multivariate statistical analysis. The conducted summary statistics, frequency analysis, reliability tests (Cronbach's alpha) correlation analysis, factor analysis and multiple regression analysis are presented here.

The result shows that correlation coefficient squared R^2=.512 which is also referred to as the coefficient of determination, indicates the percentage of total variation of Y (dependent variable). It is explained by the independent variables. In this analysis, 51% of the differences in employees' attitude to the GRP application can be explained by the effect of cultural, social, and religious variables. Prior research suggests that an R^2 of .15 indicates moderate variance while an R^2 of .35 suggests high variance (Cohen, 1988). For this model, Power distance ($t(340) = 3.653$, $p < 0.000$), In-group collectivism ($t(340) = 3.437$, $p < 0.001$), and Masculinism ($t(340) = 3.682$, $p < 0.000$) are significant predictors of GRP acceptance. Uncertainty avoidance and long-term orientation were found to have no significant effect. Of the two social factors, social network ($t(340) = 3.354$, $p < 0.001$) was found to have a significant effect while peers' influence did not have a significant effect.

From the four religious factors, perfection (Itqan) ($t(340) = 5.382$, $p < 0.000$), cooperation (Ta'awun) ($t(340) = 2.597$, $p < 0.010$), and transparency (Shaffaf) ($t(340) = 2.857$, $p < 0.005$), were found to have significant effect, while responsibility (Masuliyyah) had no significant effect. From the four demographic factors only, age ($t(340) = 2.222$, $p < 0.027$) was found to have a significant effect, while gender, academic qualification and job position emerged as having no significant effect. Attitude ($t(340) = 33.645$, $p < 0.000$) exerted a significant effect of usage level. Among the four outcomes variables three of them - cost effectiveness, ($t(340) = 3.087$, $p < 0.002$), service quality ($t(340) = 3.175$, $p < 0.002$), and organizational efficiency ($t(340) = 7.974$, $p < 0.000$) - have a significant relationship with the usage of GRP systems. Meanwhile a relationship with customers has no significant relationship.

The research novelty of this study lies in the specification and development of a comprehensive research model to test the impact of cultural, social, religious, and demographics on the adoption of technological innovation. The combination of socio-cultural and religious variables into a single study context goes beyond previous research. It does this by bringing together all the relevant factors that may affect individual employees' innovation adoption into a coherent model. This research fills a knowledge gap by investigating an unexplored topic in a Middle Eastern country.

The outcomes of the study also provide a useful, deterministic tool for managers, government and organizations in Saudi Arabia to better manage and implement technological innovation in Saudi Arabia. It will help managers to identify any problems that individual employees face in adopting innovation and develop strategies that improve uptake and acceptance of a technological innovation. Findings of this study will assist the Saudi government to develop policies and procedures for the implementation of new technologies in various public service departments and agencies. The research provides guidelines to the government, public and private sector in Saudi Arabia to generate policies and procedures that govern technology acceptance in the workplace. This consequently will support in achieving King Salman's national transformation program - a program for the development of human resources and the Saudi Vision 2030. Several limitations are identified and suggestions for future research are provided.

ACKNOWLEDGEMENT

First and foremost, I thank Allah Almighty who is the creator of the whole universe for giving me the time and strength to accomplish this study. This work would not have been completed without the success He granted me.

I received gracious help from several individuals. Without the assistance, support and advice of these individuals, this study would have been difficult to accomplish, and I would like to express my sincere appreciation to all of them.

I would like to express my deepest appreciation and gratitude to my supervisors, Prof. Dharmendra Sharma and Dr. Majharul Talukder, who provided me with continuous assistance, valuable suggestions, encouragement, generous support and scholarly advice throughout this journey. Both of them always responded promptly, sharing their ideas, motivating and guiding me towards the conclusion of the study. Not many PhD supervisors look after their students like the way they did. Their deliberate guidance and knowledge have been a fulfilling source of nourishment throughout the entire process of my research project, up to when the thesis was finally completed. The experience learned from them will always remain a core life lesson for me.

Special appreciation and gratitude go to my beloved mother Hessah Almuhiza, my brothers and sisters, my wife Munerah Alsanad and my daughters Raneem, Sadeem and Jana, for their support, patience, prayers, encouragement and understanding. They all gave me the strength to succeed in completing my PhD studies. Thank you very much and may Allah Almighty bless you all.

I wish to express my deepest appreciation and gratitude to the Ministry of Foreign Affairs (MOFA) for providing me with the opportunity, funding and nurturing to embark and complete this study. I would indeed like to convey my thanks to the former Saudi Ambassador in Australia, H.E. Nabil Alsaleh and former ICT's Manager at MOFA, Eng. Ayman Alrashed for their assistance and support.

I also appreciate the help and advice of all my friends for their assistance during the tough times I experienced in completing my PhD. Special thanks go to my friends Mr. Abdulaziz Alrowais

and Mr. Saud Almelehi for their continual encouragement. Special mention also goes to my fellow HDR students Mazen Alismail, Irfan Khan, and Ibrahim Alturki for their help and support throughout this journey. I genuinely appreciate their support, guidance, and friendship. I would also like to thank my colleagues at MOFA who completed the survey questionnaire.

Finally, I would like to take this opportunity to thank the authorities at the University of Canberra and the Faculty of Science and Technology for giving me the opportunity to study in this unique university, and for their support in accomplishing my program. May Allah Almighty reward them all for their contribution and forgive me for all errors and shortcomings.

PUBLICATIONS

The following refereed papers have been developed from the PhD research:

Alsheddi, A., Sharma, D., & Talukder, M. (2018). Investigating the impact of demographic factors on the adoption of technological innovation in Saudi Arabia. 48th International Business Research Conference. Organized by: World Business Institute. 19-20 November 2018, Sydney, Australia.

Alsheddi, A., Sharma, D., & Talukder, M. (2019). Investigating the determinants of innovation adoption in Saudi Arabia. International Review of Business Research Papers, 15 (1), pp. 46-68

Alsheddi, A., Sharma, D., & Talukder, M. (2020). Impact of Users' Socio-Cultural and Religious Orientation on Government Resource Planning (GRP) Systems Usage in Saudi Arabia. IEEE Access, 8, pp. 122722-122735

Alsheddi, A., Sharma, D., Talukder, M. (2020). Cultural and Religious Determinants on the Adoption of Government Resource Planning (GRP) Systems in Saudi Arabia. Business Process Management Journal, (In Progress)

TABLE OF CONTENTS

ABSTRACT i
CERTIFICATE OF AUTHORSHIP OF THESIS iv
ACKNOWLEDGEMENT v
PUBLICATIONS vii
TABLE OF CONTENTS viii
LIST OF TABLES xiv
LIST OF FIGURES xvii
LIST OF ABBREVIATIONS xviii

CHAPTER ONE: INTRODUCTION 1
1.1 Background of the Study 1
1.2 Motivation for the study 6
1.3 Objectives of the study 7
General Objective 7
Specific Objectives 7
1.4 Research questions 8
1.5 Contribution of the study 8
Theoretical Contributions 9
Development of a comprehensive model 9
Filling the knowledge gap 9
Better and deeper understanding of the socio-cultural and religious values impacting on the level of technology adoption 10
Practical Contribution 10
Implications for the Saudi government 10
Implications for the public and private sector organizations 11
Implications for managers 11
1.6 Structure of the thesis 11
1.7 Summary 13

CHAPTER TWO: LITERATURE REVIEW 14
2.1 Introduction 14
2.2 Technological Innovations 14
Definition of innovation 14
Types of Innovation 15
Innovation Adoption Process 16
The difference between adoption and diffusion 17
Acceptance of technological innovations 17
2.3 Definition of Culture 19
Impact of Culture on Technology Acceptance 20
Societal Culture 21
2.4 Impact of Religion 22
2.5 General Information about Saudi Arabia 24
Cultural Norms in Saudi Arabia 26
Religion in Saudi culture 29
2.6 Gender Issue in Saudi Arabia 29
2.7 Technology Usage in Saudi Arabia 31
Internet Usage in Saudi Arabia 34
2.8 Relevant Previous Studies 36
2.9 Government Resource Planning (GRP) in Saudi Arabia 37
2.10 Hofstede's Cultural Dimensions 38
Power Distance Index (high versus low) 39
Individualism versus Collectivism 40
Masculinity versus Femininity 40

Uncertainty Avoidance Index (high versus low) 41
Long-term Orientation 42
Indulgence versus Restraint 42
2.11 Saudi Arabia compared to some other countries 43
2.12 Summary 45

CHAPTER THREE: THEORETICAL FRAMEWORK 46
3.1 Introduction 46
3.2 Rogers' Innovation Diffusion Theory (IDT) 48
3.3 Theory of Reasoned Action (TRA) 52
3.4 Technology Acceptance Model (TAM) 54
3.5 The Unified Theory of Acceptance and Use of Technology (UTAUT) 56
3.6 Hofstede's Cultural Dimensions Theory (CDT) 59
3.7 Comparing the Theoretical Models 66
3.8 Summary 68

CHAPTER FOUR: RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT 70
4.1 Introduction 70
4.2 Need for Developing a Conceptual Model 70
4.3 Model Development 71
4.4 Hypothesis Development 74
4.5 Cultural Values 75
Uncertainty avoidance 75
Power distance 76
In-group collectivism 77
Long-term orientation 78
Masculinism vs Feminism 78
4.6 Social Dimensions 79
Social Networks 80
Peers' Influence 80
4.7 Religious Values 80
Perfection (Itqan) 82
Cooperation (Ta'awun) 82
Responsibility (Masuliyah) 83
Transparency (Shaffaf) 83
4.8 Demographic Characteristics 84
Gender 84
Age 85
Academic Qualifications 85
Position or Status 86
4.9 Attitudes 86
4.10 Expected Benefits 87
Cost Effectiveness 87
Organizational Efficiency 87
Service Quality 87
Relationships with Customers 88
4.11 Summary 89

CHAPTER FIVE: RESEARCH METHODOLOGY 90
5.1 Introduction 90
5.2 Research Design 90
5.3 Location of the study 91
5.4 Reasons for using the GRP system as the study tool 92
5.5 Population of the Study 95
5.6 Sample Size for this Study 96

5.7 Research Instrument for the Study and Expert Opinion....96
5.8 Pilot Study....97
5.9 Data Collection Process....97
5.10 Data Analysis Process....99
Data Screening....99
Data Analysis Techniques....100
5.11 Validity and Reliability....100
5.12 Definitions of the Constructs and Measure of the Variables....101
Cultural Dimensions....101
Uncertainty avoidance....102
Power distance....103
In-group collectivism....103
Masculinism versus Feminism....104
Long-term orientation....104
Social Dimensions....105
Social networks....105
Peers' influence....106
Islamic Values....106
Perfection (Itqan)....107
Cooperation (Ta'awun)....107
Responsibility (Mas'uliyyah)....108
Transparency (Shaffaf)....108
Demographic Characteristics....109
Gender....109
Age....110
Academic qualifications....110
Position....110
Attitude....110
The Dependent Variable....111
Expected Benefits....112
Cost effectiveness....112
Organizational efficiency....112
Service quality....113
Relationships with customers....113
5.13 Ethical Considerations....113
5.14 Summary....114

CHAPTER SIX: DATA ANALYSIS AND DISCUSSION....116
6.1 Introduction....116
6.2 The Questionnaire....116
6.3 Demographic Information....117
Gender....118
Age Groups....119
Academic Qualifications....120
Job Position....121
6.4 Cross-Tabulation for level of usage by demographics....122
Cross-Tabulation by Gender....123
Cross-Tabulation (Gender by frequency)....123
Cross-Tabulation (Gender by features)....124
Cross-Tabulation (Gender by usage ticketing)....125
Cross-Tabulation (Gender by usage-services)....125
Cross-Tabulation (Gender by usage training)....126
Cross-Tabulation for age....127
Cross-Tabulation (Age by time)....127
Cross-Tabulation (Age by frequency)....128

Cross-Tabulation (Age by features) 129
Cross-Tabulation (Age by usage ticketing) 130
Cross-Tabulation (Age by usage-services) 131
Cross-Tabulation (Age by usage-training) 132
Cross-Tabulation for academic status 133
Cross-Tabulation (Academic status by time) 133
Cross-Tabulation (Academic by frequency) 134
Cross-Tabulation (Academic status by features) 135
Cross-Tabulation (Academic status by usage ticketing) 136
Cross-Tabulation (Academic status by usage-services) 137
Cross-Tabulation (Academic status by usage training) 138
Cross-Tabulation for position 139
Cross-Tabulation (Position by time) 139
Cross-Tabulation (Position by frequency) 141
Cross-Tabulation (Position by features) 142
Cross-Tabulation (Position by usage ticketing) 143
Cross-tabulation (Position by usage-services) 144
Cross-Tabulation (Position by usage-training) 145
6.5 Data Screening 147
6.6 Normality 147
6.7 Using the GRP Application 148
Length of time using the GRP application per day 148
Frequency of using the GRP application 149
Using more than one feature of the GRP application 149
Using different features of the GRP Application 150
Ticket and Mission Services 150
General Services 151
Training Services 151
6.8 Reliability and Validity 152
Constructs' Reliability 152
Validity 154
6.9 Exploratory Factor Analysis (EFA) 157
Analysis of Uncertainty Avoidance Scale (UA) 157
KMO and Bartlett's Test for Uncertainty Avoidance Scale 158
Factor Loading for Uncertainty Avoidance 159
Analysis of Power Distance Scale (PD) 159
KMO and Bartlett's Test for Power Distance Scale 160
Factor Loading for Power Distance 160
Analysis of In-Group Collectivism Scale (IC) 160
KMO and Bartlett's Test for In-Group Collectivism Scale 161
Factor Loading for In-Group Collectivism 161
Analysis of Long-Term Orientation Scale (LO) 162
KMO and Bartlett's Test for Long-Term Orientation Scale 162
Factor Loading for Long-Term Orientation Scale 162
Analysis of Masculinism Scale (MAS) 163
KMO and Bartlett's Test for Masculinism Scale 163
Factor Loading for Masculinism Scale 163
Analysis of Social Network Scale (SN) 164
KMO and Bartlett's Test for Social Network Scale 164
Factor Loading for Social Network 165
Analysis of Peers' Influence Scale (PI) 165
KMO and Bartlett's Test for Peers' Influence Scale 165
Factor Loading for Peers' Influence 166
Analysis of Perfection Scale (PE) 166
KMO and Bartlett's Test for Perfection Scale 167

Factor Loading for Perfection Scale 167
Analysis of Cooperation Scale (CO) 168
KMO and Bartlett's Test for Cooperation Scale 168
Factor Loading for Cooperation Scale 168
Analysis of Responsibility Scale (RE) 169
KMO and Bartlett's Test for Responsibility Scale 169
Factor Loading for Responsibility Scale 170
Analysis of Transparency Scale (TR) 170
KMO and Bartlett's Test for Transparency Scale 170
Factor Loading for Transparency Scale 171
Analysis of Effect of Demographics on Attitude to using the GRP application 171
Analysis of Attitude Scale (AT) 172
KMO and Bartlett's Test for Attitude Scale 173
Factor Loading for Attitude Scale 173
6.10 Regression Analysis 174
6.11 Inter-correlations among Study Variables 175
6.12 Analysis of Attitude Effect on Usage 178
6.13 Analysis of Outcome Variables 179
Analysis of Cost Effectiveness Scale (CE) 179
KMO and Bartlett's Test for the Cost Effectiveness Scale 179
Factor Loading for Cost Effectiveness 180
Analysis of Service Quality Scale (SQ) 181
KMO and Bartlett's Test for Service Quality Scale 181
Factor Loading for Service Quality (SQ) 182
Analysis of Organizational Efficiency (OE) 182
KMO and Bartlett's Test for Organizational Efficiency Scale 183
Factor loading of scale for Organizational Efficiency (OE) 183
Analysis of Relation with Customers (RC) 184
KMO and Bartlett's Test for Relationship with Customers Scale 184
Factor Loading for the Relationship with Customers (RC) 185
Analysis of Usage Effect on Cost Effectiveness 185
Analysis of Usage Effect on Service Quality 186
Analysis of Usage Effect on Organizational Efficiency 187
Analysis of Usage Effect on Relationship with Customers 188
6.14 Checking Assumptions 190
6.15 Discussing the results of the hypotheses 193
Discussion of the international cultural values hypotheses (H1 to H5) 193
Discussion of the social values hypotheses (H6 and H7) 194
Discussion of the religious values hypotheses (H8 to H11) 194
Discussion of the demographics characteristics hypotheses (H12 to H15) 195
Discussion of the attitude hypothesis (H16) 196
Discussion of the outcome hypotheses (H17 to H20) 196
6.16 Summary of the hypotheses testing 197
6.17 Summary 198

CHAPTER SEVEN: CONCLUSION, IMPLICATIONS & RECOMMENDATIONS 199
7.1 Introduction 199
7.2 Summary of the research 199
7.3 Study Contribution 206
Theoretical contribution 206
Contribution to knowledge 208
7.4 Implications of the study 209
Implications for management personnel 209
Implications for the Saudi Government 210
Implications for organizations 212

7.5 Limitations of the research 213
7.6 Directions for future research 215

REFERENCES 217

Appendix 1: Participant Information Form 243
Appendix 2: Approval by Ethics Committee 246
Appendix 3: Ministry of Foreign Affairs' Approval Letter 248
Appendix 4: Survey Questionnaire 250

LIST OF TABLES

Table 2.1 Findings of Some Studies on Technology Acceptance....22
Table 2.2 KSA Population 2020 – Estimates from multiple sources....25
Table 2.3 World Internet Users and 2019 Population Stats....32
Table 2.4 World Internet Users from 2000 to 2020....32
Table 2.5 Internet users in Saudi Arabia from 2000 to 2018....33
Table 2.6 Active Internet and Social Media Users in KSA 2018....35
Table 2.7 Active Social Network Platforms in KSA 2018....35
Table 2.8 Top Chat Apps and Messengers in KSA 2018....36
Table 2.9 Saudi Arabia compared to United States in Power Distance....39
Table 2.10 Saudi Arabia compared to the United States: Individualism versus Collectivism....40
Table 2.11 Saudi Arabia compared to the United States: Masculinity versus Femininity....41
Table 2.12 Saudi Arabia compared to the United States: Uncertainly Avoidance....41
Table 2.13 Saudi Arabia cultural dimensions compared to Australia....43
Table 2.14 Saudi Arabia compared to Kuwait and the UAE....43
Table 2.15 Saudi Arabia compared to three Western countries....44
Table 2.16 Arab characteristics in the international models of national cultural dimensions.....44
Table 3.1: Evolution of Theories and Models of Technology Adoption....47
Table 3.2 Constructs used in UTAUT....57
Table 3.3 Comparison between Small and Large Power Distance Societies....60
Table 3.4 Comparison between Collectivist and Individualist Societies....61
Table 3.5 Comparison between Weak- and Strong- Uncertainty Avoidance Societies....62
Table 3.6 Comparison between Feminine and Masculine Societies....63
Table 3.7 Comparison between Short- and Long-Term Oriented Societies....64
Table 3.8 Indulgent versus Restrained Society....65
Table 3.9 Technology acceptance theories/models comparison....66
Table 4.1 Key differences between strong and weak uncertainty avoidance societies....76
Table 4.2 Key differences between high and low power distance societies....77
Table 4.3 Key differences between individualist and collectivist societies....77
Table 4.4 Key differences between masculine and feminine societies....79
Table 4.5 Research questions and corresponding hypotheses....88
Table 6.1 Demographic Characteristics....118
Table 6.2 Gender distribution....118
Table 6.3 Age group distribution....119
Table 6.4 Academic Qualification....120
Table 6.5 Job position distribution....122
Table 6.6 Cross-tabulation (Gender by time)....123
Table 6.7 Cross-tabulation (Gender by frequency)....124
Table 6.8 Cross-tabulation (Gender by features)....125
Table 6.9 Cross-tabulation (Gender by usage-ticketing)....125
Table 6.10 Cross-tabulation (Gender by usage-services)....126
Table 6.11 Cross-tabulation (Gender by usage training)....126
Table 6.12 Cross-tabulation (Age by time)....127
Table 6.13 Cross-tabulation (Age by frequency)....128
Table 6.14 Cross-tabulation (Age by features)....129
Table 6.15 Cross-tabulation (Age by usage ticketing)....130
Table 6.16 Cross-tabulation (Age by usage-services)....131
Table 6.17 Cross-tabulation (Age by usage training)....132
Table 6.18 Cross-tabulation (Academic by time)....133
Table 6.19 Cross-tabulation (Academic status by frequency)....134
Table 6.20 Cross-tabulation (Academic status by features)....135
Table 6.21 Cross-tabulation (Academic status by usage ticketing)....137
Table 6.22 Cross-tabulation (Academic status by usage-services)....138
Table 6.23 Cross-tabulation (Academic status by usage training)....139

Table 6.24 Cross-tabulation (Position by time) 140
Table 6.25 Cross-tabulation (Position by frequency) 141
Table 6.26 Cross-tabulation (Position by features) 142
Table 6.27 Cross-tabulation (Position by usage ticketing) 143
Table 6.28 Cross-tabulation (Position by usage-services) 145
Table 6.29 Cross-tabulation (Position by usage training) 146
Table 6.30 Correlation between demographics and attitudes towards smart system adoption 147
Table 6.31 Skewness and Kurtosis Statistics for the Study Variables 148
Table 6.32 Length of time using the GRP application per day 149
Table 6.33 Frequency of using the GRP application 149
Table 6.34 Using more than one feature of the GRP application 150
Table 6.35 Usage of Ticket and Mission Services 150
Table 6.36 Usage of General Services 151
Table 6.37 Usage of Training Services 151
Table 6.38 Cronbach's Alpha Reliability Results 153
Table 6.39 Results of reliability and convergent validity 154
Table 6.40 Correlation Matrix for Uncertainty Avoidance (UA) 158
Table 6.41 KMO and Bartlett's Test for Uncertainty Avoidance Scale 158
Table 6.42 Factor Loading for Uncertainty Avoidance (UA) 159
Table 6.43 Correlation Matrix for Power Distance (PD) 159
Table 6.44 KMO and Bartlett's Test for Power Distance 160
Table 6.45 Factor Loading for Power Distance (PD) 160
Table 6.46 Correlation Matrix for In-Group Collectivism (IC) 161
Table 6.47 KMO and Bartlett's Test for In-Group Collectivism 161
Table 6.48 Factor Loading for In-Group Collectivism (IC) 161
Table 6.49 Correlation Matrix for Long-Term Orientation (LO) 162
Table 6.50 KMO and Bartlett's Test for Long-Term Orientation Scale 162
Table 6.51 Factor Loading for Long-Term Orientation (LO) 162
Table 6.52 Correlation Matrix for Masculinism (MAS) 163
Table 6.53 KMO and Bartlett's Test for Masculinism Scale 163
Table 6.54 Factor Loading for Masculinism (MAS) 164
Table 6.55 Correlation Matrix for Social Network (SN) 164
Table 6.56 KMO and Bartlett's Test for Social Network Scale 164
Table 6.57 Factor Loading for Social Network (SN) 165
Table 6.58 Correlation Matrix for Peers' Influence (PI) 165
Table 6.59 KMO and Bartlett's Test for Peers' Influence Scale 166
Table 6.60 Factor Loading for Peers' Influence (PI) 166
Table 6.61 Correlation Matrix for Perfection (PE) 167
Table 6.62 KMO and Bartlett's Test for Perfection Scale 167
Table 6.63 Factor Loading for Perfection (PE) 167
Table 6.64 Correlation Matrix for Cooperation (CO) 168
Table 6.65 KMO and Bartlett's Test for Cooperation Scale 168
Table 6.66 Factor Loading for Cooperation (CO) 168
Table 6.67 Correlation Matrix for Responsibility (RE) 169
Table 6.68 KMO and Bartlett's Test for Responsibility scale 169
Table 6.69 Factor Loading for Responsibility (RE) 170
Table 6.70 Correlation Matrix for Transparency (TR) 170
Table 6.71 KMO and Bartlett's Test for Transparency scale 171
Table 6.72 Factor Loading for Transparency (TR) 171
Table 6.73 Regression Model Summary 171
Table 6.74 Result of regression analysis (demographics) 172
Table 6.75 Analysis of Variance (ANOVA) for demographics 172
Table 6.76 Correlation Matrix for Attitude (AT) 173
Table 6.77 KMO and Bartlett's Test for Attitude 173
Table 6.78 Factor Loading for Attitude (AT) 173

Table 6.79 Regression Model Summary 174
Table 6.80 Result of regression analysis with attitude as dependent variable 174
Table 6.81 Inter-correlations among study variables 177
Table 6.82 Regression Model Summary 178
Table 6.83 Result of regression analysis with usage as dependent variable 178
Table 6.84 Correlation Matrix for Cost Effectiveness (CE) 179
Table 6.85 KMO and Bartlett's Test for the Cost Effectiveness Scale 179
Table 6.86 Factor Loading for Cost Effectiveness (CE) 180
Table 6.87 Correlation Matrix for Service Quality (SQ) 181
Table 6.88 KMO and Bartlett's Test for Service Quality Scale 181
Table 6.89 Factor Loading for Service Quality (SQ) 182
Table 6.90 Correlation Matrix for Organizational Efficiency (OE) 182
Table 6.91 KMO and Bartlett's Test for Organizational Efficiency Scale 183
Table 6.92 Factor Loading for Organizational Efficiency (OE) 183
Table 6.93 Correlation Matrix for the Relationship with Customers (RC) 184
Table 6.94 KMO and Bartlett's Test for the Relationship with Customers Scale 184
Table 6.95 Factor Loading for the Relationship with Customers (RC) 185
Table 6.96 Regression Model Summary 185
Table 6.97 Coefficients for effect of usage on cost effectiveness 186
Table 6.98 Regression Model Summary 186
Table 6.99 Coefficients for effect of usage on service quality 187
Table 6.100 Regression Model Summary 187
Table 6.101 Coefficients for effect of usage on organizational efficiency 188
Table 6.102 Regression Model Summary 188
Table 6.103 Coefficients for effect of usage on relationship with customers 189
Table 6.104 Coefficients for the Effect of Usage on the Four Outcomes' 189
Table 6.105 Summary of the hypotheses testing 197
Table 7.1 Summary of the hypotheses testing results 203
Table 7.2 Summary of the research questions addressed 205

LIST OF FIGURES

Figure 2.1 Rogers' Model of the Innovation Adoption Process. 16
Figure 2.2 The stages by which a person adopts an innovation....17
Figure 2.3 Map of Saudi Arabia. 26
Figure 2.4 Hofstede's dimensions for Saudi Arabia 39
Figure 3.1 The five attributes of innovation 50
Figure 3.2 Rogers' Model of the Innovation Adoption Process 51
Figure 3.3 Innovation Adoption Curve 52
Figure 3.4 Theory of Planned Reason Action (TRA) model. 53
Figure 3.5 The Technology Acceptance Model (TAM)....55
Figure 3.6 Most recent version of Technology Acceptance Model (TAM) 55
Figure 3.7 UTAUT Model 59
Figure 3.8 Hofstede's Cultural Dimensions Theory....60
Figure 4.1 Conceptual Research Model 74
Figure 6.1 Gender distribution....119
Figure 6.2 Age group distribution....120
Figure 6.3 Academic Qualification Distribution 121
Figure 6.4 Job position distribution 122
Figure 6.5 Plot of standardized residuals against standardized predicted values 190
Figure 6.6 Histogram of normally distributed residuals 191
Figure 6.7 Normal Probability plot of regression standardized residuals 192

LIST OF ABBREVIATIONS

AI	Artificial intelligence
AVE	Average Variance Extracted
BI	Behavior Intention
CSF	Critical Success Factors
DSS	Decision Support System
DOI	Diffusion of Innovation
EE	Effort Expectancy
EFA	Exploratory Factor Analysis
EGDI	E-government Development Index
EPI	E-participation Index
ERP	Enterprise Resource Planning
EY	Ernst and Young
G20	Group of Twenty
GDP	Gross Domestic Product
GRP	Government Resource Planning
GLOBE	Global Leadership and Organizational Behavior Effectiveness
HRD	Human Resources Development
HRM	Human Resources Management
CDT	Hofstede's Cultural Dimension Theory
ICT	Information Communication Technology
IDT	Innovation Diffusion Theory
KMO	Kaiser-Meyer-Olkin
KSA	Kingdom of Saudi Arabia
MAPS	Model of Acceptance with Peer Support
MCIT	Ministry of Communications and Information Technology
MOFA	Ministry of Foreign Affairs
MPCU	Model of Personal Computer Use
NCCC	National Centre of Cultural Competence
NDCT	National Digital Transformation Committee
PAW	Perceived Awareness

PBC	Perceived Behavioral Control
PEU	Perceived Ease of Use
PLS	Partial Least Squares
PNU	Princess Nourah Bint Abdulrahman University
PU	Perceived Usefulness
SAA	Saudi Arabian Airlines
SDAIA	Saudi Data and Artificial Intelligence Authority
SCT	Social Cognitive Theory
SPA	Saudi Press Agency
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior
TQM	Total Quality Management
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Information Communication Technology (ICT) is the backbone of modern life. The technological revolution and especially the rapid change in IT continue to spread throughout the world. It is changing the ways people interact, behave, communicate and conduct business worldwide (Menon et al., 2019). ICT is employed to enhance the effectiveness of companies' internal processes and expand the scope of their business operations and it used to achieve their fundamental business objectives. ICT is essential for the social and economic development of the world today and it plays a major role in the progress of societies and businesses (Alanezi, 2018). The use of ICT has grown enormously in the last 10 years with computers and smart devices becoming indispensable to daily life (Sim & Stein, 2016). ICT affects markedly the demands of productivity, organizational expansion, profitability and competitiveness of businesses and organizations (Martins & Raposo, 2005; Raymond et al., 2005; Consoli, 2012; Taylor, 2013, 2015).

Every nation in the world is striving to obtain the latest technology in order to gain benefits and improve the lives of its citizens (Oye et al., 2014; Samaradiwakara & Gunawardena, 2014). The proliferation and extensive use of ICTs is changing the way people and workplaces operate (Barba-Sánchez et al., 2007; Taylor, 2015; Cooper & Vyas, 2019). Success in business is attributed to the effective use of modern technology (Dumpit & Fernandez, 2017). Technological advances have entirely reshaped modern organizations by making their business processes highly integrated and more streamlined (Cooper & Vyas, 2019). The tremendous developments in ICT are affecting every aspect of our lives and furthermore, this ICT revolution has played an important role in the economic and social development in most countries of the world (Halili et al., 2017). Not only are these technical advances changing lives in the developed and developing nations, the technological revolution constitutes a techno-economic paradigm shift with profound implications. Affected here are the productive and institutional structures in developed and developing countries (Nagy, 2010).

User acceptance of technology has been viewed as an important factor in determining the success or failure of any information system project (Davis et al., 1989). The most important

benefits are associated with access to and adoption of new technologies. This is why understanding technology acceptance is vital (Suvarna & Godavari, 2012). It is critically important to understand how people accept and adopt new technologies in the workplace (Louho et al., 2006). Technology has to be accepted and used appropriately otherwise it will be of little value (Frambach & Schillewaert, 2002; Oye et al., 2014; Talukder et al., 2014). Technology acceptance can be described as a critical factor in determining the success or failure of any new technology (Samaradiwakara & Gunawardena, 2014). The adoption of a new technological innovation can be successful only when people accept it and effectively use it in the workplace (Talukder et al., 2014). The shift to digital technologies is so pronounced that lack of acceptance would almost certainly guarantee the loss of competitive advantage (Abu Nadi, 2012).

The availability of new technological innovations does not guarantee that employees will use these innovations (Talukder, 2014). The desired benefit from any innovation cannot be realized in organizations if it is not accepted by its workforce. This is why it is important to examine the adoption of innovations by employees (Talukder, 2014). The introduction of innovation requires changing the employees' behaviors and attitudes towards such changes positively (Nelson, 1990; Talukder, 2014). Researchers have investigated factors that determine the adoption of technology using various technology acceptance models, for instance the technology acceptance model (Davis, 1985), diffusion of innovation theory (Rogers, 2004) and unified theory of acceptance and use of technology (Venkatesh et al., 2003). To better appreciate the factors that influence the use of ICTs in developing countries, it is important to understand the theoretical models used to explain ICT adoption in these places (Taylor, 2015). Collis (1999) argued that culture is an important factor that influences how humans accept, use, and react to the technology. Literature on technology acceptance and adoption has shown that culture is a key determinant (Leidner & Kayworth, 2006; Abu Nadi, 2012). Scholars have found there is a significant correlation between cultural factors and the adoption of ICT (Erumban & De Jong, 2006; Zhang & Maruping, 2008; Abu Nadi, 2012).

During the last three decades, several studies have emerged to illustrate the relationship between cultural factors and uptake of technology and showing that cultural background plays a significantly important role in affecting the uptake and use of new technology (Hofstede, 1980; Del Galdo & Nielsen, 1996; Trompenaars & Hampden-Turner, 1997; Tse et al., 2004; Barton, 2010). It has been argued that technology carries the values and ideas of Western cultures, which

can change local cultural traditions and habits (Albirini, 2008). Studies found that cultures vary in their use of ICT (Karahanna et al., 1999; Straub et al., 2002; Gefen et al., 2003). These social and cultural differences, consequently, encourage researchers to validate different technology acceptance theories and models in the Middle East (Al-Gahtani et al., 2007; Baker et al., 2007; Baker et al., 2010; Alhirz & Sajeev, 2015). Cultural factors are major issues that determine the acceptance or rejection of new technologies in any society. One of the main factors in rejecting any new technology is the incompatibility with cultural practices, values, and traditions (Hill et al., 1994; Akman & Turhan, 2016). Consequently, the culture of any society has a huge impact on technology. It is considered one of the main factors that determine whether individuals in that society or workplace will adopt the technological innovation (Loch et al., 2003; Ameen & Willis, 2015). As stated previously, the use of information technology varies from culture to culture (Karahanna et al., 1999; Straub et al., 2002; Gefen et al., 2003). Previous studies investigated the effect of cultural values on technology adoption by incorporating Hofstede's dimensions to account for culture (Twati, 2008; Al-Hujran et al., 2011; Kahttab et al., 2012; Frigui et al., 2013). For this reason, it is important to study the impact of socio-cultural values on the acceptance and adoption of new technologies.

Religious values also play an important role in people's lives through shaping their beliefs, knowledge, and attitudes. Religious commitments, beliefs and values influence the feelings and attitudes of people to any innovation (Rehman & Shahbaz 2010). Very few studies have explained the effect of religious views on use of information technology in Arabic countries (Al-Saggaf, 2004; Alomari, 2014). This is why this study included investigating the effect of religious factors on accepting technological innovations. Technology adoption theories are well-established in the literature and most of the relevant research has been mainly conducted in developed countries. Prior studies focused mainly on ICT adoption and firm performance in the context of large companies. Studies on ICT adoption by public sector organizations in Saudi Arabia are limited. Public service is an important sector in Saudi society and has a significant impact on national economy. There have not been many studies on technology adoption and its impact on public service organizations in Saudi Arabia, so this study aims to fill this gap in the literature. This study will specifically examine the impact of socio-cultural and religious values on the technology adoption in public sector organizations in Saudi Arabia and their impact on workplace performance.

One of the most important factors that shapes the culture and values of people in Saudi Arabia is its national religion - Islam, one of the world's most significant religions. Values are affected by the transmission of religious values and norms. Religious oriented values are expected to have a strong impact on the followers of a given faith (Ab. Wahab et al., 2016). The socio-cultural norms in Middle Eastern societies are very different from those in Western countries (Kirlidog, 1996). While Saudi Arabian cultural values originate in the teachings of Islam, these values have not been emphasized in the extant literature with reference to the acceptance of technology (Ab. Wahab et al., 2016).

The Kingdom of Saudi Arabia (KSA) occupies much of the Arabian Peninsula, and it is a country that has experienced rapid and dramatic changes in terms of economic and social development during the last four decades, especially since the rise in oil prices during the 1970s (Al Dossry, 2012). Saudi Arabia is experiencing a rapid growth in terms of economy, education, population, and technology due to the increasing oil revenues earned by the country (Abu Nadi, 2012). The Digital Transformation Unit emanated from the National Digital Transformation Committee (NDCT), which was established by a royal decree in July 2017 announced at the conclusion of the MEFTECH Conference on Wednesday, February 26, 2020, in Riyadh. Part of this process was preparing a legislative draft for developing the Kingdom's digital economy (Al-Hamidi, 2020). The Saudi leaderships recognizes the role of the Saudi Data and Artificial Intelligence Authority (SDAIA), which was launched on Wednesday March 4, 2020 at the Ritz Carlton Hotel, in Riyadh. The aim was to make the Kingdom a global leader of the world's data-driven economies and its readiness to adopt artificial intelligence (AI) technologies (Bridgwater, 2020). Internet penetration among Saudi nationals is around 93% and this may explain the increasing popularity of online and other technology applications throughout the country (Saad, 2016).

The Enterprise Resource Planning (ERP) system has become one of the most important fields under the information systems umbrella. The ERP system is an integrated software package that includes all business functions required to perform relevant procedures. In order to react to rapidly changing business environments, technological enhancements and rising pressure of competition, organizations are forced to adapt their systems and perform ERP upgrades (Barth & Koch, 2019). The ERP system is often one of the biggest investments a company will have to make. The ERP is not just a major financial decision, but an effective solution can affect all parts of one's business, like accounting, marketing, manufacturing, human resources, and more

(Elgohary, 2019). The ERP has a potential market in the Middle East and particularly in Saudi Arabia (Basoglu et al., 2007; Almishal & Alsaud, 2015). The ERP system in Saudi government agencies is referred to as Government Resource Planning (GRP). Technology in Saudi government departments is still in its infancy and their senior managers have not yet adopted new technologies throughout the country. This is what motivates the government to implement the ERP in its bureaucracies (Almishal & Alsaud, 2015). This study investigates the socio-cultural and religious factors concerning the acceptance and adoption of the GRP as a new technological innovation in Saudi Arabia.

The main reason for selecting this topic is that there is a lack of ERP acceptance and adoption studies in the Middle East countries generally (Maguire et al., 2010; Hossain et al., 2011; Abdelghaffar, 2012; Alhirz & Sajeev, 2015). Studies show that there is a need to investigate social and cultural factors that affect the behavioral acceptance and adoption of ERP users in developing countries (Al-Gahtani et al., 2007; Baker et al., 2007; Venkatesh & Zhang, 2010; Alhirz & Sajeev, 2015). In spite of the popularity of ERP, the failure rate of ERP implementation remains high (Zerbino et al., 2017). It is said that about 70% of ERP implementations fail to deliver anticipated benefits (Kumar et al., 2003). This is why it is very important to study Critical Success Factors (CSF) because they provide clear guidance to practitioners on where to focus and allocate resources reasonably in planning an ERP project (Ifinedo, 2008). According to Saleh et al. (2013) factors and challenges of starting up ERP in developing countries differ from those in the Western countries. The majority of these analyses have been conducted in Western countries and very few of them had examined the implementation in Middle Eastern countries and none in Saudi Arabia (Saleh et al., 2013).

One of the oldest social science theories is the Diffusion of Innovation (DOI) Theory (Rogers, 1962). The theory explains how, over time, an idea or product gains momentum and spreads through a specific population or social system within a country or in a specific society. For adoption to take place, a person should do something differently than what he or she had done previously (LaMorte, 2019). Rogers's Diffusion of Innovation Theory looks at the fundamental characteristics of technological innovations to trace their impact on adoption (Rogers, 2004; Sahin, 2006). On the other hand, the Technology Acceptance Model (TAM) by Davis (1985) is a parsimonious model that looks at key behavioral elements that influence decision-making related to ICT adoption. TAM theory explains that behavior is influenced by attitudes which are influenced by perceptions of usefulness and convenience. A positive attitude shown by

consumers can attract many to decide where to shop in an online store (Suleman et al., 2019). Some key characteristics of technological innovations offer a similar meaning to the behavioral traits in TAM. Particularly, the key antecedents of perceived usefulness, ease of use, social influence, and facilitating conditions in TAM suggest a relative advantage, complexity, image and compatibility in Diffusion Theory (Venkatesh et al., 2003). This research stream based on various technology adoption models relies on a varied approach being taken (Holden & Karsh, 2010). A range of factors is incorporated to address different contexts such as compatibility, adopter perceptions, their social network, and the general environment under which the technology adoption is attempted (Datta, 2011). For these reasons, it is very important to understand the theoretical models used to explain ICT adoption (Taylor, 2015).

The conceptual model developed for this current study is based on existing technology acceptance theories, namely, Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT) and Hofstede's Cultural Dimension Theory (CDT). The study develops an integrated research model using the strengths and limitations of previous theories and models. The model extends the previous research models in terms of adding new variables into the research framework. The research will collect data from a study sample of people working at the Ministry of Foreign Affairs, to investigate the socio-cultural and religious factors influencing the adoption of technological innovation in Saudi Arabia. The model includes cultural dimensions, social dimensions, religious values, and demographic characteristics as determinants of technology acceptance affecting the perception of individual employees, and the expected benefits for organizations from the adoption of technological innovations.

1.2 Motivation for the study

The main aim of this study is to investigate the impact of socio-cultural and religious values on the adoption of new technological innovations in Saudi Arabia. There has been very little research published on the effects of socio-cultural and religious factors on technology adoption in Middle East nations (Norton, 2002; Al-Saggaf, 2004; Alomari, 2014). Challenges and factors affecting ERP implementation in developing countries differ from those of Western economies. Hence, a gap in the literature exists for what we know about Middle Eastern countries on this topic. Very few studies examined the implementations of the ERP system in Middle Eastern countries and none in Saudi Arabia (Saleh et al., 2013). This study tries to fill such gap by going

beyond the boundaries of Western counties to empirically examine the determinants of successful ERP implementation in Saudi Arabia.

Most of the field management research seems to neglect religious values as influencing factors (Sedikides, 2010; Al-sharif, 2014). The identification of socio-cultural and religious factors is important to the government, organizations and policymakers that want to create a workplace environment conducive to employees' adoption of technological innovation and thereby benefit from it. This thesis extends research beyond these contextual variables, and it suggests that behavioral models do not universally hold across cultures (Moore & Benbasat, 1991; Datta, 2011). The assessment of technology acceptance in the context of Arab countries has generally escaped deeper scrutiny (Straub et al., 2002; Loch et al., 2003; Alomari, 2014). When comparing user behavior related to ICT adoption across countries in the Arab world, adoption behavior is varied and nuanced (Twati, 2006; Kalliny & Hausman, 2007; AlAwadhi & Morris, 2009; Alomari, 2014). Although values were extensively studied in several analyses, Islamic values remain relatively unexplored in the literature (Ab. Wahab et al., 2016).

Employees in Saudi Arabian relatively know little about the socio-cultural impact on technology acceptance. Except for a few studies (Gatignon et al., 1989; Kalliny & Hausman, 2007), no much is known about how cultural and religious values affect consumers' adoption of innovation. For this reason, further research is required in order to fill the gap in our knowledge on this topic.

1.3 Objectives of the study

General Objective

The main objective of this study is to examine the impact of socio-cultural and religious values on the adoption of technological innovation in Saudi Arabia. Specific objectives of this study are outlined in more detail below.

Specific Objectives

1. To examine the impact of cultural norms on the adoption of technological innovation by employees in an organization in Saudi Arabia.
2. To explore the impact of social networks on the adoption of technological innovation by employees in an organization in Saudi Arabia.

3. To investigate the impact of religious values on the adoption of technological innovation by employees in an organization in Saudi Arabia.
4. To examine the impact of attitude to technological innovation on employees' acceptance behavior in Saudi Arabia.
5. To investigate the impact of demographic characteristics on employees' attitudes to technological innovation in an organization in Saudi Arabia.
6. To explore the benefits of adopting technological innovation in organizations in Saudi Arabia.

1.4 Research questions

The main research question of this study is:

What is the impact of socio-cultural and religious values on the adoption of technological innovation by employees in an organization in Saudi Arabia?

The specific research questions are as follows:

1. What is the impact of cultural values on the attitude toward the adoption of technological innovation by employees in an organization in Saudi Arabia?
2. What is the impact of social factors on the attitude toward the adoption of technological innovation by employees in an organization in Saudi Arabia?
3. What is the impact of religious values on the attitude toward the adoption of technological innovation by employees in an organization in Saudi Arabia?
4. What is the impact of demographic characteristics on the attitude toward the adoption of technological innovation in an organization in Saudi Arabia?
5. What is the impact of attitude toward technological innovation on individual employees' acceptance and use of technological innovation in Saudi Arabia?
6. What is the effect of technology adoption on the expected benefits from this usage?

1.5 Contribution of the study

The purpose of this study is to investigate the socio-cultural and religious values affecting the acceptance of technological innovations by individual employees in Saudi Arabia. This research is expected to make significant theoretical and practical contributions as follows. Firstly, the research contributes to knowledge development by studying a particular phenomenon in Saudi

Arabia. The new conceptual model will encourage greater learning technology adoption and facilitate a better understanding of the factors affecting individuals' acceptance of innovation in the Middle East context. Theoretically, such research will enrich the technology acceptance literature by addressing a construct, which combines adoption issues into one coherent model. Secondly, the combination of variables and the testing of a wide range of factors in this study represent a novel approach to understanding technological innovation adoption by individuals. Thirdly, this research will assist managers to identify and benchmark strategies so that technology adoption occurs in their workplaces. These strategies should be customized to best fit the unique characteristics of end users. The research will also provide a guideline to the Saudi Arabian government, public and private sector businesses to generate policies that govern technology acceptance and usage of technological innovations in the workplace.

Theoretical Contributions

The study makes several theoretical contributions, and these are described in more detail below.

Development of a comprehensive model

This study develops a theoretical construct that integrates socio-cultural and religious values and individual innovation adoption issues into a coherent model. The combination of socio-cultural and religious variables in this study goes beyond previous research in an attempt to bring together all the relevant factors that may affect individual employees' innovation adoption into one coherent model. The analysis combines multiple sets of variables found in socio-cultural and religious as well as innovation adoption-related studies, into a single study context. Cultural values, social dimensions and religious norms influence individual attitudes and perceptions which consequently lead to adoption behaviors.

Filling the knowledge gap

Very few studies have been done on the Middle East region concerning the effect of socio-cultural and religious values on employees' acceptance of technological innovations. The literature shows that we know very little about the ways in which individuals adopt technological innovations and the determinants that impact on their adoption of technological innovation in the workplace (Talukder, 2012). Most previous research on the influence of cultural norms has been conducted in Western countries (Maguire et al., 2010; Hossain et al.,

2011; Abdelghaffar, 2012; Alhirz & Sajeev, 2015). This research fills that knowledge gap by especially focusing on a variety of cultural factors, social influences and religious values on the adoption of new technologies in workplace settings.

Better and deeper understanding of the socio-cultural and religious values impacting on the level of technology adoption

This research will provide a better and deeper understanding of the impact of socio-cultural and religious values on technology adoption by employees in Saudi Arabia. The study is expected to provide a greater understanding of how cultural, social and religious values affect employees' technological innovation adoption behavior. Middle East countries are a perfect example where cultural values, social influence and religious values prevail in all aspects of an individuals' life. On this theme, the study emphasizes the impact of national cultural dimensions that shape individuals' social characteristics and acceptance of technological innovations in Saudi Arabia. The findings of this research are expected to be especially relevant to other Middle East countries that share cultural characteristics with Saudi Arabia. The results are expected to provide a theoretical explanation for the acceptance of technological innovations in Arab countries given that they share a similar language, type of government, religion, culture and traditions.

Practical Contribution

The study has important practical implications, which are highlighted below in more detail.

Implications for the Saudi government

The findings of this study will help the Saudi government develop policies and procedures on the implementation of new technologies in various departments, agencies, etc. The Saudi government can benefit from the results of this study by recognizing the influence of socio-cultural and religious values on employees' acceptance of technological innovations. The results will guide the Saudi government to develop strategies and policies to implement new technologies throughout the country.

Implications for the public and private sector organizations

Findings of this research will help public and private sector organizations engaged in introducing technological innovations. The research will guide public and private organizations to develop policies and procedures concerning new technology implementation in their workplaces. Research findings will provide information on what are the socio-cultural and religious factors workplaces need to consider in order to ensure the optimum level of acceptance and usage of technological innovation. This will also help organizations to design support systems and use adequate resources for individual employees when issues arise.

Implications for managers

The findings of this study will help guide management towards more effective strategies when implementing technological innovations in organizations. The results will help management identify the extent of resources and support needed for employees when a new technology is in the workplace. This will ensure the smooth uptake of new technology usage in the organization and improve the workplace environment. Findings will also help managers and other senior executives determine how employees need to be trained in how to use the new technology in the workplace. The results will also help managers to maximize the advantages and minimize the disadvantages of technology usage in order to improve the workplace environment. These findings should help reduce innovation implementation-related costs and enable employees to accept an ICT innovation more readily.

1.6 Structure of the thesis

The study aims to investigate the factors that affect acceptance and adoption of technological innovation from the Saudi employees' perspective. The study comprises seven chapters. The following are the details of each chapter:

Chapter One: Introduction. This chapter presents the topic, the research questions, methodology, as well as the contributions of the study to generating new knowledge on this subject.

Chapter Two: The Literature Review. This chapter discusses, in depth, what culture is and how culture is defined. The societal culture is also discussed in this chapter in addition to an in-depth

explanation about Saudi Arabia. The chapter also includes the cultural norms, traditions, customs, etc., in the KSA, the use of technology, and how the Saudi culture is affected by religion and gender factors. This chapter presents the Saudi cultural dimensions according to Hofstede's cultural dimension theory and gives some comparisons between Saudi Arabia and some other countries in terms of these cultural dimensions.

Chapter Three: Theoretical Framework. This chapter reviews the prominent theories and approaches within the technology acceptance domain. The chapter discusses the following: Innovation Diffusion Theory (IDT) by Rogers (1962); Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975); Technology Acceptance Model (TAM) by Davis (1985); United Theory of Acceptance and Use of Technology (UTAUT) by ; and Cultural Dimension Theory (CDT) by Hofstede (2001). Further explored here are Hofstede's six dimensions (Power Distance Index (PDI), Individualism (IDV), Uncertainty avoidance index (UAI), Masculinity (MAS), Long-term orientation (LTO), and Indulgence (IND)). These models and theories are then compared to show their advantages and disadvantages, so that alternative, hybrid model/construct(s) serves as the ideal conceptual framework and is applicable to Saudi society.

Chapter Four: Research Model and Hypotheses development. This chapter presents the development of a customized model that best suits Saudi cultural norms. The developed model consists of four categories that affect the adoption of technological innovation in Saudi Arabia: international cultural values, social dimensions, religious values, and demographic characteristics. International cultural values consist of five variables, these being: Uncertainty avoidance, Power Distance, In-group collectivism, Masculinism vs Feminism and Long-term orientation. The social dimensions consist of two variables, i.e. social networks and peers' influence. Religious values consist of four variables: Perfection, Cooperation, Responsibility, and Transparency. The demographic characteristics consist of four variables: age, gender, academic qualifications, and workplace position or status. The research hypotheses are then developed from these variables.

Chapter Five: Methodology of the Research. This chapter is dedicated to explaining the chosen methodology that can answer the research questions. Discussed here are the population of the study, the study sample, data collection procedures, analysis tools and criteria, the development of the instrument and the statistical analysis methods.

Chapter Six: Data Analysis and Discussion. This chapter is dedicated to the data analysis. Data analysis was done using the most appropriate statistical analysis applications. Based on data analysis and the results obtained, the chapter will then discuss the results and what they mean.

Chapter Seven: Conclusion and Recommendations. This chapter summarizes the findings of the research and makes recommendations for practice. Also discussed here are the limitations of the research and what future studies on this topic should do.

Appendices: The last part includes four appendices: The first appendix is the participants' information form. The second appendix is the approval letter of the research ethics and integrity research services from the University of Canberra. The third appendix is approval of the Saudi ministry of foreign affairs to collect data from the ministry for this research. The fourth appendix is survey questionnaire which was distributed to the ministry employees.

1.7 Summary

This study aims to investigate the socio-cultural norms and religious values in Saudi Arabia and their impact on the acceptance and diffusion of technological innovations. This chapter introduces the study by stating the research problem, explaining the background of the problem upon which the research questions were established. The chapter focuses on the problems associated with the adoption of technological innovations by employees in Saudi Arabia. The chapter also explains the reasons concerning why the proposed research model is important to researchers and practitioners. In addition, it explores broad categories of factors: cultural, social, religious, and demographic, which affect the employees' attitude to the adoption of technological innovations. The chapter, then, discusses the knowledge gap as one of the justifications for undertaking this thesis. The objectives are presented followed by the research questions. The theoretical and practical contributions of the study are also presented. The next chapter comprises the literature review and the technology acceptance theories and models which constitute the real focus of Chapter 2.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the impact of socio-cultural and religious values in Saudi Arabia on the acceptance of technological innovation. The chapter is organized as follows. The first part discusses the technological innovations. After elaborating on the definitions, categories and the process, the acceptance of technological innovations is discussed. The second part is dedicated to discussing culture and its definitions, while the third part looks at the culture of Saudi society, the use of the internet throughout the country, and the main characteristics of society that may affect acceptance of technological innovations. In the fourth section, information about the Ministry of Foreign Affairs (MOFA) and Government Resource Planning (GRP) is presented. Finally, the fifth section discusses the concept of Hofstede's cultural dimensions.

2.2 Technological Innovations

Definition of innovation

Innovation has been of the most interesting and consistent tasks undertaken by humans throughout history (Lee & Trimi, 2018). Continuous innovation efforts have been imperative for societies to survive and improve people's quality of life (Lee and Trimi, 2018). The term innovation according to Hajar et al. (2020) is the process of pioneering new ideas and concepts that aid in the enhancement of overall organizational performance.

Innovation has been defined in various ways. Zaltman et al. (1973) argued that innovation is any system or program that is new to individuals or organizations regardless of the age of this innovation or the number of its users. This means that the innovation may be new only to those individuals or organizations who are embracing it. Hajar et al. (2020) defined technological innovation as the adoption of a creative idea to develop a new product or service, or a new element or technique of production or service operation. Innovation according to Afuah (2003) is the use of technological systems that are new to employees. This system offers a better and improved service and the outcome of the new system is more efficient. In the same way, Rogers (2003) argued that innovation is any idea, practice or object that is looked at as new by an individual. Talukder et al. (2014) defined innovation as something that adds value to an

organization. According to his definition it will only be considered an innovation when it can be implemented; it cannot be considered an innovation if it is not incorporated into an organization's daily activities. According to Department of Industry (2016), innovation is a key driver of business competitiveness, economic growth, and improved living standards. The report suggested that the term innovation could carry different meanings depending on the background and experience of the person who is seeking it. Innovation has been defined in the above-mentioned report as implementation of a new or significantly improved product, process, new marketing method or new organizational method in business practices, workplace organization or external relations. The report also indicated that a range of actors across the spectrum of business, government, academia and other parts of the community is essential for a well-functioning innovation system (Department of Industry, 2016). Innovation has been indicated as a significant driver for customer satisfaction such as a firm's performance, especially in service-related industries (González-Cruz et al., 2018; Hajar et al., 2020).

Types of Innovation

Researchers categorized innovations into many types. The most popular categories concentrate on the distinction between technical and administrative innovation, product and process innovation and incremental and radical innovation (Gopalakrishnan & Damanpour, 1997; Gopalakrishnan & Bierly, 2001; Talukder et al., 2014). Administrative innovations pertain to administrative processes and human resources. They are indirectly related to the basic work activities of the business or organization and are more directly related to management processes. Technical innovations are the products, processes and technologies used to produce or render the services of an organization (Gopalakrishnan & Bierly, 2001).

Product innovation comprises the outputs or services that are introduced for the benefits of customers while process innovation is viewed as delivery of outcomes rather than being simply outcomes. This is why workplaces adopt product innovations more than process innovation (Damanpour, 1996; Gopalakrishnan & Damanpour, 1997). The degree of change caused to the structure and processes of an organization is the main factor that differentiates between radical and incremental innovations. Incremental innovations cause marginal change when existing products or processes do not have to be radically transformed. However, radical innovations cause fundamental changes in an organization's structures and activities (Damanpour, 1996; Gopalakrishnan & Damanpour, 1997).

Innovation Adoption Process

The emergence of a commercialized technology does not guarantee that it will be adopted by institutions. Many factors affect the decisions made by firms and consumers about the adoption of technology. The adoption of technologies, and their spread across the economy, occurs as a result of a multitude of individual decisions made by firms and consumers (New Zealand Productivity Commission, 2019). The adoption of any new technology usually starts with the recognition that there is a need for solutions. After that comes the initial decision to attempt the adoption process and then the implementation of the solution is proceeded with (Wisdom et al., 2014). The adoption process at an organizational or system level is complex because it involves promoting change in routine practices when decision-makers do not perceive changes as necessary or want them (Wisdom et al., 2014). Rogers (2003) in his model for Innovation Diffusion Theory (IDT) indicated that every innovation passes through five stages before it is implemented, these being knowledge, persuasion, decision, implementation, and confirmation (The Interaction Design Foundation, 2016).

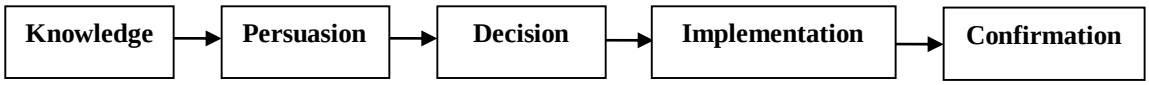

Figure 2.1 Rogers' Model of the Innovation Adoption Process. (Source: Rogers, 2003).

Rogers (1962) identified five traits that help us to categorize people according to their adoption of an innovation. These five traits are:

1. Innovators: who are the first individuals to adopt innovation and willing to take the risk (2.5%).
2. Early adopters: the second category to adopt an innovation (13.5%).
3. Early majority adopters: this category adopts the innovation sometime after the first two categories (34%).
4. Late majority adopters: this category adopts an innovation after the average member of the society (34%).
5. Laggards: this category is the last to adopt an innovation (16%).

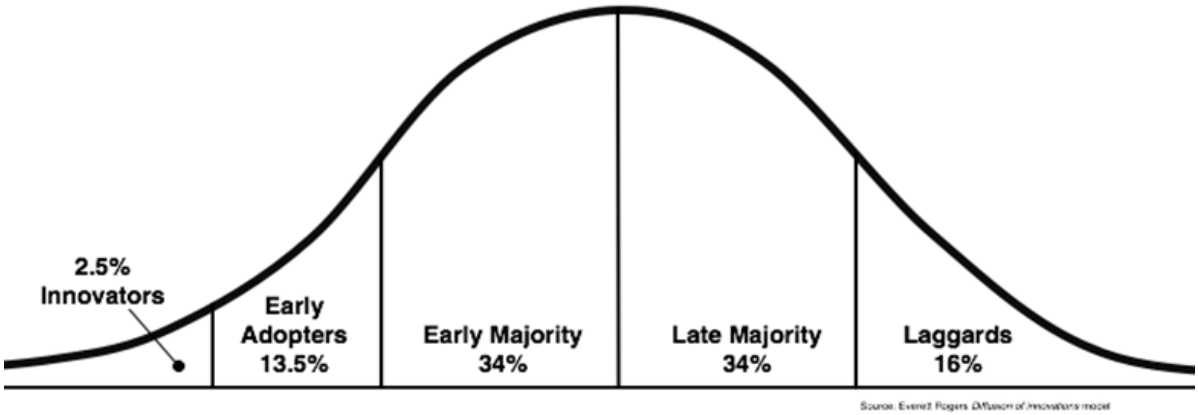

Figure 2.2 The stages by which a person adopts an innovation. (Source: LaMorte, 2019).

The difference between adoption and diffusion

These two terms are quite distinct from each other even though many people use them in the same context. According to Sharma and Mishra (2014) the term adoption is used at individual because it refers to the stage in which a technology is selected for use by an individual or an organization, while diffusion refers to the adoption by the masses because it is concerns with the stage in which the technology spreads to general use and application.

Acceptance of technological innovations

The technological innovation pace of growth has continued at a very high rate while the adaptation and usage rate of such technologies have been comparatively slow. The gap between the growth rate and acceptance rate of technological adaptation led to productivity gains from innovation investments being less than expected (Venkatesh et al., 2000). Understanding the acceptance of technological innovations is important because if technological innovations are appropriately utilized by employees, then increased worker productivity, better decision-making, efficiency in performing jobs and individual productivity will be achieved. Bhattacherjee and Sanford (2006) stated, "understanding IT acceptance is important because the expected benefits of IT usage, such as gain in efficiency, effectiveness or productivity, cannot be realized if individual users do not accept these systems for task performance" (p. 805).

The problem with acceptance is that the availability of these technologies does not guarantee their use by staff (Bhattacherjee, 1998; Talukder et al., 2014). Technological innovations are advancing at an astronomical pace, but the use of these technological innovations is far below

expectations (Venkatesh et al., 2000; Talukder et al., 2014). The adoption of a new technological innovation cannot be successful unless people accept it and use it effectively in the workplace (Talukder et al., 2014). One of the big challenges that hinder straight forward solutions is designing an effective approach for increasing end-user acceptance and use of innovation (Talukder, 2011)**.** Nelson (1990) indicated that motivating users to use innovation remains a major problem for businesses and organizations. To introduce technological innovations requires a change in the attitudes and behavior of employees. Without these changes the attitudes and behavior of the employees, and business plans, may fail to achieve their desired outcomes. Understanding the acceptance of new technologies is very important because key benefits are associated with access to them (Suvarna & Godavari, 2012). An individual's innovation acceptance and the drivers of this adoption remain largely unknown, although innovation adoption has been studied extensively (Frambach & Schillewaert, 2002). Furthermore, very little is known about the ways in which individuals embrace an innovation and the factors that influence doing so (Bhattacherjee, 1998; Venkatesh et al., 2000; Frambach & Schillewaert, 2002; van Everdingen & Wierenga, 2002).

Understanding the acceptance process and the factors that make this process effective is essential for organizations to make this adoption successful (Lee et al., 2006; Talukder et al., 2014). It is evident in the current literature that what we know about the ways in which individuals adopt and the factors that influence individual adoption of innovation is relatively little (Bhattacherjee, 1998; Venkatesh et al., 2000; Frambach & Schillewaert, 2002; van Everdingen & Wierenga, 2002). Further research is required regarding the role of organizational, individual, and social processes affecting individual adoption of innovation (Frambach & Schillewaert, 2002; Mun et al., 2006; Schepers & Wetzels, 2007). Many research studies have been done on technological innovation acceptance and use by individuals and organizations. According to Frambach et al. (1998) ", as only a fraction of new products is successful, a thorough understanding of factors underlying the innovation adoption decisions by potential adopters is necessary" (p. 161). Studies have identified the factors that are involved in the individual's intention, decision, and satisfaction to use a new or innovative technology (Silva & Dias, 2007). Since the personnel working in these organizations originate from a variety of cultural or social backgrounds, it is very important to understand their behavioral differences in accepting technology innovations (Zhang & Ma, 2009).

2.3 Definition of Culture

Defining culture is not an easy task because a variety of disciplines including anthropology, sociology, physiology, history, management, economics, business, and technology have looked at it in different ways (Abu Nadi, 2012). Culture was defined to explain the differences between societies (Najm, 2015). Tylor (1871) defined culture as, "culture is that complex whole which includes knowledge, belief, art, morals, laws, customs and any other capabilities and habits acquired by men as a member of the society" (p. 1). Many scholars have nonetheless defined culture. It has been viewed as the programming of the human mind that differentiates between members of different societies and communities (Hofstede, 1980). Culture is looked at as a complex whole that includes knowledge, beliefs, art, morals, laws, customs, capabilities and habits acquired by members of the society or community (Tylor, 1871; Alkahtani et al., 2013). According to Siddique et al. (2016) culture has been endorsed and created by constant interactions with others and is looked at as a phenomenon that surrounds us all the time. Many anthropologists defined culture as learned from others in childhood and adolescent development, and is shared by members of the society. They believe it is responsible for the differences in ways of thinking, and considered it to be essential in the psychological and social development of the individual (Peoples & Bailey, 2011).

The National Centre of Cultural Competence (NCCC) explained the term "culture" as an incorporated set of human behaviors of a social, religious, or ethnic group, which is able to convey this set of behaviors to subsequent generations. Culture is in effect a learnt behavior from within the society into which one is born—or in which one becomes embedded and consists of norms, beliefs and customs (Gay, 2000). Culture is considered to be a very important factor in determining ICT acceptance. Definitions of culture in general could include the observation of rules, customs, responsibilities, and morals. These rules are affected by a range of levels of culture such as language, sexual characteristics, race, beliefs, geography, and employment. These aspects all influence interpersonal deeds (Barr & Glynn, 2004; Ali et al., 2008). There is a sense that culture is akin to the collective programming of the mind (Chevrier, 2003). Culture has been conceptualized as a system of shared symbols, norms and values in a social collective such as a nation, country, community, etc. (Lee et al., 2013). Culture is a collective's unique set of parameters distinguishing a group of people who are attached through either religious, professional, ethnic, racial or organizational ties. These parameters can be shared attributes or shared values (Al-sharif, 2014). These make them distinct from any other

group. It is important to note that for this thesis, cultural values, such as religious beliefs, morals and norms, social, political and legal systems, play a very important role in technological innovation implementation and adoption.

Impact of Culture on Technology Acceptance

According to Jaafreh (2018), national culture is an important issue in technology acceptance. Culture has a significant effect on the diffusion of technology (Straub et al., 2002; Loch et al., 2003; Ameen & Willis, 2015). A significant role is played by cultural background in affecting the uptake and use of new technology (Hofstede, 1980; Trompenaars & Hampden-Turner, 1997; Tse et al., 2004; Barton, 2010). Culture was acknowledged in previous studies as wielding a significant impact on technology adoption, specifically in developing countries such as those with Arab histories (Ameen & Willis, 2015). The incompatibility of any technology with societal cultural practices, values, and traditions is considered one of the main factors in why technology can be rejected (Hill et al., 1994; Akman & Turhan, 2016). Literature on technology acceptance and adoption revealed that culture is an important key determinant in the acceptance of technology (Leidner & Kayworth, 2006; Abu Nadi, 2012). A significant correlation between the adoption of ICT and cultural factors has been noted in many studies (Erumban & De Jong, 2006; Twati, 2008; Zhang & Maruping, 2008; Min et al., 2009; Abu Nadi, 2012). These researchers indicated that Arab culture can both be a hindering and a supporting factor of technological innovations. Abu Nadi (2012) stated that a lack of acceptance of new technology occurs because individuals carry cultural biases, beliefs, and values which affect their perceptions of what the new technology may portend.

The result of Al-Ghaith (2015) study about the social network behavior in Saudi Arabia suggests that attitude and subjective norms have a significant effect on the participation intention of adopters**.** For this reason, Hofstede explored the influence of cultural differences on the adoption and diffusion of ICT-based innovations (Olushola & Abiola, 2017). Many previous studies incorporated Hofstede's cultural dimensions to account for how it impacts on technology adoption (Twati, 2008; Al-Hujran et al., 2011; Kahttab et al., 2012; Frigui et al., 2013). It should be noted that El Louadi and Everard (2004) stated some limitations of Hofstede dimensions in relation to the Arab cultural dimensions. In fact, previous studies (Loch et al., 2003) found that the Arab culture does display some significant cultural values for studying technology transfer where problems can arise: cronyism; disposition against planning;

preference for face-to-face communications; and perceptions of religious prohibition or one's religion/faith being undermined.

Societal Culture

Societal culture has been defined as a collection of values and principles, shared within a particular group of people in a certain country or region (Prasad & Babbar, 2000). What makes a societal culture is the development of shared ideas or understandings that inform behavior in the context of that particular society. Societal culture denotes a system of inherited conceptions expressed in symbolic forms by means of which men and women communicate, perpetuate, and develop their knowledge about and attitudes toward life. It is the historical transmission pattern of meanings embodied in symbols (Geertz, 1973). Societal culture can be defined as the common and/or learnt traditions, customs, values and norms among a group of individuals (Northouse, 2006). Arab culture has been greatly affected by globalization and Western behavior, but Islam is still the most influential factor that seeps through all aspects of life in Arab countries (Ali & Wahabi, 1995). A homogeneous societal culture constitutes the shared meanings with little variation in beliefs and practices; that is, the culture has one dominant way of thinking and acting. A homogeneous societal culture is infused with meanings which guide people's behavior. The difference between a homogeneous and heterogeneous societal culture is that in the latter these dominant sets of values are not regarded as the only acceptable set of beliefs. They in fact exhibit much greater variation and more than one set of beliefs and way of life is encouraged.

For any organization's globalization or internationalization strategy, understanding and contextualizing cultural differences across nationalities is necessary. In order to apply organizational theories to business practices, societal culture is an important factor to be considered because it is a 'super' or overarching system of which organizational systems are a part (Shaw, 2014). The organization's employees who are members of the societal culture bring their societal values and culture to the workplace (House et al., 2004; Borg et al., 2011; Shaw, 2014). This suggests that the success of any organization in external adaptation requires closeness to the contextual culture (House et al., 2004; Shaw, 2014).

2.4 Impact of Religion

Saudi Arabia is viewed as the cradle of Islam and holds a very important place in the history of Islam because Prophet Mohammed (peace be upon him) received the revelation of the holy Koran as well as gave the primordial teachings within the area of Saudi Arabia (Mathkur, 2019). Currently, approximately 75% of the world's population belong to some kind of religion, which is a source of values that can be understood and accepted (Zuckerman, 2007; Ab. Wahab et al., 2016). One of the main factors in rejecting new technologies is its incompatibility with a society's historical, religious, cultural traditions, practices, and values (Hill et al., 1994; Akman & Turhan, 2016). Islam according to Abu Nadi (2012) is the bedrock of Saudi Arabia's culture and sets the moral principles and behaviors in its society. Employees' religious beliefs are increasingly being investigated by researchers in the field of management (Al-sharif, 2014). Given the conservative nature of Saudi Arabian Islamic faith, understanding the significance of the impact of Islamic principles and values on organizations cannot be underestimated (Al-sharif, 2014). Although values have been the subject of extensive research internationally, work on Islamic values remains relatively unexplored in the literature (Ab. Wahab et al., 2016).

Most of the research within the management field seems to neglect religion as a factor that influence management (Sedikides, 2010; Al-sharif, 2014). Work in the Islamic system may be seen as worship, and the motivation to work is not merely based upon material needs (Robbins et al., 2011). The reason for the neglect of religion as an influencing factor in research is that most researchers, who come from Western backgrounds with the resulting attitudes, assume that organizations have a neutral view on religious beliefs and employees leave them at home before going to work. However, this assumption has been proved to be inaccurate, especially when analyzing Middle East countries (Mellahi & Budhwar, 2010; Al-sharif, 2014).

Table 2.1 Findings of Some Studies on Technology Acceptance

No.	Author	Date	Paper	Findings
1	Mangula, I., & Brinkkemper, S.	2017	A Meta-analysis of ICT Innovation Adoption Factors: The Moderating Effect of Product and Process Innovations	Five factors consistently affect the adoption decision for both product and process innovations, namely relative advantage, compatibility, top/senior management support, organizational readiness, and competition.

				Two factors, namely organizational size and external pressure, highlighted the significant effect for product innovations, but not for process innovations.
2	Aldraehim, M.	2013	Cultural impact on e-service use in Saudi Arabia	This study identified four Saudi Arabian cultural values impacted by the use of e-services in the public and private sector in Saudi Arabia. Of these four, nepotism and the fear of a lack of interaction with other humans were found to discourage intentions to use e-services. In contrast, employee commitment did have a positive effect. The fourth Saudi Arabian cultural value was assumed initially to have positive effects, but the finding was the opposite.
3	Alhirz, H. & Sajeev, A.	2015	Do cultural dimensions differentiate ERP acceptance? A study in the context of Saudi Arabia	The espoused cultural values of power distance, uncertainty avoidance and individualism vary across the ERP implementation stage and/or early and later users' acceptance of ERP. Only one of the cultural dimensions tested (namely, uncertainty avoidance) was found to be significant.
4	Saleh, M., Abbad, M. & Al-Shehri, M.	2013	ERP Implementation Success Factors in Saudi Arabia	This ERP implementation project was not successful in Saudi Arabia. For those organizations that are considering implementation, the finding could serve as a basis for their decisions that ERP projects in Saudi Arabia need to carefully consider how success can be achieved.
5	Bazhair, A. & Sandhu, K.	2015	Factors for the Acceptance of Enterprise Resource Planning (ERP) Systems and Financial Performance	One of the key factors which needs to be taken into account is user satisfaction. The organizations need to ensure that training programs are in line with users' cultural and psychological needs. Financial performance is also one of the key markers when adopting new ERP systems and how it influences the dynamics of ERP adoption in organizations.
6	Talukder, M.	2012	Factors affecting the adoption of technological innovation by individual employees: An Australian study	Perceived usefulness and managerial support are the two dominant variables in explaining adoption. Individual adoption of innovation is influenced by two social factors (peers and social network).

				Individual adoption of innovation is also influenced by demographic factors.
7	Almishal, A. & Alsaud, M.	2015	Implementing ERP Systems in Government: Case Study of Saudi Arabian Organizations	For effective ERP implementation: Determine methodology according to the situation. Choosing the right project manager. Implement a ready-made package ideal for the government sector. Localization is a critical issue in the ERP.
8	Abu Nadi, I.	2012	Influence of Culture on e-Government Acceptance in Saudi Arabia	The most interesting and unexpected finding is the positive influence of conservative values. Saudi society is religiously conservative, but these attributes have not impeded the acceptance of technology.
9	Ezzi, Shaza, Teal, E. & Izzo, G.	2014	The influence of Islamic values on connected generation students in Saudi Arabia	Saudi Arabian college/university students see themselves as members of a connected generation. They responded favorably to the use of on-line video. They have greater preference for video searching and sharing for social communication and entertainment; there is less interest in major news information shown by them. 50% of respondents were offended by videos portraying non-Islamic behavior, but this had only a moderate effect on males.
10	Zhao, F., Shen, K., & Shen, A.	2014	Effects of national culture on e-government diffusion A global study of 55 countries	Culture does have an effect on e-government diffusion in various ways. Economic development in the form of GNI per capita has a moderating effect on the relationship between culture and e-government diffusion.

2.5 General Information about Saudi Arabia

Saudi Arabia, the country in which this study is conducted, was founded in 1932 by King Abdulaziz Ibn Saud. Saudi Arabia covers a geographical area of approximately 1,960,582 square kilometres (756,984 square miles) and it occupies about 80% of the Arabian Peninsula. The neighbouring countries are Jordan, Iraq, and Kuwait, in the north, Yemen and Oman in the

south, Qatar, and the United Arab Emirates in the east, and the Red Sea in the west. The population of Saudi Arabia estimated by the latest United Nations' Population Division in 2020 is 34,813,871 (Worldometer, 2020). Riyadh is the capital city and has grown significantly in the last three decades. Makkah and Medina, being the holy cities of Islam, are located in the western part of Saudi Arabia and are the focus of pilgrimage by Muslims from all over the world (Al Dossry, 2012). Table 2.2 presents the estimated population of the Kingdom of Saudi Arabia (KSA) for the year 2020.

Table 2.2 KSA Population 2020 – Estimates from multiple sources

Sources	Million	Year	Population
World Bank	34.81	2020	34,814,000
UN Estimate	34.81	2020	34,814,000
Countrymeters.info	35.01	2020	35,017,043
Worldometers.info	34.56	2020	34,556,071
Worldpopulationreview.com	34.56	2020	34,556,071
Populationpyramid.net	34.81	2020	34,813,867

Source: Global Media Insight (2018).

Saudi Arabia and its Neighbors

Figure 2.3 Map of Saudi Arabia.

The Kingdom of Saudi Arabia is a monarchy ruled by the Al Saud family. The Saudi Basic Law of Governance has the Koran and Sunna (Prophet Muhammad's sayings and traditions) as the basis of the country's constitution. A few years ago the population numbered approximately 28.5 million, including 5.8 million foreigners (Rajkhan, 2014). More recently, the population of Saudi Arabia was estimated in 2016 to be nearly 32 million. About 33% out of this number are non-Saudis according to government statistics. Historically, the area that is now known as Saudi Arabia was inhabited previously by nomads (Bedouins), whose livelihoods depended on camels and sheep. Saudi Arabia has experienced rapid and dramatic changes in economic and social development during the last four decades. This economic development is due to the revenues gained from the rise in oil prices in the 1970s. The country is considered the world's second largest producer and largest exporter of oil. The economy depends mainly on oil, which makes up more than 80% of the country's total exports (Al Dossry, 2012).

Cultural Norms in Saudi Arabia

Saudi Arabia is significantly different from other countries in the world because of its strong association with the religion and culture (Siddique et al., 2016). Culture in Saudi Arabia is characterized by its infusion of Islamic values and symbolic emphasis on Bedouin culture

(Long, 2005). Islam according to Abu Nadi (2012) is the basis of Saudi Arabian culture and sets the moral principles and behaviors in its society through the *Koran* (the holy book) and the *Sunna* (the sayings and practices of the prophet Mohammed peace be upon him). The main characteristics of Saudi societal–cultural values are: adhering to tribalism, acknowledging hierarchy or a higher authority, seeking prestige, and maintaining conservative practices in one's life (Abu Nadi, 2012; Alkahtani et al., 2013). Saudi culture has been historically, strongly influenced by Bedouin culture in its strong emphasis on kinship solidarity and through the concept of extended families. The clans organize themselves around their male relatives (Long, 2005).

Islam plays a significant role in Saudi culture by defining the social manners, traditions, obligations, and practices (including business practices) enacted in the society. The second source that forms the culture in Saudi Arabia is the Arab culture. Arab culture, which is responsible for setting the agenda for people's social lives, is considered a strong predictor for the resistance to ICT (Straub et al., 2002). The Arab culture, according to them, stresses the importance of home and the traditional nature of people's lives and how they do things which are antithetical to new technologies. Furthermore, dignity and respect, in Saudi culture, are considered to be major factors that influence people's behavior and standing in society. Not maintaining dignity and respect in Saudi society is referred to as 'losing face'. Dignity and respect are maintained by the use of compromise, patience and self-control (Alkahtani et al., 2013). Since the early 2000s, these aspects of Saudi culture are increasingly threatened by dramatic social changes heralded by the introduction of an electronic micro revolution into the country, and the availability of improved means of communication. Furthermore, people in Saudi Arabia are experiencing increased spatial mobility within the country and beyond its borders (Al Dossry, 2012).

Zhao et al. (2014) studied the effect of national culture on e-government diffusion in 55 countries throughout the world. The GLOBE model (Global Leadership and Organizational Behavior Effectiveness project) was used to examine them. Two UN index scores were used: firstly, the e-government development index (EGDI) for the dependent variable; and secondly, the e-participation index (EPI) for the independent variables. The indices were generated from the questionnaire survey devised by the GLOBE research team. The results revealed that for rich countries characterized by in-group collectivism and a long-term orientation regarding life,

uncertainty avoidance was found to have a significant effect, while for the poor countries it was found to have only a marginally significant effect.

Another study looked at the impact of Saudi cultural values on e-service usage (Aldraehim et al., 2013). The sample used in this study consisted of people working in the private and public sectors in Saudi Arabia. The convenience sampling procedure technique was used and the completed responses for the questionnaire numbered 254. The hypothesis of the study was: the presence of a Service Oriented Culture is a positive (+) predictor of Intention to Use e-services in Saudi Arabia. The Partial Least Squares (PLS) path analysis technique helped to obtain results from this qualitative study. The major outcome was the rejection of the hypothesis by indicating a very weak negative path coefficient of -0.008. The researcher returned the reason behind the rejection of the hypothesis to the lack of the mandates from their supervisors (Aldraehim et al., 2013).

The influence of Saudi societal culture on human resources management (HRM) practices in the public and private sectors was investigated in another study (Al-sharif, 2014). The HRM factors here were job desirability, recruitment sources, performance appraisal, compensation and rewards, and training programs. Saudi Arabian Airlines (SAA) was chosen as the case study during its privatization phase, enabling the researcher so to examine the transition from a public to a private sector entity. The research method was a mixed qualitative and quantitative strategy, and one where interviews were conducted with managers and a questionnaire answered by 200 engineers. The results revealed that three factors were affected by Saudi societal culture: compensation and rewards, job desirability, and training programs (Al-sharif, 2014).

The influence of Saudi culture and perceived characteristics on e-government acceptance were also evaluated by Abu Nadi (2012). The study population comprised 671 Saudi citizens with Internet access, and the sample was acquired through four email newsgroups and directly through an online survey. Some determinants were found to have a negative effect on the intention to use e-transactions. These determinants are: motivation towards gaining prestige, trust in government agencies, and possessing dominance over people and resources. The other determinants had a positive significant effect: preservation of conservative values; e-transactions are compatible with societal values and citizens' needs; e-transactions are a good communication method; trust in the Internet and the government; and easy communicability of e-transactions (Abu Nadi, 2012).

Religion in Saudi culture

Saudi Arabia is the birthplace of Islam and it is home to the holy mosques at Medina and Makkah. Saudi Arabia is viewed as the cradle of Islam. The first disciples of Prophet Mohammed (peace be upon him) started preaching, turning converts, and making disciples in the area that is modern-day Saudi Arabia (Mathkur, 2019). It was also the homeland of the prophet of Islam (Mohamed) from his birth to his death. Saudi Arabia holds is the most important place in the history of Islam because it is within the area of Saudi Arabia that Prophet Mohammed (peace be upon him) got to the revelation of the holy Koran as well as gave the primordial teachings that form the basis of the *Sunnahs* (Mathkur, 2019). Saudi Arabia has nearly two million Muslim pilgrims visiting the country each year, which is known as the Hajj (Alsaif, 2014). Out of the total population in Saudi Arabia, 97% are Muslims. Saudi Arabia is a country in which Islamic law is strictly enforced and it governs people's personal, political, economic and legal lives (Aldraehim et al., 2013; Rajkhan, 2014). The moral principles and behaviors in society are articulated through the Koran (the holy book) and the Sunna (the sayings and practices of the prophet Mohammed, peace be upon him).

2.6 Gender Issue in Saudi Arabia

Gender is now widely recognized as a significant variable in explaining the technological acceptance behaviors of people (Goswami & Dutta, 2016). According to one United Nations report, Saudi Arabia is considered to be one of the strictest country in the world on the issue of women's freedoms and rights (Kutbi, 2015). Men dominate women and control their lives in Saudi Arabian culture. The physical segregation of genders is perceived to be essential in Saudi Arabia. In their interpretation of Islam, males and females who are not related should not have direct contact with each other. In Saudi culture, direct communication is effectively forbidden by the female's spouses (Sabbagh, 1996). Conservative groups in Saudi Arabia, due to their interpretation to the Islamic teachings, promote the separation of gender as a rule, which developed as traditions, patterns and norms through the centuries. This resulted in the situation where men and women work separately. Women are also unable to drive within the country, and have to rely on male relatives for their transportation (Alsaif, 2014; Rajkhan, 2014). Women are required to cover their bodies in Abaya (black robes and face coverings) as a sign of respect for Islam's modesty laws (Al Dossry, 2012). Women still make up less than 16% of

the nation's workforce. Of the approximate 8.4 million women who are of working age, only about 15% are employed (Sivard, 2011). One of the biggest obstacles women still face is the ban on women's driving.

The adoption and usage of e-services in Saudi Arabia was examined by Al-Ghaith et al. (2010). Their study was based on the diffusion of innovations (DOI) theory. Data was collected by the means of a survey conducted in 2008. The questionnaires were distributed in both the Arabic and English languages, to 1000 participants (520 males and 480 females), of which 357 responses were from men and 314 women (the actual total being 651). It was found that the perceived complexity was a significant related factor affecting e-services adoption in Saudi Arabia, followed by issues concerning privacy and compatibility. Quality of the Internet and its relative advantage also had a notable effect on e-services usage and adoption. Another finding was that Saudi women are more likely than men to embrace e-services (Al-Ghaith et al., 2010).

In their analysis, Dimitrios and Alali (2014) describe how particular demographic characteristics and social environment affect people's involvement with social media. The factors examined were gender, age, education, employment status, income, profession and Internet usage. In their survey, 596 individuals agreed to participate in face-to-face interviews or an online survey using Google Docs. This study concluded that the vast majority of the sample population use the Internet and social media, and the latter involved 85% of people. Females make slightly more use of the social networks than males, while youths are using social media more than older people; level of education does not seem to have any effect on the frequency of e-services usage (Dimitrios & Alali, 2014).

Finally, Akman and Turhan (2016) investigated the impact of socio-demographic and utilitarian factors on the adoption of social media for learning by academics and students in higher education institutions. The empirical factors included: gender, age and position, while the utilitarian factors were perceived ease of use, perceived usefulness, perceived social pressure and perceived awareness. The data was collected through questionnaires and interviews. Results indicate that, except for perceived awareness (PAW), all the remaining factors wielded a significant effect on the actual usage of social media (Akman & Turhan, 2016).

2.7 Technology Usage in Saudi Arabia

Saudi Arabia has embarked on a bold national-level change management program driven by the significant growth already in motion in the ICT sector. Seven key avenues of growth in the ICT sector have been identified in the latest Ernst and Young (EY) report, 'Unlocking the digital economy potential of the Kingdom of Saudi (Reda, 2020). According to the recent Saudi Gazette Report (2019) the 23rd session of the Council of Arab Ministers of Communications and Information Technology (ICT) named Riyadh as the Arab world's first-ever digital capital for the year 2020. On this theme, the Ministry of Communications and Information Technology (2019) reported that Saudi Arabia is the region's largest ICT market and ranks 13th globally, with a value of $28.7 billion in 2019 and strong growth in both the consumer and enterprise segments. Supported by a young and increasingly tech-savvy population, Saudi Arabia is a market of early technology adopters, with one of the highest social media penetrations in the world. Mobile subscribers stood at 43.8 million in 2019, representing a 129% penetration of the total population.

During the year 2019, the Ministry of Communications and Information Technology (MCIT) launched a five-year strategy aimed at accelerating the sector's growth by 50% and elevating its contribution to GDP by $13.3 billion (MCIT, 2019). The Saudi Gazette Report (2019) mentioned that - supported by a 93% Internet user penetration versus the global average of 53% - Saudi Arabia also became the first adopter of commercial 5G technology in the Middle East and North Africa, and the third largest globally. Part of this report states that as the only Arab nation represented in the G20, Saudi Arabia will be hosting the G20 meetings throughout 2020, under the theme of "Realizing Opportunities of the 21st Century for All". However, the G20 meeting, because of the corona virus outbreak, will be held virtually online to discuss the outbreak of the virus. According to the internet World stats for March 2019 there are now 4,346,561,853 **Internet users** worldwide. This is comparable to 3.26 billion Internet users in 2016 (see Table 2.3 below).

Table 2.3 World Internet Users and 2019 Population Stats

WORLD INTERNET USAGE AND POPULATION STATISTICS MARCH 2019 – Updated						
World Regions	**Population (2019 Est.)**	**Population % of World**	**Internet Users 30 June 2019**	**Penetration Rate (% Pop.)**	**Growth 2000-2019**	**Internet Users %**
Africa	1,320,038,716	17.1 %	522,809,480	39.6 %	11,481 %	11.5 %
Asia	4,241,972,790	55.0 %	2,300,469,859	54.2 %	1,913 %	50.7 %
Europe	829,173,007	10.7 %	727,559,682	87.7 %	592 %	16.0 %
Latin America / Caribbean	658,345,826	8.5 %	453,702,292	68.9 %	2,411 %	10.0 %
Middle East	258,356,867	3.3 %	175,502,589	67.9 %	5,243 %	3.9 %
North America	366,496,802	4.7 %	327,568,628	89.4 %	203 %	7.5 %
Oceania / Australia	41,839,201	0.5 %	28,636,278	68.4 %	276 %	0.6 %
WORLD TOTAL	7,716,223,209	100.0 %	4,536,248,808	58.8 %	1,114 %	100.0 %

Source: Internet World Statistics (2019).

Table 2.4 World Internet Users from 2000 to 2020

Year	World Population	Internet Users	Penetration %
2020	7,792,163543	4,574,000,000	58.7%
2019	7,753,483,209	4,536,248,808	58.5%
2018	7,716,223,209	4,346,561,853	56.3%
2017	7,634,758,428	4,156,932,140	54.4%
2016	7,432,663,275	3,424,971,237	46.1%
2015	7,349,472,099	3,185,996,155	43.4%
2014	7,265,785,946	2,956,385,569	40.7%
2013	7,181,715,139	2,728,428,107	38%
2012	7,097,500,453	2,494,736,248	35.1%
2011	7,013,427,052	2,231,957,359	31.8%
2010	6,929,725,043	2,023,202,974	29.2%
2009	6,846,479,521	1,766,403,814	25.8%

2008	6,763,732,879	1,575,067,520	23.3%
2007	6,681,607,320	1,373,226,988	20.6%
2006	6,600,220,247	1,162,916,818	17.6%
2005	6,519,635,850	1,030,101,289	15.8%
2004	6,439,842,408	913,327,771	14.2%
2003	6,360,764,684	781,435,983	12.3%
2002	6,282,301,767	665,065,014	10.6%
2001	6,204,310,739	502,292,245	8.1%
2000	6,126,622,121	414,794,957	6.8%

Source: Internet World Stats (2020).

Table 2.5 Internet users in Saudi Arabia from 2000 to 2018

Year	Internet Users	% of Population	Total Population
2018	30,257,715	88.6%	34,140,662
2017	30,257,715	90.2%	33,554,343
2016	20,813,695	64.7%	32,157,974
2015	20,251,947	64.2%	31,540,372
2014	19,674,729	63.7%	30,886,545
2013	18,271,636	60.5%	30,201,051
2012	15,927,865	54%	29,496,047
2011	13,674,508	47.5%	28,788,438
2010	11,517,165	41%	28,090,647
2009	10,415,607	38%	27,409,491
2008	9,627,423	36%	26,742,842

2007	7,825,057	30%	26,083,522
2006	4,946,618	19.5%	25,419,994
2005	3,143,890	12.7%	24,745,230
2004	2,461,976	10.2%	24,055,573
2003	1,869,001	8%	23,357,887
2002	1,447,291	6.4%	22,668,102
2001	1,030,203	4.7%	22,007,937
2000	472,917	2.2%	21,392,273

Source: Internet Live Stats (2019).

Internet Usage in Saudi Arabia

In 2015 Saudi Arabia was ranked seventh globally in terms of individual accounts on social media, with each individual having as many as seven accounts. This was revealed in a study conducted in Saudi Arabia by Saudi Aramco (Al-Sughair, 2015). The study reveals 26% of Saudi youth use Snapchat, putting Saudi Arabia in eighth position globally, in terms of teenagers who use this website. According to research from YouGov as mentioned in Arab News (2016), residents in Saudi Arabia spend approximately five hours a day using social media. The same study showed that young users (aged 18-35) spend from two to six hours per day, while older users (aged 36-55) spend 30 minutes to two hours per day. The active social media users are 11 million people (i.e. 34.53% of the total population). During the year 2016, the number of people who access the web through laptops and desktops fell by 17% while the number of people who use their mobile phones rose by 19%. Out of this 11 million active social media users, 10 million (31.4% of the total population) are using it on their mobile phones. The statistics for the messaging platforms during 2016 were as follows: WhatsApp with 8.59 million users (27%), followed by Facebook Messenger with 6.37 million users (20% of the population).

Table 2.6 Active Internet and Social Media Users in KSA 2018

	Number	**Percent**
Total Population	33.25 Million	100%
Active Internet Users	30.25 Million	90.98%
Active Social Media Users	25 Million	75.19%
Users Through Mobile Device	18 Million	54.14%

Source: Global Media Insight (2018).

As seen in Table 2.6 above the reason for the jump in internet and social media usage in Saudi Arabia is the high rate of smart phone ownership. The number of active social media users is 25 million (75.19% of the total population). 18 million (54.14% of the total population) out of the social media active users access it through their smart phones. This accounts for 72% of the active social media users. This very impressive number of smart phone users is due to the fact that about 27 million (84% of the Saudi nationals) live in cities (Global Media Insight, 2018).

Table 2.7 Active Social Network Platforms in KSA 2018

Social Media Platform	**Number of Users**	**Percentage**
YouTube	23.61 Million	71.%
Facebook	21.95 Million	66.%
Instagram	17.69 Million	54.%
Twitter	17.29 Million	52%
Google +	10.64 Million	32%

Source: Global Media Insight (2018).

Table 2.7 confirms that YouTube is the most popular social media platform in Saudi Arabia with 23.62 million active users followed by Facebook with 21.95 million active users. In the third place comes Instagram with 17.96 million active users. The fourth place is Twitter with 17.29 million active users and the last place is Google+ with 10.64 million active users.

Table 2.8 Top Chat Apps and Messengers in KSA 2018

Application	Number of Users	Percentage
WhatsApp	24.27 Million	73%
Facebook Messenger	13.30 Million	40%
Snapchat	12.97 Million	39%
Skype	7.98 Million	24%

Source: Global Media Insight (2018).

Table 2.8 shows that WhatsApp is the most used chat platform with 24.27 million active users. Second place is Facebook Messenger with 13.30 million active users. Snapchat came third with 12.97 million active users but showed faster growth than Facebook Messenger. The last place was Skype with less than 8 million active users.

2.8 Relevant Previous Studies

One study looked at the excessive use of social media by Saudi students and the effect of this has on their academic performance. There were 108 responses received from Saudi university students via an online survey. The results showed no relationship between the number of hours spent on social media and individual academic performance. Twitter was the most used social media network followed by Facebook, then Instagram. The results indicated that most Saudi students do not use social media excessively (Shahzad et al., 2014).

Another study (Omar, 2014) investigated the different factors that influence users' attitudes to social media in different cultural contexts, i.e. Norway and Saudi Arabia. The sample consisted of students at Agder University in Norway, and Saudi students at the University of Omaha in the US. The author applied the convenience sampling technique. The sample size comprised 250 students equally divided between Norway and Saudi Arabia. A self-administered questionnaire was distributed to the study sample and the outcome revealed that Saudi and Norwegian students are impacted by three significant factors: firstly, trust in information; secondly, security in social media; and thirdly, the perception of the reliability of online advertising. Consequently, only one factor was found to be significant, that is, security in social media.

One study (Alotaibi et al., 2016) set out to identify the factors that affect citizens' decisions to use social media (SM) platforms as a means for communication with their government and highlight those factors that influence users to do this. The paper adopted a modified model from the Unified Theory of Acceptance and Use of Technology (UTAUT) model by integrating into it cultural factors identified by Hofstede's model. A survey was used to collect data and a primary advantage of this paper is that those predictions were derived from previous empirical evidence and behavioral theories. These predictors guarantee that the suggested theoretical model was sounder, viable and reliable, and that it created a basis for future prospective empirical studies on the adoption of SM and e-government (Alotaibi et al., 2016).

Finally, an analysis investigated the factors that impact on users' intention to use social media. Perceived ease of use, perceived usefulness, social influence, facilitating conditions, playfulness, and trust were looked at here. Twitter was chosen as the case study for this paper and an online questionnaire was administered through social media platforms. Data was collected from 462 respondents and the research model developed was based on TAM2 (the second version of Technology Acceptance Model) with some modifications. Playfulness, social influence, facilitating conditions, and trust were added to the TAM2 model to refine the proposed model. Results indicated that behavioral intent is positively affected by perceived ease of use, perceived usefulness, and trust. Furthermore, the results revealed that social influence, playfulness, and facilitating conditions exert positive effects on perceived usefulness, increasing users' trust in social media platforms (Akar & Mardikyan, 2014).

2.9 Government Resource Planning (GRP) in Saudi Arabia

The use of Enterprise Resource Planning (ERP) systems increased steadily within small, medium and large organizations in the last few years (Barth & Koch, 2019). Many organizations use the solution of Enterprise Resource Planning (ERP) systems to improve their competitiveness (Menon et al., 2019) (Menon et al., 2019). The Government Resource Planning system (GRP) is the title used by the Saudi government for the Enterprise Resource Planning (ERP) concept. The ERP system is a software package of different modules. Each module is linked by the ERP system, so they function in tandem with one another and subsequently the whole database. This integration allows managers and other users' direct access to real time operations. It also helps to eliminate counterproductive processes and cross-functional coordination problems (Cheung & Vogel, 2013).

This system is becoming one of the most important systems in the field of information systems. The ERP is an essential tool enabling organizations to effectively process their business and manage their resources when business units are consolidated (Alhirz & Sajeev, 2015). The ERP system has a potential market in the Middle East and, particularly, in Saudi Arabia. It is a comprehensive integrated software package that includes all business functions required to perform the workplace procedures (Almishal & Alsaud, 2015). King Salman approved in 2015 the Program for Human Resources Development (HRD) in order for government employees to be more productive and improve the workplace environment (Ministry of Civil Service, 2018).

2.10 Hofstede's Cultural Dimensions

The effect of cultural values on technology adoption and or acceptance has been studied by many researchers and were largely influenced by Hofstede's cultural dimensions' theory (Twati, 2008; Al-Hujran et al., 2011; Kahttab et al., 2012; Frigui et al., 2013). Hofstede examined how culture works in many countries and he conducted comprehensive studies on how values are influenced by culture**.** According to him, "culture" is a form of mind programming that distinguishes the members of one human group from another (Hofstede, 1980). Hofstede published his cultural dimensions' model at the end of the 1970s, based on a decade of comprehensive research. Added to this, his model of national culture consists of six dimensions (describe in more detail below). He conducted comprehensive studies of how culture influences values in the workplace. Between 1967 and 1973 the large database was developed, consisting of IBM employees' value scores, in 70 countries where the company operated. Initially, he identified four dimensions that could distinguish one culture from another: power distance; uncertainty avoidance; individualism vs. collectivism; and masculinity vs. femininity. In his 1993 study, Hofstede added a fifth dimension known as "long term orientation" (Cavusgil et al., 2008). In 2008, Hofstede and others added a sixth cultural dimension, referred to as indulgence versus restraint (Hofstede et al., 2008).

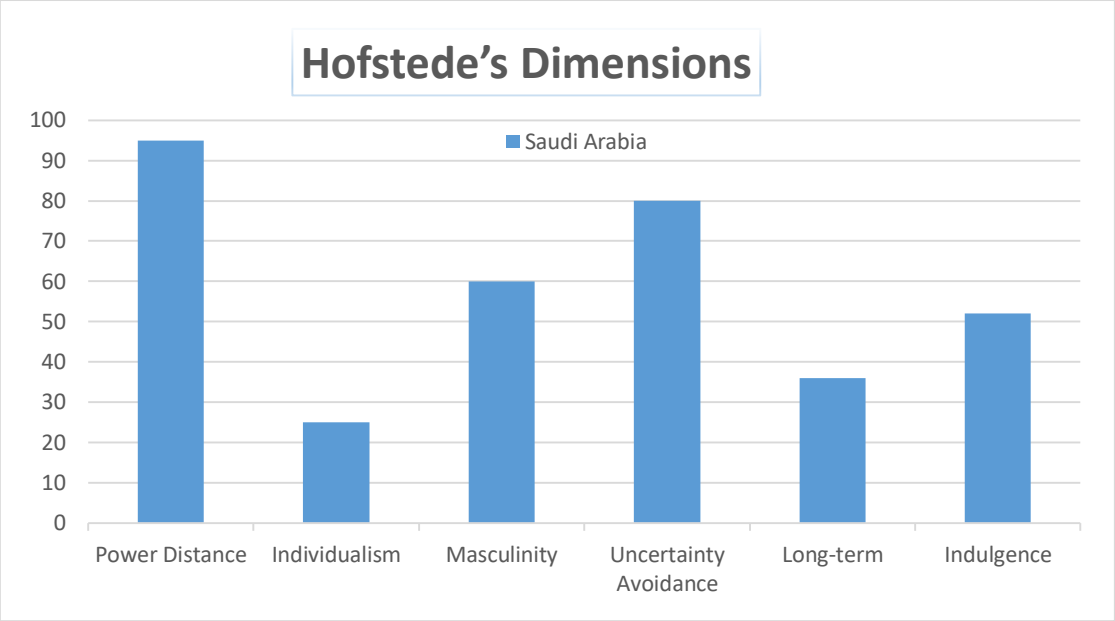

Figure 2.4 Hofstede's dimensions for Saudi Arabia. (Source: Hofstede, 2015).

Power Distance Index (high versus low)

Power distance refers to the extent to which unequal power distributions are expected and accepted by less powerful members of organizations and institutions. In a large power distance society, parents teach children obedience, while in a small power distance society parents treat children as equals. Power distance deals with the amount of distance (or power) between people at the top and people at the bottom of society. In other words, people at the bottom expect these inequalities even though they may not necessarily agree with them. Saudi Arabia scores high on this dimension (score of 95). This means substantial inequalities exist in society and people are accepting this hierarchical order where everyone has a place in society which needs no further justification (Hofstede Insights, n.d.).

Table 2.9 Saudi Arabia compared to United States in Power Distance

Saudi Arabia (95)	**United States (40)**
Inequality is Acceptable	Inequality is Minimized
Rigid/Authoritative Structure Vertical Hierarchies	Flexible Structures Dominate "Flatter Organizations"
Centralized Decision-Making	Collective Decision-Making
Respect for Authority	Respect for Individuality

"Large Gaps in Compensation, Authority and Respect"	Authority and Respect is Minimized
Individuals in Power are Privileged	Supervisors and Employees are Considered Almost as Equals

Source: Cassell and Blake (2012).

Individualism versus Collectivism

The individualism-collectivism dimension relates to individual and societal characteristics, specifically the extent to which people in a society are integrated into groups or prefer to be as individualist as possible. In an individualist society, individuals are expected to stand up for themselves, assert their own personality and drives, look after one's own family and their own affiliations. In contrast, in collectivist societies, individuals behave as members of a community, group or organization so that harmony is promoted. Saudi Arabia's individualism ranking of 25 indicates it is a collectivist society, which manifests in a close long-term commitment to being a member of the 'group', i.e. family, extended family, or a network of extended relationships (Al-Jumeily & Hussain, 2014).

Table 2.10 Saudi Arabia compared to the United States: Individualism versus Collectivism

Saudi Arabia (25)	**United States (91)**
"We"	"I"
Focus on Tradition	Focus on Progress
Collaborative	Competitive
Individual Achievement	Success and Position Ascribed
Work for Intrinsic Rewards	An Enjoyment of Challenges, and an Expectation of Rewards for hard work
Time is in God's Hands and Delays are the Result of Fate	High Valuation on People's Time

Source: Cassell and Blake (2012).

Masculinity versus Femininity

The masculinity dimension refers to how a society adheres to the traditional values of male and female roles – with the man likely to be the provider and the woman the caregiver**.** A society is

seen as *feminine* when there is not a strong differentiation between the genders for emotional and social roles—both men and women should be modest and caring and both boys and girls may cry, but neither should fight. In masculine societies, both men and women are assertive and competitive, however, women are less so than men. Saudi Arabia has a score of 60 which indicates a high level of masculinity and individuals are expected exert much effort to be successful.

Table 2.11 Saudi Arabia compared to the United States: Masculinity versus Femininity

Saudi Arabia (60)	**United States (62)**
Value Good Relationship with Supervisors	Value Opportunity
Caring/Compassionate	Less Emphasis on Being Caring/Compassionate
Favor Small-Scale Enterprises	Favor Large Scale Enterprises
Value Cooperation	Value Recognition/Advancement
Value Employment Security	Value Sense of Accomplishment from Challenging/Rewarding Work

Source: Cassell and Blake (2012).

Uncertainty Avoidance Index (high versus low)

Uncertainty avoidance refers to the ways in which a culture deals with not being able to predict the future. Cultures high in uncertainty avoidance dismiss unstructured situations with strict behavior codes, laws and rules, disapproval of deviant opinions, and a belief in an absolute Truth (Hofstede, 2011). Saudi Arabia's uncertainty avoidance ranking of 80 indicates its society prefers avoiding uncertainty and is characterized by only low-level tolerance for uncertainty.

Table 2.12 Saudi Arabia compared to the United States: Uncertainly Avoidance

Saudi Arabia (80)	**United States (46)**
Risk Averse	Risk Inclined
"Very formal business conduct with lots of rules and policies"	"Informal business attitude"
Need and expect structure	More concern with long- term strategy than what is happening

	on a daily basis.
Acceptance of Change	Fear of Change
Differences are avoided	Value Differences

Source: Cassell and Blake (2012).

Long-term Orientation

A long-term orientation fosters virtue directed toward the future, in particular, perseverance and thrift and ordering relationships according to perceived status. A short-term orientation fosters virtue that are related to the past and present, respects traditions, preserves 'face', where there is an emphasis on personal steadiness and stability. Long-term orientation refers to the degree the society embraces, or does not embrace, long-term devotion to traditional, forward-thinking values. A high long-term orientation ranking indicates the country ascribes to the values of long-term commitments and respect for tradition (Cassell & Blake, 2012). Saudi Arabian society scored of 36 on this dimension which can be seen as low score. People have a strong concern with demonstrating great respect for traditions, establishing absolute truth, and focus on achieving quick results. They exhibit relatively small propensity to save for the future, great respect for traditions, and a focus on achieving quick results (Hofstede Insights, n.d.).

Indulgence versus Restraint

This dimension identifies the extent to which a society allows gratification of basic and natural human desires that are linked to enjoying life and having fun (Hofstede, 2011). According to Hofstede Insights (n.d.) Saudi Arabia with its intermediate score of 52 on this dimension does not point to a clear preference. Culture in Arab countries is complex but generally it can be summarized as a combination of people's self-perceptions, values and attitudes which help us understand how Arab individuals and organizations in these countries function in different circumstances, given that they are all Islamic. Seven Arab countries were included in Hofstede's study (1980): Egypt, Iraq, Lebanon, Saudi Arabia, Kuwait, Libya, and the UAE (Najm, 2015). The characteristics of these Arab countries, according to this study are: long power distance/high hierarchy, collectiveness, masculinity, relationship orientation, high avoidance of uncertainty, humane orientation, tribal and family receptiveness, gender discrimination, and past orientation (Najm, 2015).

2.11 Saudi Arabia compared to some other countries

Table 2.13 Saudi Arabia cultural dimensions compared to Australia

Dimension	Saudi Arabia	Australia
Power Distance	95 High	36 Low
Individualism	25 Low	90 High
Masculinity	60 High	61 High
Uncertainty Avoidance	80 High	51 Intermediate
Long Term Orientation	36 Low	21 Low
Indulgence	52 Not Clear	71 High

Table 2.14 Saudi Arabia compared to Kuwait and the UAE (based on Hofstede's cultural dimensions)

	Saudi Arabia	Kuwait	UAE
Power Distance	95	90	90
Individualism	25	25	25
Masculinity	60	40	50
Uncertainty Avoidance	80	80	80
Long-term Orientation	36	N/A	N/A
Indulgence	52	N/A	N/A

What can be observed from this table are the similarities between Saudi Arabia and the GCC countries in terms of their cultural dimensions.

Table 2.15 Saudi Arabia compared to three Western countries

	KSA	USA	UK	Australia
Power Distance	95	40	35	36
Individualism	25	91	89	90
Masculinity	60	62	66	61
Uncertainty Avoidance	80	46	35	51
Long-term Orientation	35	26	51	21
Indulgence	52	68	69	71

Observed in the table above are the differences between Saudi Arabia and three Western countries concerning their cultural dimensions. At the same time there do appear to be some similarities between them. According to Hofstede's research, Saudi Arabian culture scored high in terms of power distance, uncertainty avoidance, and masculinity but low on individualism. Conversely, the Western countries scored high for Individualism and low in Power Distance, Uncertainty Avoidance and Masculinity. It is therefore sensible to conclude that Saudi Arabian culture is still very different to Western culture, despite the inroads made by the latter's technological innovations in the country (Khashman & Large, 2011; Minkov & Hofstede, 2012). According to Hofstede's (1980) taxonomy, the attributes of Saudi Arabia are high power distance and high uncertainty avoidance (Baxter, 1998). This high-power distance in Saudi Arabia could be linked to: firstly, the respect for authority in this conservative and hierarchical Islamic society; and secondly, the Bedouin traditions (Bjerke & Al-Meer, 1993).

Table 2.16 Arab characteristics in the international models of national cultural dimensions.

Author	Dimensions	Characteristics of the Arabs
Hofstede, 1980,1988	Power distance	Long power distance
Hofstede, 1980,1988	Uncertainty avoidance	High avoidance of uncertainty
Hofstede, 1980,1988	Individualism/collectivism	Strong collectivity
Hofstede, 1980,1988	Masculinity/femininity	Masculinity

Hofstede, 1980,1988	Long-/short-term Orientation	Short-term orientation
Hofstede and Minkov, 2008, 2010, 2013	Indulgence vs. Restraint	Indulgence

Source: Najm (2015).

Arab cultures according to Hofstede's model are characterized by long power distance/high hierarchy, collectiveness, masculinity and according to the GLOBE project are characterized by relationship orientation, high avoidance of uncertainty, tribal and family receptiveness, clear differentiated differences between the gender that verges on discrimination, orientation to the past and long power distance (Najm, 2015). The differences in cultural dimensions between the Arab countries and Western countries are echoed by Hofstede (2003).

2.12 Summary

The literature review presented in this chapter focused on the socio-cultural norms and religious values in Saudi Arabia that impact on the acceptance and adoption of technological innovations. Also discussed here was the extent to which they did so. Technological innovations are considered to be a major outcome of the ICT revolution which has influenced many aspects of modern life over the past few decades. It has been indicated that technological innovations are advancing at an astronomical pace, but the use of these technological innovations is far below expectations (Venkatesh et al., 2000; Talukder et al., 2014). Talukder et al. (2014) and Bhattacherjee (1998) asserted that these technological innovations do not guarantee employees will actually use them. Technological innovation cannot be useful or accepted unless people want it in their workplace and utilize it willingly (Talukder et al., 2014). The acceptance of technological innovations in any organization requires a change in the attitudes and behaviors of all employees. Saudi Arabia is an Arab Muslim country which has a unique and, in many respects, a conservative culture despite the many changes that are now occurring given the government's promotion of the Vision 2030 economic strategy. In order to improve the adoption and acceptance of technological innovation in Saudi Arabia, it is important to understand how the socio-cultural features and religious values that are inherent in Saudi society can make such acceptance possible.

CHAPTER THREE: THEORETICAL FRAMEWORK

3.1 Introduction

This chapter discusses the theoretical framework of the thesis. It will explore various theories, concepts, frameworks and models related to technology acceptance, cultural theories and innovation diffusion models. The first part provides background information on technology acceptance, followed by sections on the technology acceptance theories and models. Then the chapter compares the technology acceptance theories and models in order to provide a good basis for developing a conceptual model that can best fit the Saudi environment. The theories that will be discussed are: the Innovation Diffusion Theory (IDT) by Rogers; the Theory of Reasoned Action (TRA) by Fishbein and Ajzen; Technology Acceptance Model (TAM) by Davis; the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh and others; and Hofstede's Cultural Dimensions Theory (CDT).

Information system researchers deal with different theories and models to study human behavior regarding the acceptance and use of innovative technologies. The purpose of these models is to identify and explain factors that influence users to either accept or reject a technology. These models, which emerged from different fields such as sociology, psychology, and information technology, have been in existence for decades. Researchers from different disciplines have been working to validate and extend the models in order to fit into various situations and contexts. In order to develop an improved conceptual model for this study, a comparison of existing technology acceptance theories/models is needed. For this reason, the researcher conducted a review of the theoretical literature. Furthermore, the chapter also will discuss the theoretical framework, in terms of the dimensions of cultural theories that have been developed in the last few decades. At present, there are more than 12 models of cultural differences, each claiming to offer the best way to understand and measure culture (Steers, 2005). These cultural theories have been developed to identify similarities and differences among cultures and to categorize them (Guirdham, 2005).

In this chapter we discuss five theories and models about the factors that affect technology acceptance. The first section provides background information on technology acceptance. The subsequent sections discuss five technology acceptance theories and models. Then the chapter

compares these technology acceptance theories and models in order to provide a good basis for developing a conceptual model that can best fit the Saudi environment. The theories are: the Innovation Diffusion Theory (IDT) by Rogers; the Theory of Reasoned Action (TRA) by Fishbein and Ajzen; Technology Acceptance Model (TAM) by Davis; the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh and others; and Hofstede's Cultural Dimensions Theory (CDT).

Table 3.1: Evolution of Theories and Models of Technology Adoption

Year	Theory/Model	Developed By	Constructs/ Determinants of adoption
1960	Innovation Diffusion Theory (IDT)	Everett Roger	The innovation, communication channels, time and social system
1975	Theory of Reasoned Action (TRA)	Ajzen and Fishbein	Behavioral intention, Attitude (A), and Action Subjective Norm
1985	Theory of Planned Behavior	Ajzen	Behavioral intention, Attitude (A), and Behavior Subjective Norm, Perceived Behavioral Control.
1986	Social Cognitive Theory	Bandura	Affect, anxiety.
1989	Technical Adoption	Fred D Davis	Perceived usefulness and perceived ease of use.
1991	The Model of PC Utilization	Thompson et al	Job-fit, Complexity, Long-term consequences, Utilization Affect Towards Use, Social Factors, Facilitating Conditions.
1992	The Motivation Model	Davis et al.	Extrinsic motivation (such as perceived

			usefulness, perceived ease of use, and subjective norm) and intrinsic motivation (such as perceptions of pleasure and satisfaction).
2000	Technology Acceptance Model Extended (TAM2) model	Venkatesh and Davis	Social influence processes (subjective norm, voluntariness and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability and perceived ease of use).
2003	Unified Theory of Acceptance and Use Technology (UTAUT)	Venkatesh et al.	Performance expectancy, effort expectancy, Acceptance and Use of social influence and facilitating conditions.
2009	Model of Acceptance with Peer Support (MAPS)	Sykes et al.	Behavioral intention, System use, Facilitating with Peer Support conditions, Network density, Network (MAPS) centrality, Valued network centrality, Valued network density.

Source: Sharma and Mishra (2014)

3.2 Rogers' Innovation Diffusion Theory (IDT)

Everett M. Rogers refined the Innovation Diffusion Theory (IDT) in 1995, having commenced this concept in the early 1960s (Lai, 2017). As stated, a few years ago (Samaradiwakara & Gunawardena, 2014) it gradually evolved until the best well-known innovation-decision

process was introduced by Rogers (Rogers & Shoemaker, 1971; Rogers, 1995). It is also called the Diffusion of Innovation theory (DOI). This theory is one of the early acceptance theories that explain how innovations in the form of new ideas or technologies spread throughout society (Almazroi, 2017). Rogers (1995) defined innovation as an idea, object, or practice that is perceived by individuals, groups, communities, etc., as being new. He defined diffusion as the process of communicating innovation through certain channels over time among the members of a social system (Rogers, 1995). Department of Industry (2016) described innovation as the key factor for competitiveness and growth in developed economies. It seeks to explain how new ideas and technology spread through cultures, why, and at what rate.

After going through 508 diffusion studies, Rogers devised his theory about diffusion of innovation and its adoption by organizations. Over time, an innovation is communicated among the members of a social system through certain channels (Dillion & Morris, 1996; Samaradiwakara & Gunawardena, 2014; Lai, 2017). Alsaif (2014) stated: "It was thought by IDT that individuals adopt new technology when they find that the system that is compatible with their personal beliefs and values and when they expect benefits and less complexity" (p. 9). The main idea of IDT according to Sharma and Mishra (2014) is that the spread of a new idea is influenced by four elements which are: the innovation, communication channels, time and social system. They also stated there are five stages for the process of diffusion which are: knowledge, persuasion, decision, implementation, and confirmation. According to Nunes and Arruda Filho (2018) and Rogers (1995), adopters judge an innovation based on their perceptions in regard to five attributes that it should have: relative advantage, compatibility, complexity, trialability, and observability. Diffusion of Innovations (DOI) and Technology Acceptance Model (TAM), according to Rogers and Davis, represent the most powerful theoretical emphasis to innovation adaptation literature (Al-Rahmi et al., 2019).

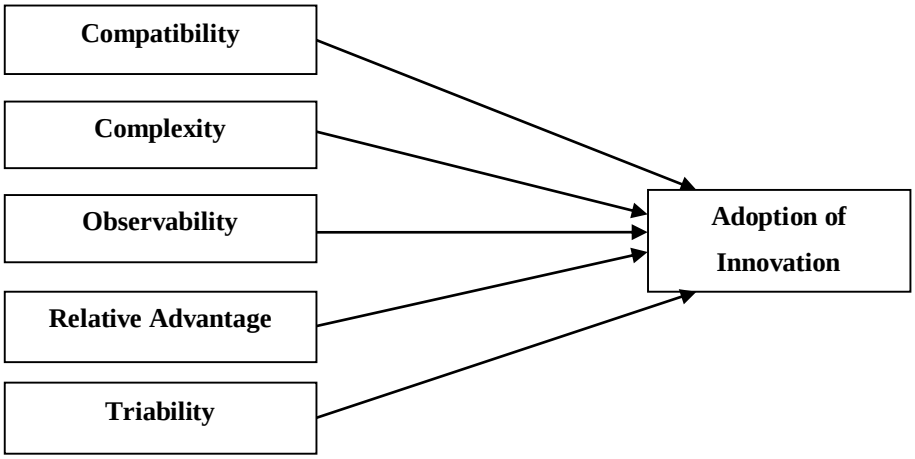

Figure 3.1 The five attributes of innovation. Source: Rogers (2003).

The five attributes are explained in more detail below.

1) Compatibility:

Compatibility is defined as the fact in which learners feel that the innovation is compatible with their standards, previous involvements and the desires of the probable adopters (Al-Rahmi et al., 2019). Compatibility of innovation is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters. Alternatively, it is consistent with social practices and norms that its users are familiar with.

2) Complexity:

Complexity is defined as the level of difficulty in understanding innovations and their ease of use that is perceived by the end-user (Al-Rahmi et al., 2019). Complexity of innovation is the degree to which it is perceived as relatively difficult to be understood and to be use. This also refers to how easy it is to learn it.

3) Observability:

Observability is defined as the level in which the outcome of the innovation is noticeable by others (Al-Rahmi et al., 2019). Innovation observability is the degree to which the results of this innovation are visible to others, and the extent to which the technology's outputs and its benefits are clear to see.

4) Relative advantage:

Relative advantage is defined as the level to which people assume that the new innovative is better than the old traditional one (Al-Rahmi et al., 2019). An innovation's relative advantage is the degree to which it is perceived as being better than the idea or reality it supersedes. The extent to which a technology offers improvements over currently available tools is also part of this.

5) Trialability:

Trialability refers to the extent to which people think that they need to experience the innovation before talking the decision of adopt it or not (Al-Rahmi et al., 2019). Innovation trialability is the degree to which this innovation can be experimented with on a limited basis. The opportunity to try the innovation before committing to use it is part of this process.

The process of innovation adoption is described by Rogers in 1983 as the process used by an organization to develop knowledge about an innovation, take a decision to adopt or reject it, implement it, and then be aware of the characteristics it imparts on the workplace (Rogers, 1995). According to this theory there are five stages of the adoption process: knowledge, persuasion, decision, implementation, and confirmation. These five stages are depicted in the following figure.

Figure 3.2 Rogers' Model of the Innovation Adoption Process. Source: Rogers (2003).

The adoption of any idea in a social system does not happen simultaneously. Researchers have found that people who adopt innovation early have different characteristics than those who do it later (Rogers, 2003). Adopters have been classified into five categories which are: innovators, early adopters, early majority, late majority, and laggards. These five categories are described in the innovation adoption curve in Figure 3.3 below. It is important to understand the characteristics of the target population since it can vary so much. These five categories are

associated with other influential factors which are: relative advantage, compatibility, complexity, trialability, and observability.

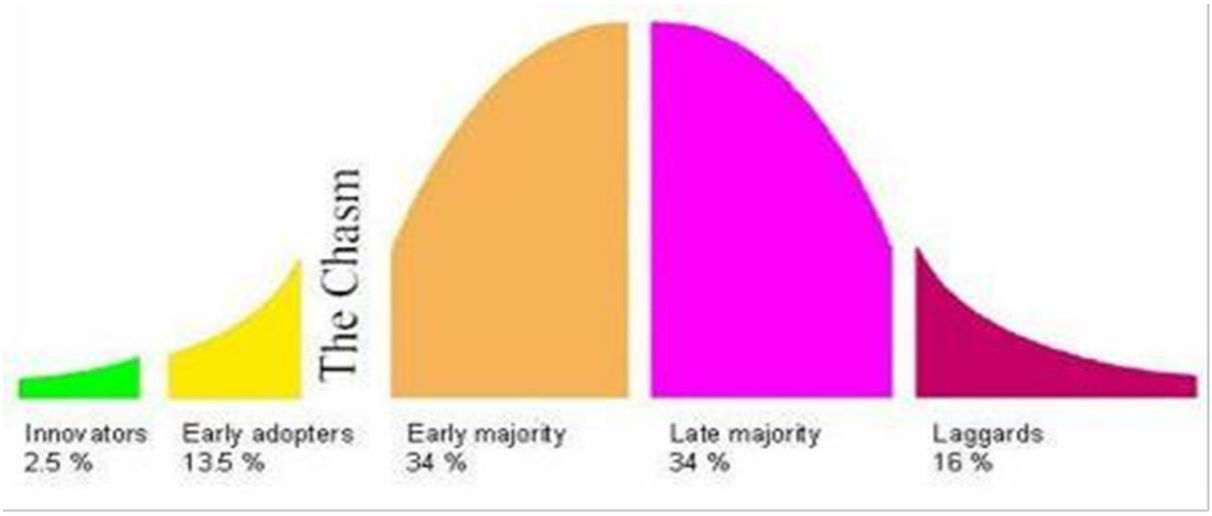

Figure 3.3 Innovation Adoption Curve (Source: Rogers, 1995)

Criticism of IDT

DOI has some limitations as suggested by Clarke (1999) who argued that there are some limitations for IDT which are as follows. Firstly, it is not strong enough to predict outcomes and help improve rate of innovation adoption. It also lacks good explanatory power. Secondly, most of the elements in this theory are specific to the culture of the environment where it was formulated. Thirdly, innovation characteristics and how they change over time were not given adequate consideration (Nutley et al., 2002).

3.3 Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) was introduced in 1967 by Fishbein in an effort to understand the relationship between attitude and behavior (Ajzen & Fishbein, 2000). During the early 1970s the theory was revised and expanded by Fishbein and Ajzen (2009) to define the relationships between beliefs, norms, intentions, and behavior (Surendran, 2012). In 1988, the Theory of Planned Behavior (TPB) was added to the existing model of reasoned action to address the inadequacies that Ajzen and Fishbein identified. They did this by adding perceived behavioral control (PBC) to the theory of reasoned action (Tlou, 2009). The ultimate goal of the theory is to predict and understand an individual's behavior (Talukder, 2014).

The theory of reasoned action is very effective in predicting variability in people's behavior across many contexts, populations, and behaviors. The theory of reasoned action was modified by Ajzen to account for behaviors that were not under the complete control of the individual (Hagger, 2019). The popularity of TRA theory is due to the relative simplicity and flexibility of Ajzen and Fishbein, as well as their effectiveness in accounting for substantive variance in behavior (Hagger, 2019). The TRA is deemed to be the first technology acceptance model to gain widespread acceptance (Samaradiwakara & Gunawardena, 2014). It embraces four fundamental concepts, these being actual behavior, behavioral intention, attitude, and subjective norm. The Theory of Reasoned Action (TRA) assumes that an individual's performance is determined by his or her behavioral intentions, which are jointly determined by attitudes and subjective norms (Mulero & Adeyeye, 2013). People choose to perform a behavior - even if they do not agree with it - because they believe that a determined person thinks that it should be done in any case. According to Masrom and Hussein (2008) TRA can be summarized by the following equation:

Behavioral Intention= Attitude towards a Behavior + Subjective Norm

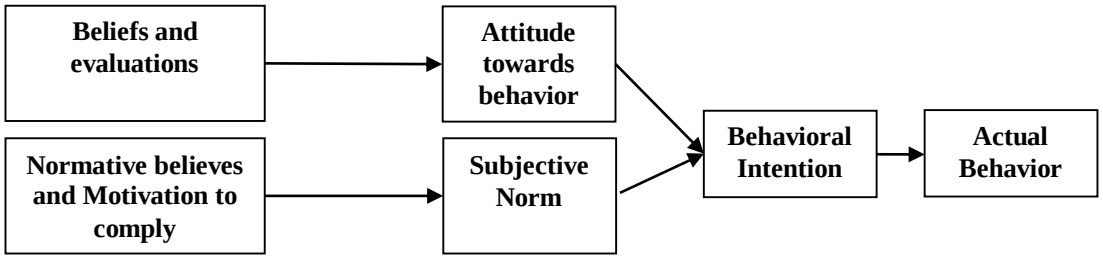

Figure 3.4 Theory of Planned Reason Action (TRA) model.
(Source: Fishbein & Ajzen, 1975).

TRA has some limitations that have been noted a few years ago by (Samaradiwakara & Gunawardena, 2014). These include, for example, the risk of confusing between attitudes and norms and the assumption that when someone forms an intention to act, they will be free to act without limitation. Webster and Martocchio (1992) and Thompson et al. (1991) stated that additional explanatory variables are needed for TRA.

Criticism of TRA

According to Davis et al. (1989) TRA is a model that describes human behavior generally, so it does not specify beliefs that would be appropriate in specific behaviors or contexts. Ajzen (2002) believes that the model will not be suitable to situations where is an absence of absolute control over the behavior. This is because behavior is determined by intention alone due to the expectation that social behavior of humans is under volitional control. TRA is also criticized by Holdershaw and Gendall (2008) for explaining only a medium percentage of variance in intention (40% to 50%) and behavior (19% to 38%). TRA has been assessed, changed and refined in various studies (Vallerand et al., 1992), leading to two popular acceptance theories which are the Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) Ajzen (1985); Davis et al. (1989). These are explained in more detail below.

3.4 Technology Acceptance Model (TAM)

The TAM model was proposed by Fred Davis in 1986 for his doctorate proposal (Lai, 2017). In 1989, he used the TAM model to explain computer usage behavior as shown in Figure 3.5 below. It is generally accepted as the first technological model to incorporate psychological factors that affect people's technology acceptance (Samaradiwakara & Gunawardena, 2014). This model is a variation of the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen in the 1960s. The model focuses on the reasons for acceptance or rejection of ICT and how to improve its level of acceptance. The TAM model comprehends the causal relationship between the real use of ICT and the external variable of users' acceptance. TAM explains the general determinants of acceptance that lead to explaining users' behavior (Lai, 2017).

The TAM theory posits that a person's intention to use a technology and associated usage behavior are predicated by the person's perceptions of the specific technology's usefulness and ease of use (Portz et al., 2019). The Technology Acceptance Model (TAM) is one of the most effective and widely used information systems theoretical frameworks. It remains a hotspot of research as new technologies keep evolving (Koul & Eydgahi, 2018). The model is based on two basic constructs. Firstly, the perceived ease of use (PEU) has been defined as the degree to which a person thinks that using a particular system would enhance his/her performance. Secondly, perceived usefulness (PU) has been defined as the degree to which a person thinks that employing a particular system would be free of effort. Attitude is determined by perceived ease of use and perceived usefulness (Samaradiwakara &

Gunawardena, 2014). This model is practical because it asserts a user is not accepting of a system or technology but is still able to implement the appropriate corrective steps to rectify this situation.

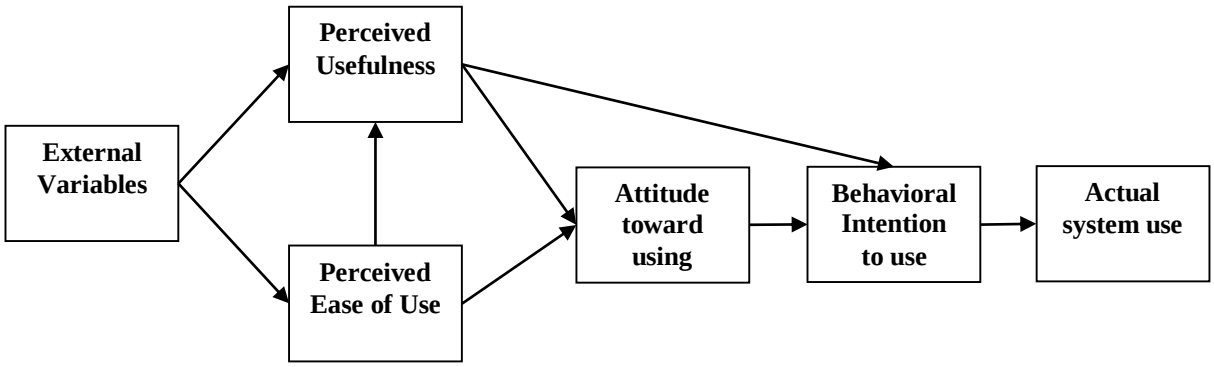

Figure 3.5 The Technology Acceptance Model (TAM).
Source: Davis et al. (1989).

Venkatesh and Davis (1996) developed the most recent version of the Technology Acceptance Model (TAM) as shown in Figure 3.6 below.

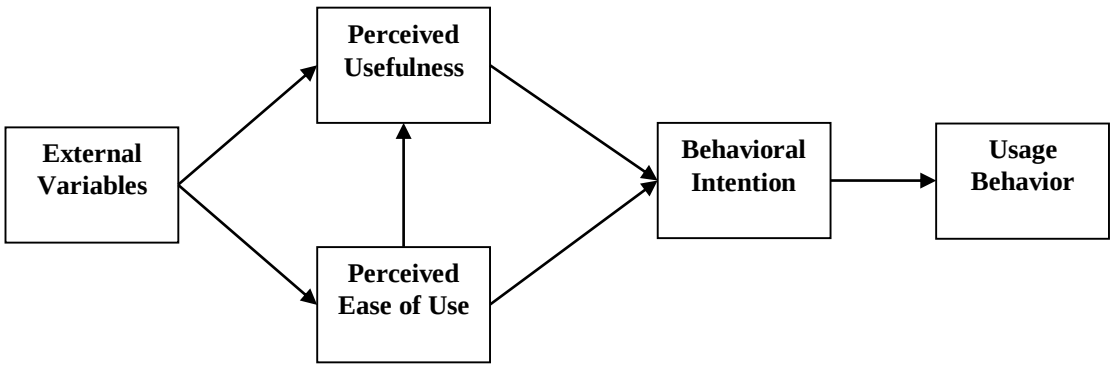

Figure 3.6 Most recent version of Technology Acceptance Model (TAM)
(Source: Venkatesh & Davis, 1996).

Alharbi and Drew (2014) conducted a study using the technology acceptance model to better comprehend academics' behavioral intention to use learning management systems. They proposed a framework based on the Technology Acceptance Model (TAM). They examined perceived ease of use, perceived usefulness, and attitude toward usage. They also examined the external variables: the lack of LMS availability, prior experience, and job relevance. The research model was applied to two different groups: academic users and academic non-users

and results showed that the non-user group indicated a greater intent to use LMS. Gender and academic rank did not reflect any significant correlation with other constructs.

Criticisms of TAM

Despite the fact that TAM has been extensively used in various technology acceptance studies, it has some limitations. TAM has been criticized for not using real data for measuring system use. The theory used self-reported use data instead which may affect the causal relationship between the dependent and independent variables (Lee et al., 2003; Chuttur, 2009). Another criticism for TAM is that it does not consider the "influence of social and personal control Furthermore, perceived usefulness and perceived ease of use are directly influenced by design features, which are external variables". These variables represent demographic characteristics, nature of the behavior, characteristics of referents, and other salient features of the system (Davis, 1985).

TAM was also criticized by other researchers who see that perceived usefulness was theorized as being determined by perceived ease of use. This was based on the notion that a system that is easier to use will be more practical (Davis, 1989; Venkatesh & Davis, 2000). In subsequent versions of TAM, attitude is omitted because of the partial mediation impact of attitude on relationship between beliefs and intention, weak direct connection between perceived usefulness and attitude, and a significant direct effect of perceived usefulness on intention (Venkatesh, 2000). Furthermore, TAM according to Benbasat and Barki (2007) has created some confusion. Rawstorne et al. (2000) identified some of the limitations of the TAM model when predicting user acceptance in a mandatory setting. Subsequently, Venkatesh and Davis (2000) included two mandatory settings when they proposed and tested the extended TAM. Reviews on the TAM in the IT acceptance literature suggest that most studies are based on North American samples in which the participants are predominantly white-collar workers (Venkatesh, 1999; Lederer et al., 2000).

3.5 The Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology model was formulated by Venkatesh, Morris, Davis and Davis in 2003 (Lai, 2017). The determinants of technological

acceptance have been explained and predicted in several theoretical frameworks. The Unified Theory of Acceptance and Use of Technology (UTAUT) model was developed by Venkatesh, Morris, Davis, and Davis in 2003 to unify eight of these existing frameworks. It has been tested empirically over time, examining the acceptability of technology between various areas (Amrouni et al., 2019). The UTAUT was developed after reviewing the constructs of the eight models that earlier research had employed to explain information systems usage behavior. These eight models are: the Theory of Reasoned Action (TRA); Technology Acceptance Model (TAM); Motivational Model (MM); Theory of Planned Behavior (TPB); a Combined Theory of Planned Behavior / Technology Acceptance Model; Model of Personal Computer Use (MPCU); Diffusion of Innovations Theory (DIT); and Social Cognitive Theory (SCT) (Venkatesh et al., 2003). UTAUT has been used to investigate behavioral intention to use technology and its influential factors (Liu et al., 2019). The UTAUT model contributes substantially to the exploration of technology acceptance and usage, and it provides a framework that not only explains acceptance of IT and ISs but also elucidates the actual use of such technologies and systems (Chao, 2019). The constructs of this model are shown in Table 3.2 below.

Table 3.2 Constructs used in UTAUT (Venkatesh et al., 2003)

Construct	**Definition**	**Root source of the construct from earlier models**	**Moderators**
Performance expectancy	Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to improve their job performance.	The five constructs from the different models that pertain to performance expectancy is perceived usefulness (TAM/TAM2), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and outcome expectations (SCT).	Gender, Age
Effort expectancy	Effort expectancy is defined as the degree of ease associated	Three constructs from the existing models capture the concept of effort expectancy: perceived ease of use	Gender, Age, Experience

	with the use of the system.	(TAM/TAM2), complexity (MPCU) and ease of use (IDT).	
Social influence	Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system.	The three constructs related to social influence: subjective norm (TRA, TAM2/IDTPB, TPB), social factors (MPCU), and image (IDT).	Gender, age, voluntariness and experience
Facilitating conditions (no effect on use intention but direct effect on use behavior)	Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system.	Three different constructs used in earlier models are: perceived behavioral control (TPB, DTPB, C-TAM-TPB), facilitating conditions (MPCU) and compatibility (IDT).	Age and experience

Source: Venkatesh et al. (2003)

The UTAUT theory aims to explain the degree of acceptance and use of ICT. The model tries to determine whether the user can accept new technologies and to deal with them. The model consists of four main constructs: performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). Accompanying these are four key moderators, these being gender, age, voluntariness and experience (Lai, 2017). The first three (PE, EE, SI) are direct determinants of usage intention and behavior, while the fourth (FC) is a direct determinant of user behavior. Gender, age, experience, and voluntariness are posited to moderate the impact of the four key constructs on usage intention and behavior (Venkatesh et al., 2003).

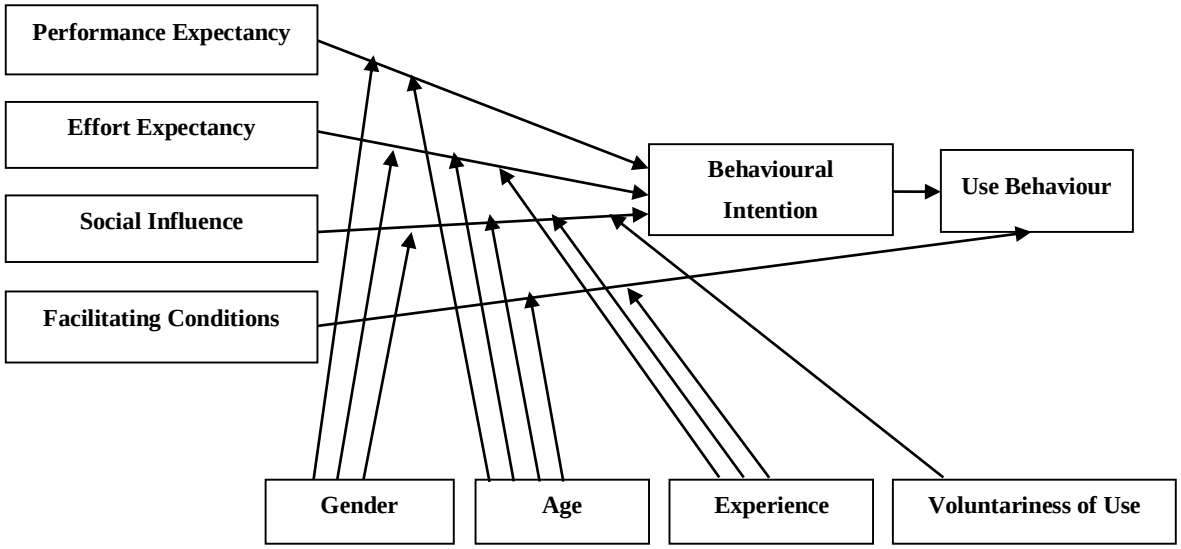

Figure 3.7 UTAUT Model. (Source: Venkatesh et al., 2003).

Criticism for UTAUT

The Unified Theory of Adoption and Use of Technology (UTAUT) has been criticized for being unable to measure acceptance of technology outside the boundaries of certain workplace environments (Abu Nadi, 2012). According to Bagozzi (2007), the (UTAUT) model did not examine direct effects which might reveal new relationships, as well as important factors from the study. These were left out by being subsumed by the existing predictors only.

3.6 Hofstede's Cultural Dimensions Theory (CDT)

Hofstede established a major and widely acknowledged conceptual model in cross-cultural psychology (Beugelsdijk & Welzel, 2018). According to Google Scholar, another 45 publications worldwide every day cite the cross-cultural work of Geert Hofstede and Ronald Inglehart. Hofstede and Inglehart have received over 200,000 citations, making them two of the world's most frequently cited social scientists (Beugelsdijk & Welzel, 2018).

Hofstede's model is a result of using factor analysis to examine the findings of a world-wide survey of employees for IBM, where their values were studied between 1967 and 1973. Hofstede was the first to quantify cultural orientations held by people in more than 60 countries (Beugelsdijk & Welzel, 2018). His model proposed four dimensions: individualism-collectivism; uncertainty avoidance; power distance and masculinity-femininity. Other research

efforts in Hong Kong led Hofstede to add a fifth dimension, i.e. long-term orientation, to cover aspects of values not discussed in the original paradigm. Then Hofstede added a sixth dimension in 2010 known as indulgence versus self-restraint. Overall the cultural dimension theory deals with how values in the workplace are influenced by culture.

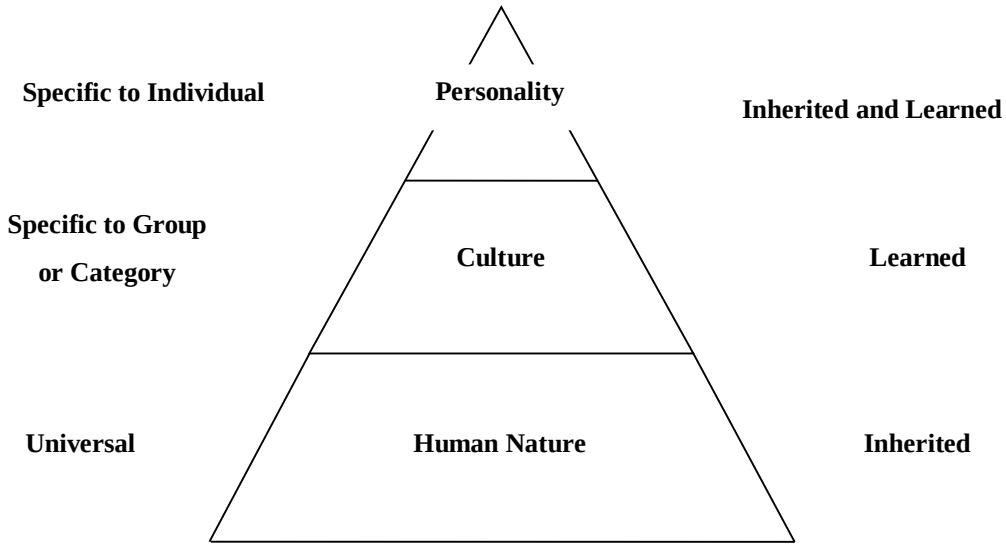

Figure 3.8 Hofstede's Cultural Dimensions Theory

These six dimensions as defined by Minkov and Hofstede (2012) are explained in more detail below.

Power distance index (PDI): The extent to which less powerful members of organizations and institutions accept an unequal distribution of power (Hofstede, 2001). It expresses the attitude of the culture towards these inequalities amongst people. Societies with low power distance are used to power/authority relationships that are more consultative or democratic.

Table 3.3 Comparison between Small and Large Power Distance Societies

Small Power Distance	Large Power Distance
Use of power should be legitimate and is subject to criteria of good and evil	Power is a basic fact of society antedating good or evil: its legitimacy is irrelevant
Parents treat children as equals	Parents teach children obedience

Older people are neither respected nor feared	Older people are both respected and feared
Student-centered education	Teacher-centered education
Subordinates expect to be consulted	Subordinates expect to be told what to do
Pluralist governments based on majority vote and change occurs peacefully	Autocratic governments based on co-option and changes only occur through revolution
Corruption rare; scandals end political careers	Corruption frequent; scandals are covered up
Income distribution in society rather even	Income distribution in society very uneven
Religions stress equality of believers	Religions with a hierarchy of priests

Source: Hofstede (2011).

Individualism **(IDV)** vs. collectivism**:** Individualism is the degree to which the individual emphasizes his/her own needs as opposed to the group needs and prefers to act as an individual rather than as a member of a group (Lee et al., 2013). Conversely, collectivism occurs in societies where individuals care for their relatives and group or community needs come first. People in collectivist societies belong to 'in groups' that take care of them in exchange for loyalty while people in individualist societies look after themselves and their direct family only (Hofstede Insights, n.d.).

Table 3.4 Comparison between Collectivist and Individualist Societies

Individualism	Collectivism
Everyone is supposed to take care of him- or herself and his or her immediate family only	People are born into extended families or clans which protect them in exchange for loyalty
"I" – consciousness	"We" –consciousness
Right of privacy	Stress on belonging
Speaking one's mind is healthy	Harmony should always be maintained
Others classified as individuals	Others classified as in-group or out-group
Personal opinion expected: one person one vote	Opinions and votes predetermined by in-group
Transgression of norms leads to guilt feelings	Transgression of norms leads to shame feelings

Languages in which the word "I" is indispensable	Transgression of norms leads to shame feelings
Purpose of education is learning how to learn	Purpose of education is learning how to do
Task prevails over relationship	Relationship prevails over task

Source: Hofstede (2011).

Uncertainty **avoidance index** (UAI): Uncertainty according to Hofstede is not the same as risk avoidance. Rather, it deals with a society's tolerance for ambiguity (Hofstede, 2011).

Uncertainty avoidance is defined by Hofstede as the "the extent to which a culture programs its members to feel either uncomfortable or comfortable in unstructured situations" (Hofstede, 2001, pp. 19-20). Uncertainty avoidance reflects the extent to which members of a society minimize uncertainty in order to cope with anxiety, the unknown or stress. People in cultures with high uncertainty avoidance try to minimize the unknown and unusual circumstances and to proceed with careful changes through step by step planning and by implementing rules, laws and regulations. In contrast, low uncertainty avoidance cultures accept and feel comfortable in unstructured situations or changeable environments and try to have as few rules as possible. People in these cultures tend to be more pragmatic and are more tolerant of and open to change.

Table 3.5 Comparison between Weak- and Strong- Uncertainty Avoidance Societies

Weak Uncertainty Avoidance	Strong Uncertainty Avoidance
The uncertainty inherent in life is accepted and each day is taken as it comes	The uncertainty inherent in life is felt as a continuous threat that must be fought
Ease, lower stress, self-control, low anxiety	Higher stress, emotionality, anxiety, neuroticism
Higher scores on subjective health and wellbeing lower	Lower scores on subjective health and well-being
Tolerance of deviant persons and ideas: what is different is interesting	Intolerance of deviant persons and ideas: what is different is dangerous
Comfortable with ambiguity and chaos	Need for clarity and structure
Teachers may say 'I don't know'	Teachers supposed to have all the answers
Changing jobs is not a problem	Staying in jobs even if disliked

Dislike of rules - written or unwritten	Emotional need for rules – even if not obeyed
In politics, citizens feel and are seen as competent by the authorities	In politics, citizens feel and are seen as incompetent by the authorities
In religion, philosophy and science: relativism and empiricism	In religion, philosophy and science: belief in ultimate truths and grand theories

Source: Hofstede (2011).

Masculinity **(MAS) vs.** femininity: Reflects the distribution of emotional roles between the genders. This dimension describes how different cultures deal with the duality of the sexes (Hofstede, 2001, p. 279). Masculine cultures' values are assertiveness, competitiveness, ambition, materialism and power. Feminine cultures place more value on quality of life and relationships. In masculine cultures, the differences between gender roles are more dramatic and less fluid than in feminine cultures where men and women have the same values emphasizing modesty and caring.

Table 3.6 Comparison between Feminine and Masculine Societies

Femininity	Masculinity
Minimum emotional and social role differentiation between the genders	Maximum emotional and social role differentiation between the genders
Men and women should be modest and caring	Men should be and women may be assertive and ambitious
Balance between family and work	Work prevails over family
Sympathy for the weak	Admiration for the strong
Both fathers and mothers deal with facts and feelings Fathers	feelings Fathers deal with facts, mothers with feelings
Both boys and girls may cry but neither should fight	Girls cry, boys do not; boys should fight back, girls should not fight
Mothers decide on number of children	Fathers decide on family size
Many women in elected political positions	Few women in elected political positions
Religion focuses on fellow human beings	Religion focuses on God
Matter-of-fact attitudes about sexuality; sex is a way of relating	Moralistic attitudes about sexuality; sex is a way of performing

Source: Hofstede (2011).

Long-term orientation **(LTO)** vs. short-term orientation: This dimension is inspired by the long-term aspects of Confucian thinking, where persistence and patience dominate one's actions (Hofstede, 2011). Every society has to maintain some links with its own past *while dealing with the challenges of the present and future (Hofstede Insights, n.d.)*. Values that are promoted are linked to the past and the present in short-term oriented societies. In long-term oriented societies they are more concerned about the future. They are characterized by pragmatic values oriented towards saving, investment, and have a capacity for adaptation and rewards including the fruits of persistence (Nedelko et al., 2020).

Table 3.7 Comparison between Short- and Long-Term Oriented Societies

Short-term Orientation	Long-term Orientation
Most important events in life occurred in the past or take place now	Most important events in life will occur in the future
Personal steadiness and stability: a good person is always the same	A good person adapts to the circumstances
There are universal guidelines about what is good and evil	What is good and evil depends on the circumstances
Traditions are sacrosanct	Traditions are adaptable to changing circumstances
Family life is guided by imperatives	Family life is guided by shared tasks
Should be proud of one's country	Try to learn from other countries
Service to others is an important goal	Thrift and perseverance are important goals
Social spending and consumption	Save well and have funds available for future investment
Social spending and consumption	Students attribute success to effort while failure is due to lack of effort
Slow or no economic growth of poor countries	Fast economic growth of countries so that a good level of prosperity is reached

Source: Hofstede (2011).

Indulgence **(IND)** versus restraint**:** In 2010 a sixth dimension (Indulgence vs. Restraint) was added based on the work of the Bulgarian sociologist Michael Minkov. Indulgence is defined as a society that allows relatively free gratification of basic and natural human drives related to

enjoying life, whereas restraint is defined for societies that inhibits gratification by social norms (Hofstede et al., 2005). The extent to which members of society try to control their desires and impulses. Whereas indulgent societies have a tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun, restrained societies believe that such gratification must be curbed and regulated by strict norms.

Table 3.8 Indulgent versus Restrained Society

Indulgent Society	Restrained Society
Higher percentage of people declaring themselves very happy	Fewer very happy people
A perception of personal life control	A perception of helplessness: what happens to me is not my own doing
High importance of leisure and freedom of speech seen as important	Freedom of speech is not a primary concern
Higher importance of leisure	Lower importance of leisure
More likely to remember positive emotions	Less likely to remember positive emotions
Less moral discipline in countries with educated populations, higher birth rates	In countries with educated populations, lower birth rates
More people actively involved in sports	Fewer people actively involved in sports
In countries with enough food, higher percentages of obese people	In countries with enough food there are fewer obese people
In wealthy countries, lenient sexual norms	In wealthy countries, stricter sexual norms
Smiling as a norm to maintain order in the nation is not given a high priority	Higher number of police officers per 100,000 population

Source: Hofstede (2011).

Criticism of Hofstede's dimensions

Hofstede's model has been extensively criticized even though it is the most comprehensive framework for measuring and explaining national cultures' values. Ailon (2008) noted inconsistencies at the level of both theory and methodology and cautions against an uncritical reading of Hofstede's cultural dimensions' model. Triandis (1988) criticized Hofstede's dimensions for being narrow and limited only to the study of work-related values, which are not necessarily the same as national ones. Also, some researchers, like Smith et al. (1996) and

Sondergaard (1994) contended that the dimensions developed from data collected between 1968 and 1973 are obsolete. Many other researchers criticized Hofstede's dimensions. McSweeney (2002) focused on the study sample which was limited to the employees of one organization (IBM). This makes it very difficult to generalize from the results. McSweeney (2002) added that the respondents were mostly men and this will have an effect on the results.

The study has also been criticized by Triandis (1988) for using a single data collection method which is the questionnaire. It has also been criticized by Yeh (1988) for the reason that Hofstede is bounded by his own cultural background which makes it very difficult to understand the behavior of people in other cultures. Sidani and Gardner (2000) and Ali and Wahabi (1995) argued that dealing with all Arab countries as one unit makes a generalized assumption because each Arab country is different from the others. Furthermore, cultural differences can be found even within the same country.

3.7 Comparing the Theoretical Models

Table 3.9 Technology acceptance theories/models comparison

Theory/Model	Constructs (Independent variables)	Moderators	Explained variance (R2)
Theory of Reasoned Action (TRA)	1. Attitude toward behavior 2. Subjective norm	1. Experience 2. Voluntariness	0.36
Technology Acceptance Model - a (TAM2)	1. Perceived usefulness 2. Perceived ease of use 3. Subjective norm	1. Experience 2. Voluntariness	0.53
Technology Acceptance Model - b (TAM- including gender)	1. Perceived usefulness 2. Perceived ease of use 3. Subjective norm	1. Gender 2. Experience	0.52
Innovation Diffusion Theory (IDT)	1. Relative advantage 2. Ease of use 3. Result demonstrability 4. Triability 5. Visibility 6. Image	1. Experience	0.36

	7. Compatibility 8. Voluntariness of use		
Unified Theory of Acceptance and Use of Technology (UTAUT)	1.Performance expectancy 2. Effort expectancy 3. Social influence 4. Facilitating conditions	1. Gender 2. Age 3.Experience 4. Voluntariness	0.69

Modified from: Venkatesh et al. (2003); Kripanont (2007); Dulle et al. (2010); Samaradiwakara and Gunawardena (2014).

Comparing these theories and models is necessary if we want to identify the most appropriate theories that can predict and explain individuals' acceptance and adoption of technology. The Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA), and Unified Theory of Acceptance and Use of Technology UTAUT are more popular than the other models, particularly in the context of information security. TRA has some limitations (Samaradiwakara & Gunawardena, 2014) such as the risk of confusing between norms and attitudes and also the assumption that a person will be free to act without limitation when he/she forms an intention to act. According to Webster and Martocchio (1992) and Thompson et al. (1991), there is a growing recognition that TRA needs additional explanatory variables. The advantages of TAM are these: firstly, it provides a quick and inexpensive way of gathering general information about an individual's perception of technology; and secondly, it can explain/predict individuals' behavior across a broad range of end users (Davis et al., 1989; Legris et al., 2003).

Venkatesh et al. (2003); Bagozzi (2007) noted more than six advantages in favor of the Unified Theory of Acceptance and Use of Technology (UTAUT). They prefer UTAUT because it has: higher explanatory power, and the fact that eight models have been discussed to construct the UTAUT means that it deserves favor. Samaradiwakara and Gunawardena (2014) in their study compared 14 technology acceptance theories and models. They concluded that among all the theories the UTAUT is the best theory and is in fact a useful tool that can assess the technology acceptance and adoption by individuals.

Shi and Wang (2011) compared Hofstede's cultural dimensions model with the concept of Global Leadership and Organizational Behavior Effectiveness (GLOBE) The comparison included the data collection method and the countries involved in these studies. Their study noted many differences between the two models. In terms of the countries involved in the two

models, countries from the six continents were selected. They used the same countries – those in North America and Australia - but different countries in Africa and Asia. The East African region, which contained 4 countries, was given the same score in Hofstede's model and the same thing for South Africa which contained 3 nations. In contrast, the GLOBE model divided South Africa in two groups according to that country's two main races and each group was measured independently and given a different score. Germany was measured as one country in Hofstede's model but it was divided into two distinct political entities, East and West, and furthermore Switzerland was divided into English-speaking and French-speaking parts.

In terms of the methods used in the two models, the GLOBE model used 18 scales to measure the practices and values in the participating countries. Nine of these scales measured the actual societal practices while the other 9 scales measured what these practices should be. The data for this model was a collaborative effort involving 170 researchers researching about 951 non-multinational organizations. The GLOBE study introduced cultural dimensions both at the organizational and societal level. The Hofstede cultural dimensions' model measured the five cultural dimensions based on 0 to 100 scales. The model collected data from a single multinational company (IBM) operating in 53 regions throughout the world. Hofstede's studies did not measure feminine scores directly. The lack of masculinity was considered feminine while the GLOBE project measured feminine scores per se. The model developed for this study is an integration of the following: Hofstede's Innovation Diffusion Theory (IDT); the Technology Adoption Model (TAM); the Unified Theory of Adoption and Use of Technology (UTAUT); the Theory of Reasoned Action (TRA); and the Cultural Dimension Theory (CDT) model. This has been done so that culture and its impact on technological innovation acceptance in Saudi Arabia can be evaluated.

3.8 Summary

This chapter discussed the theoretical framework of the study. The chapter explains various theories and model related to innovation adoption, technology acceptance and relevant cultural theories. Technological innovations and the rate at which they have changed constitute one of the most important developments have shaped the modern world in the last few decades. The study helps to investigate the factors that lead to the adoption of technological innovation in Saudi Arabia. This chapter discussed the important technology acceptance theories in order to develop a model that can be applied to this particular country. Most of these theories were

originally developed to explain the workings of Western societies but only rarely for the Middle East countries. The study develops a comprehensive theoretical research model based on existing relevant theories and models of technology adoption such as: Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh, Morris, Davis & Davis (2003); the Innovation Diffusion Theory Model (IDT) by Rogers (2003); the Theory of Reasoned Action (TRA) by Ajzen & Fishbein, 1980; the Technology Acceptance Model (TAM) by Davis (1989); and the Cultural Dimensions Theory (CDT) by Hofstede (1973). The model includes new and adapted variables that were not fully captured in the existing theories. Considering the existing theories and models, the current research develops an updated model for technology adoption relevant to the Middle Eastern countries. The developed framework is ideal for explaining the adoption of technology in workplaces in the Kingdom of Saudi Arabia.

CHAPTER FOUR: RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

4.1 Introduction

This chapter describes the development of the conceptual research model and the prior literature to develop hypotheses for this study. Discussed here is how the conceptual model was built based on previous existing theories and models. It then creates a cause and effect relationship between the socio-cultural and religious values and people's attitudes to GRP systems in Saudi Arabia. The chapter aims to develop a conceptual model on technology acceptance appropriate to Saudi Arabian society for the purposes of justifying the research hypothesis. The chapter finally discuss details of the relevant literature in support of the proposed hypotheses.

4.2 Need for Developing a Conceptual Model

This study investigates the acceptance and adoption of the GRP systems by employees of the Ministry of Foreign Affairs, Kingdom of Saudi Arabia. Government Resource Planning (GRP) is the term used by the Saudi government for Enterprise Resource Planning (ERP). According to Soliman et al. (2019) and Egdair et al. (2015) and Ismail et al. (2010), adopting ERP systems has become essential for organizations that are looking for significant performance to achieve a competitive advantage. Most of these technologies have been designed and produced in Western countries Straub et al. (2002). For this reason, the largest market of such applications is the United States and Europe according to Huang and Palvia (2001). Developing countries encounter cultural and social obstacles when trying to import these kinds of technologies (Aldraehim et al., 2013). In the last few years the penetration of ERP systems in developing countries within small, medium-sized and large organizations has risen steadily (Barth & Koch, 2019). Using ERP system reduces the redundancy of data by centralizing the data from multiple sources, which eliminates the data duplication cost and leaking (Ali & Miller, 2017; Alam & Uddin, 2019). Previous literature indicated that the rate of ERP adoption in the developing countries is very limited and it has not been studied adequately (Rajan & Baral, 2015; Alam & Uddin, 2019). Due to the cultural differences between Western and the Middle Eastern countries, ERP systems are still resisted to a large extent (Aladwani, 2006; Muscatello & Parente, 2006; Wang et al., 2007; Garg, 2010; Alhirz & Sajeev, 2015).

Even though the implementation of ERP costs a significant amount of time, money, and professional services, it does not always produce measurable results because of some critical challenges (Motwani et al., 2005; Menon et al., 2019). Implementation of ERP system has demonstrated a high failure rate. One of the main reasons is users' resistance to the ERP system. Users' acceptance of this system is the key to its implementation (Soliman et al., 2019). Many studies indicated that more than 50% of ERP investment ended in acute failure globally (Rajan & Baral, 2015; Ali & Miller, 2017; Alam & Uddin, 2019). The result of this failure in implementing ERP will result in losing organizational productivity and competitive advantage at all levels of value-creating entities (Addo-Tenkorang & Helo, 2011; Rouhani & Mehri, 2018). One of these challenges concerns the cultural differences between Eastern and Western countries, considering that the ERP systems have been developed in the western countries. Because of these cultural differences, researchers are encouraged to validate different technology acceptance theories and models in the Middle East to counter these social and cultural differences (Al-Gahtani et al., 2007; Baker et al., 2007; Baker et al., 2010; Alhirz & Sajeev, 2015). This study develops a conceptual model that can help create a deeper understanding of the implementation process of GRP systems in Middle Eastern countries and particularly in Saudi Arabian workplaces.

4.3 Model Development

The model of this research is a customized one based on five theoretical models: the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003); the Innovation Diffusion Theory Model (IDT) by Rogers (2003); the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1980); the Technology Acceptance Model (TAM) by Davis (1989); and finally, the Cultural Dimensions Theory (CDT) by Hofstede (1980). These models' modifications have been done to include other factors relating to Saudi society's culture. The Unified Theory of Adoption and Use of Technology (UTAUT) has been criticized for its inability to measure acceptance of technology outside the boundaries of organizations and workplace environments (Abu Nadi, 2012). Most studies about national culture and innovation potential have used Hofstede's cultural dimensions but this study suggests that in Saudi Arabia there may be cultural factors other than Hofstede's that influence the acceptance and diffusion of innovations. This means changing or modifying some aspects of Hofstede's model.

The basis of the Theory of Reasoned Action (TRA) conceptual model is the distinction between beliefs, attitudes, intentions and behaviors (Al-Gahtani & King, 1999; Talukder, 2014). Performance of a specific behavior by any individual according to the TRA model is determined by his/her behavioral intentions to perform the behavior, while a behavioral intention is jointly determined by the person's attitude and subjective norms concerning the behavior (Al-Gahtani & King, 1999; Talukder, 2014). The societal culture of Saudi Arabia is completely different from those of Western countries. Saudi culture is a homogeneous one influenced historically by Islam, ethnic and clan loyalties, and the tribal system (Alkahtani et al., 2013). This explains the need to develop a customized model to account for these different social factors.

The developed model combines multiple sets of factors found in previous models and incorporates factors that have been suggested in previous models. The developed model also incorporates additional variables from other innovation acceptance-related studies to create a coherent model of innovation adoption. Combining factors in this developed model goes beyond previous research in an attempt to bring together relevant factors that influence adoption into a single model. The aim is to examine the relationships between individual adoption and those factors that affect the adoption. The custom developed model consists of four categories and these are explained here. The first category is the international cultural values used in the original model known as Cultural Dimensions Theory (CDT) by Hofstede (1967-1973).

The first category is the cultural values. The international cultural values used in the developed model are uncertainty avoidance, in-group collectivism, power distance, long-term orientation, and masculinity-femininity. Some other local cultural values that distinguish Saudi society from others have been added to these international cultural values. The second category comprises the social dimensions used in the Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen (1980). The basis of the TRA conceptual framework is the distinction between beliefs, attitude, intentions and behaviors (Al-Gahtani & King, 1999). These social dimensions consist of social networks and peers' influence.

The third category constitutes religious values that differentiate Saudi society from Western societies. This category is similar to that of social influence in the UTAUT devised by Venkatesh et al. (2003) and the normative beliefs in Ajzen and Fishbein's (1980) TRA concept. The latter authors state that people may form different beliefs about the consequences of performing a behavior and different normative beliefs on the basis of varied experiences. These

beliefs in turn determine attitudes and subjective norms, which then determine intention and the corresponding behavior. These religious values, that are expected to influence employees' attitudes to the adoption of new technologies, include perfection, cooperation, responsibility, and transparency.

The fourth category is concerned with demographic characteristics functioning as moderators that form people's attitudes to embracing technological innovations. This category is similar to that noted in the UTAUT concept. These demographic characteristics category include gender, age, academic qualification, and position. The model also includes the attitude, which is affected by the variables included in the four categories mentioned above. At the same time, the attitude affects the individual use of technological innovations. That means the attitude serves as a dependent and independent variable.

The model includes the organizational benefits expected from employing technology. The international cultural values, social dimensions, religious values and demographic characteristics affect individuals' attitudes to technological innovation, which consequently impact on people's adoption of these innovations. The adoption of technological innovations in business is expected to result in many outcomes and benefits. The outcomes examined here, from the employees' point of view, are cost effectiveness, organizational efficiency, service quality, and relations with customers. This customized model is thought to be suitable for use in Saudi society and it is depicted in Figure 4.1 below. The arrows highlight the relationship among constructs and the hypotheses established for each relationship.

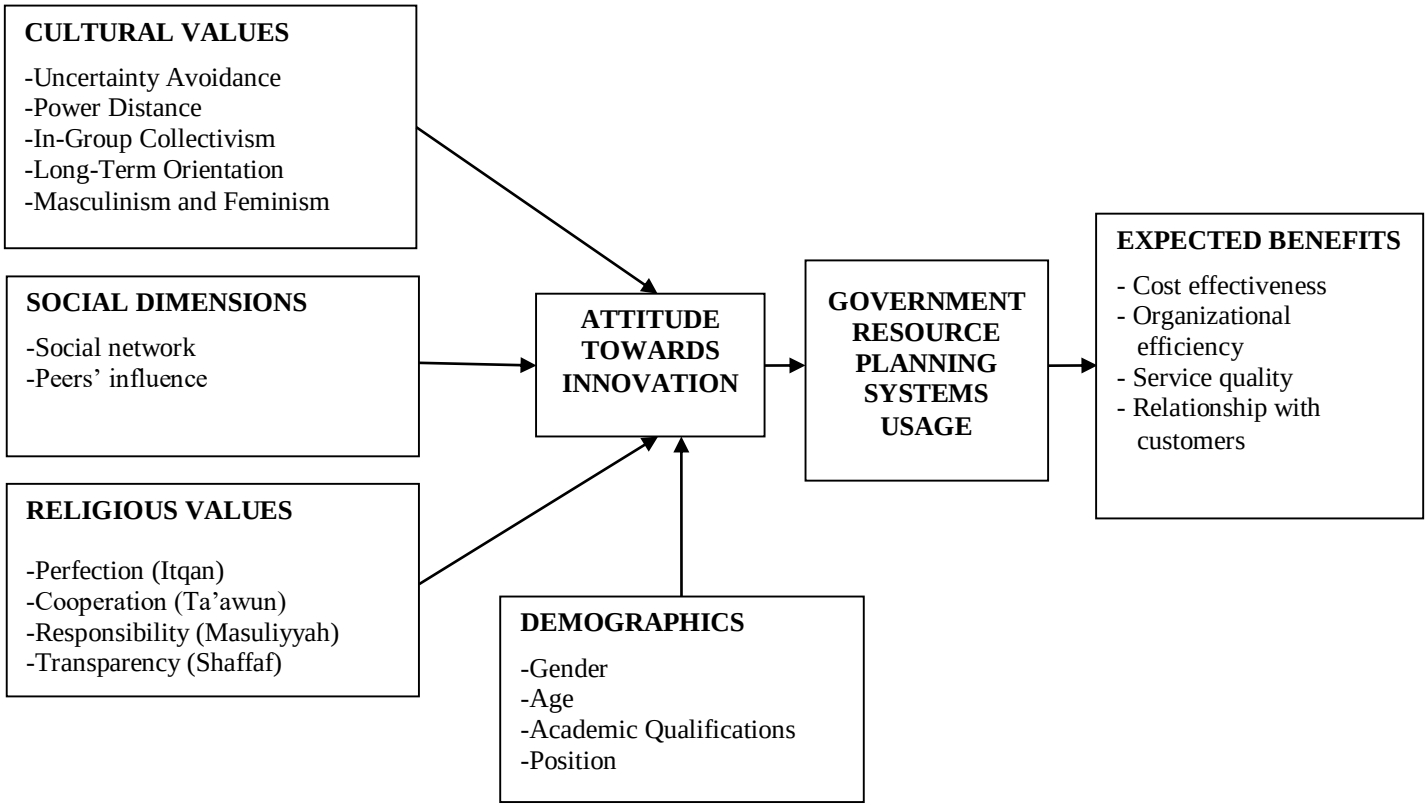

Figure 4.1 Conceptual Research Model

4.4 Hypothesis Development

This study develops a conceptual model by considering the impact of socio-cultural factors on models and theories developed for adoption of technology. The model developed for this study depends mainly on Hofstede's cultural dimension theory (CDT) and the Unified Theory of Acceptance and Use of Technology (UTAUT) along with other theories such as TRA, TAM and Rogers's innovation diffusion models with some modifications. Among the various national culture models introduced in the literature, the one developed by Geert Hofstede is the most popular in terms of the number of citations in a research paper (Moon & Choi, 2001; Handoyo, 2018). The model contains four categories that are assumed to greatly influence the adoption of technology in Saudi Arabia: international cultural values, local cultural values, religious values, and demographic characteristics. The hypotheses for the research have been derived from this developed model.

4.5 Cultural Values

The effect of culture on technology adoption was acknowledged in previous studies, specifically, the effect of culture on technology adoption in developing countries such as the Arab countries (Ameen & Willis, 2015). Culture is believed to wield a crucial influence on innovation and the innovativeness of organizations (Dehghan Manshadi, 2017). Several studies reported the impact of cultural values on technology adoption (Yousafzai et al., 2010; Cho, 2011; Ooi et al., 2011). The international cultural values for this study have been derived from Hofstede's cultural dimensions. In 1980 Hofstede carried out his research by analyzing the cultural beliefs of 116,000 service and sales employees of IBM in 40 different countries. The study was extended by Hofstede in 1991 to include data for an additional 10 countries from three regions: the Middle East, West Africa, and East Africa. Among these added countries are seven Arab nations: Egypt, Iraq, Kuwait, Lebanon, Libya, Saudi Arabia, and the United Arab Emirates (Obeidat et al., 2012). Hofstede's model which was developed during the period from 1970 to 1990s has been criticized as being outdated because the validity and stability of the model are questionable in regard to measuring national culture since circumstances have now changed (Handoyo, 2018). The dimensions Hofstede proposed were classified into four categories: power distance, uncertainty avoidance, individualism – collectivism, and masculinity – femininity (Vieregge & Quick, 2011). A fifth dimension called "future orientation" was added by Hofstede in 1993 (Cavusgil et al., 2008).

Uncertainty avoidance

Uncertainty avoidance has been defined by Hofstede and Peterson (2000) and Hofstede (1991) as meaning "intolerance for uncertainty and ambiguity". To measure the tolerance of ambiguity in a society, Hofstede developed an uncertainty avoidance index (UAI) score. Uncertainty avoidance can be measured in all kinds of cultures, for example at school, in the family or at work. It indicates to what extent society's members are programmed by the culture to feel either uncomfortable or comfortable in unstructured situations. It is also defined as the extent to which members of an organization or society strive to avoid uncertainty by reliance on social norms, rituals, and bureaucratic practices to alleviate the unpredictability of future events.

Table 4.1 Key differences between strong and weak uncertainty avoidance societies

Strong Uncertainty Avoidance Societies	Weak Uncertainty Avoidance Societies
Avoidance of risk	Risk taking
Clearly defined structures, written rules and standardized procedures	No more rules than strictly necessary
Lack of tolerance for differences	Tolerance of differing behaviors and opinions
Strong need for harmony	Flexibility
Need for predictability (planning is important)	Promotions based on merit
Time is money	Time is a framework for orientation

Source: Dehghan Manshadi (2017); adapted from Hofstede (1997).

People's preference for adventure in a low uncertainty avoidance organization and wanting to adventure are key factors when implementing an innovation. According to Dwyer et al. (2005) analysis, uncertainty avoidance will impact on people's acceptance of an innovation. The consequences of this as mentioned by Rogers (2003) are the changes that occur in an individual or a social system. This why Sahin (2006) considered uncertainty to be an important obstacle in the adoption of innovations. Therefore, the following hypothesis has been proposed:

H1: *Uncertainty avoidance has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

Power distance

Power distance has been defined by Hofstede (1991) as "a measure of the interpersonal power or influence between (a superior) and (a subordinate) as perceived by the (subordinate)" (Obeidat et al., 2012). Power distance has also been defined as the degree to which members of an organization or society expect and agree that power should be unequally shared. McGrath and Pinder (2003) confirmed that creative spirit is related to high power distance. Hofstede (1991) believes that lower power distance stands for more innovative consciousness and having a higher creative spirit. Personnel who show high power distance are more likely to accept the use of a new technology in the retail industry. The reason why they are willing to do so is due to their respect for authority.

Table 4.2 Key differences between high and low power distance societies

High Power Distance Societies	Low Power Distance Societies
Centralized authority and power	Decentralized authority and decision-making responsibility
Dictatorial leadership	Consultative or participative management style
Paternalistic management style	Flat organizational structures
Many hierarchical levels	Small number of supervisory staff
Large number of supervisory staff	Lack of acceptance and questioning of authority
Acceptance that power has its privileges	Rights consciousness
Expectation of inequality and power differences	Tendency towards egalitarianism

Source: Dehghan Manshadi (2017); adapted from Hofstede (1997).

Middle Eastern countries are considered as having a very high-power distance. They scored 80 out of 104 and they were ranked the seventh amongst the 50 countries included in Hofstede's study (Obeidat et al., 2012). As such, the following hypothesis has been posited:

H2: *Power distance has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

In-group collectivism

This concept reflects the degree of expressing pride, loyalty and cohesiveness by individuals in their organizations, social units, communities or families. Collectivism and individualism can be highlighted in the contrast between the "we" versus the "me" societies Hofstede (2001).

Table 4.3 Key differences between individualist and collectivist societies

Individualist Score Societies	Collectivist Score Societies
Individual interests are more important than collective interests	Collective interests are more important than individual interests
Everyone has a right to privacy	Private life is taken over by the group
Everyone is expected to have a private opinion	Opinions are predetermined by the group
Laws and rights should be the same for all	Laws and rights differ by group
Laws and rights differ by group	Harmony and consensus in society are the ultimate goals

Source: Dehghan Manshadi (2017); adapted from Hofstede (1997).

Arab countries, in Hofstede's classification, scored 38 out of a possible score of 100. This means they were rated as having a more collective than individualistic culture. The United States, as an example of an individualist culture, is characterized by loose ties among its members (Obeidat et al., 2012). Therefore, the following hypothesis has been proposed:

H3: *In-group collectivism has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

Long-term orientation

Long-term oriented societies attach more importance to the future. They foster pragmatic values oriented toward rewards, including persistence, saving and capacity for adaptation. In short-term oriented societies, people focus on the present or past and consider them more important than the future. Values promoted are related to the past and the present, including steadiness, respect for tradition, the notion of 'saving one's face', reciprocation and fulfilling social obligations (Hofstede, 2001). Organizations characterized by a short-term orientation focus on the past and on quick results while those characterized by long-term orientation focus on future outcomes. People in short-term-thinking societies have a strong concern with establishing the absolute truth, exhibiting great respect for traditions, are normative in their thinking, focus on achieving quick results, and relatively small propensity to save for the future. Islamic Arab culture is classified as having a long-term orientation (House et al., 2004). Based on the above, the following hypothesis will be tested:

H4: *Long-term orientation has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

Masculinism vs Feminism

Masculinity refers to a society's preference for assertiveness, heroism, achievement and material reward as symbols of success. In contrast, femininity represents a preference for modesty, cooperation, quality of life and caring for the weak. Masculine cultures possess the following characteristics (Anastasia, 2015) such as clearly distinct gender roles, benevolence has little or no significance, men are expected to be assertive and focus on material achievements, much value is associated with mastery of people, nature, one's job, etc. A sense of humor, intelligence, affection, and personality are preferred characteristic traits that women

want for their boyfriends, while understanding, wealth, and health are considered desirable characteristic traits that women expect of men.

Table 4.4 Key differences between masculine and feminine societies

High Masculinity Score Societies	Low Masculinity Score Societies
Gender roles are clearly distinct	Social gender roles overlap
Men should be confident, tough and focused on material success	Both men and women should be modest, tender and concerned with the quality of life
Both men and women should be modest, tender and concerned with the quality of life	Desired traits in husbands are the same as desired traits in boyfriends
Places importance on the value of ability	Emphasizes non-materialistic aspects of success
Dominant values in society are material success and progress	Dominant values in society are caring for others and preservation

Source: Dehghan Manshadi (2017); adapted from Hofstede (1997).

Feminine cultures possess the following characteristics mentioned by Anastasia (2015): firstly, overlapping of social gender roles; secondly, men well as women are expected to be tender, modest, with a focus on the quality of life; thirdly, emphasis on the non-materialistic aspects of success; and fourthly, the preferred traits of wives and husbands are the same. Therefore, the following hypothesis has been proposed:

H5: *Masculinism or feminism has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

4.6 Social Dimensions

Social influence is defined as the extent of the influence of a social group on one another's behavior in adoption (Brown & Venkatesh, 2005; Konana & Balasubramanian, 2005; Talukder, 2014). Social factors were found to be more significant than economic factors in driving individuals within organizations to adopt innovations (Westphal et al., 1997; Peansupap & Walker, 2005; Talukder, 2014). Employees may adopt an innovation not because of perceived social pressure but due to its usefulness (Talukder, 2014). Adoption of technological innovation is influenced by social factors. Anandarajan et al. (2000) stated that social factors constitute a weapon which helps people to adopt technology.

Social Networks

A social network effect can be defined as the extent to which individual employees in certain institutions are influenced by people working for other workplaces (Lewis et al., 2003; Talukder, 2014). People share information with other organizations and are more likely to lead members be exposed to new ideas and concepts (Frambach & Schillewaert, 2002; Rogers, 2003; Talukder, 2014). Social influence is considered to be the strongest predictor that affects the intention to embrace a new technology (Youngberg et al., 2009; Sternad & Bobek, 2013; Alam & Uddin, 2019). Alam and Uddin (2019) indicated that social influence is one of the most significant predictors that affect individuals' intension to adopt a new technology. Chatti et al. (2007) support the notion that the advantages of social networks in different fields help individuals to adopt technology. As such, the following hypothesis has been proposed:

H6: *Social networks have an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

Peers' Influence

Employees are influenced by their peers through the adoption of an innovation (Talukder, 2014). They normally imitate this by looking at what their peers do (Frambach & Schillewaert, 2002; Talukder, 2014). This may signal its importance and certain advantages and thus eventually motivate other employees to do the same. In their study Brancheau and Wetherbe (1990) found that employees' decisions to adopt an innovation wields a significant impact on both management and peers. Several studies reported that peers have a significant influence on adoption of technological innovation (Zhou et al., 2010; Venkatesh et al., 2011; Yu, 2012). Cheung and Vogel (2013) indicated that peer influence shapes the attitude of an individual to a technology. On the above backdrop, the following hypothesis would be worthy of testing:

H7: *Peers' influence has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

4.7 Religious Values

National cultures play a significant role in the development of national information infrastructure (Lee et al., 2013). The effectiveness and efficiency of ICT deployment and use are influenced by national culture (Lee et al., 2013). Values are permanently enshrined in the

belief system of a society (Nik Mustapha, 2003). Religion as a source of values was articulated in several faiths in many ways, for example: Protestant Work Ethic, Jewish Work Ethic, Christian Work Ethic as well as Islamic Work Ethic (Ab. Wahab et al., 2016). For example, in the teachings of Islam, a Muslim should practice good deeds to obtain the blessings and mercy from God, help other creatures of this Earth, to be responsible for the wellbeing of society and do no harm to others (Shafique et al., 2015). Empirical research has shown positive results for the impact of values on employees or organizational performance (Paarlberg & Perry, 2007; Ab. Wahab et al., 2016). Values directly influence behavior (Meglino & Ravlin, 1998; Mashlah, 2017). Islamic values in the workplace are applicable universally and compatible with current management styles (Robertson et al., 2002; Halstead, 2007; Ab. Wahab et al., 2016). For instance, the Malaysian approach to economic development was achieved through a unique combination of Islamic reforms and local customs (Lawrence, 2000). According to Lawrence (2000) economic growth and development is seen as the central goal of "Malaysian Islamic Reforms" (Ab. Wahab et al., 2016).

By applying Islamic Work Values (Ab. Wahab et al., 2016) Malaysia was able to solve the problems of unethical work behaviors and inefficiency. This helped Malaysia to ease out of the Asian Financial Crisis in the late 1990s faster than other countries (Nor Mohamed, 2007). Saudi society's culture is hugely influenced by Islam in determining its traditions, social norms, patterns, obligations, privileges and practices (Al-Saggaf, 2004). When introducing technological innovations to a conservative and religious society such as Saudi Arabia, where religion affects every aspect of daily life, there is a resistance to anything new that may undermine religious adherence and community solidarity (Alsaif, 2014). Researchers in the field of management have begun evaluating employees' religious beliefs as a significant aspect of management practices (Al-sharif, 2014). The significance of understanding the impact of Islamic principles and values on organizations cannot be underestimated (Al-sharif, 2014).

Islamic values (Ab. Wahab et al., 2016) have important implications for managers and leaders in Arab countries (Ali & Weir, 2005; Abuznaid, 2006; Branine & Pollard, 2010; Hammoudeh, 2012; Mashlah, 2017). Al-sharif (2014) stated that the significance of understanding the impact of Islamic principles and values on organizations could not be underestimated. Al-Omar (1994) and Ibn Baz et al. (2005) stated that for organizations to function well in the Muslim world, the main inspiration must be derived from Islamic teaching and values. The guiding principles for good moral and social conduct are applicable to management and business (Al-Abdouli, 2004).

Many successful organizations are run on religious principles. An example for this is the success of many companies in Malaysia (Lipford et al., 1993; Yarwood, 1993; Friedman, 1999). Those who are committed to Islamic beliefs tend to refuse any unethical conduct in their organization (McNichols & Zimmerer, 1985).

Perfection (Itqan)

Mashlah (2017) described perfection (*Itqan*) which in Islam refers to the act of worship. Ab. Wahab (2012) described the word *Itqan* as an Arabic word for perfectionism. Literally, it means to arrange and dispose of things in a scientific and logical way in order to get the ideal outcome. She explained this word as the attitude of being careful, meticulous, hardworking and excellent in carrying out responsibilities and tasks. She considered efficiency, clear objectives and having an effective working style as evidence of the desire for *Itqan* (perfection).

According to Farg et al. (2017) perfection can also be linked to the concept known as Total Quality Management (TQM). Perfection (*Itqan*), according to Mashlah (2017), will increase the need for innovation and creativity as a result of striving for perfection so that individuals and the community benefit. Technology enables employees to improve their work and job performance, thus minimizing errors. *Itqan*, also according to Mashlah (2017), increases the need for innovation and creativity as a result of striving for perfection. This leads us to assume that perfection is an important factor that affects the acceptance and adoption of new technological innovations. Here the following hypothesis is proposed:

H8: *Perfection has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

Cooperation (Ta'awun)

The word *Ta'awun* is defined as the divine commandment for people to work together to achieve peace, harmony and a civilized society (Rosly & Abu Bakar, 2003; Redzuan et al., 2009; Hunter, 2012; Sarif, 2016, 2018). According to Ab. Wahab (2012), *Ta'awun* is an Arabic word meaning cooperation to achieve something. The concept of *Ta'awun* is considered to be very important in Islam and means not doing evil or harming others. Recently, Sarif (2018) described cooperation (*Ta'awun)* and competition as useful for creating and sustaining competitive advantage. Strategic *Ta'awun* or high performing cooperation between businesses

enables them to improve market share (Sarif, 2018). Thus, cooperation and teamwork are encouraged and helped by technology. In the design phase technological systems are accomplished by teamwork. In the implementation phase, the system is run by a number of people working in different departments/sectors/agencies. Based on this, cooperation can be considered as important in influencing employees' adoption of technological innovations. As such, the following hypothesis is put forward:

H9: *Cooperation has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

Responsibility (Masuliyah)

Mas'uliyyah is an Arabic word that means responsibility. From the Islamic point of view, management accountability has two dimensions: firstly, a manager or worker is accountable to his/her immediate boss; and secondly, that person is obliged to feel responsible to God after leaving this world (Ab. Wahab, 2012). Rozlan et al. (2016) and Rezaeian (2010) described responsibility (*Mas'uliyyah*) as the force that binds action demanded by a leader. A Muslim manager must have a good sense of duty. Technological systems like the Decision Support System (DSS) make decisions in a responsible way which helps to improve organizations' work. Several studies stated that transparency can reduce or eliminate corruption (Gerring & Thacker, 2004; Reinikka & Svensson, 2005; Bauhr et al., 2010; Lindstedt & Naurin, 2010). We can therefore state that responsibility may affect the innovation adoption decision by employees. Therefore, the following hypothesis has been suggested:

H10: *Responsibility has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

Transparency (Shaffaf)

This Arabic word "shaffaf" means can see through (transparent). Transparency allows the public to gather information about daily affairs that affect them, and they have been fully informed about them (Gidado & Yusha'u, 2017). It is the principal that guarantees freedom of access or for any person to obtain information about certain situations (Taufiq, 2015). Technically it means to put things into writing and keeping good records (Ab. Wahab, 2012). The Holy Quran refers to putting transactions into writing and having witnesses in the following

verse: *"O ye who believe, when you deal with each other, in transactions involving future obligations in a fixed period of time, reduce them to writing. Let a scribe write down faithfully as between the parties: let not the scribe refuse to write: As Allah has taught him, so let Him write…"* (Baqarah *282*). Technology enables employees to make informed decisions and this will improve the element of transparency. Also, a new and superior system enhances the degree of accuracy in terms of making transparent decisions. Based on this concept, we claim that transparency affects individuals' innovation acceptance decisions. Therefore, the following hypothesis has been proposed:

H11: *Transparency has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

4.8 Demographic Characteristics

Demographic characteristics are considered to be moderating variables that affect individuals' beliefs and attitudes about the adoption of technological innovations. According to Talukder (2014), this included demographics in his proposed model as a separate category. The reason for doing this is that it is directly related to individuals' characteristics, which influence behavior. Demographics have been noted by Fishbein and Ajzen (1980) and Frambach and Schillewaert (2002) as influential factors that affect behavior. These are explained in more detail below.

Gender

Gender can explain the degree to which gender inequalities are espoused by an individual. Individuals who espouse masculine values emphasize work-related goals such as earnings, advancement, competitiveness, performance and assertiveness. On the other hand, people who espouse feminine values tend to emphasize personal goals such as a friendly atmosphere, comfortable work environment, quality of life and warm personal relationships (Lee et al., 2013). Gender has a moderating effect on the behavioral intention to use the ERP system (Soliman et al., 2019). Opinions vary about males and females with reference to the adoption of technological innovations. Some studies found that males embrace technological innovation much more significantly than females, because they are thinking they are more skilled in computer tasks and are more attracted to modern technology than females (Lerouge et al., 2005). Thus, gender has been found in many studies to play a significant role in predicting the

usage of technology (Venkatesh et al., 2000; Venkatesh et al., 2003; Wang et al., 2009; He & Freeman, 2019). Subsequently, the following hypothesis is put forward for analysis:

H12: *Gender difference has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

Age

Many studies stated that age is an important demographic variable that has direct and moderating effects on acceptance and adoption of technology (Venkatesh et al., 2003; King & He, 2006; Porter & Donthu, 2006; Wang et al., 2009; Chung et al., 2010). Many studies revealed that older people use technological innovations significantly less than younger people (Lerouge et al., 2005). Kwok and Gao (2005) Younger employees in the workplace focus on the likelihood of adopting new technologies but this is harder for older people to do when a new system is introduced to the organization (Venkatesh et al., 2003; Soliman et al., 2019). Older people have limited experience using computers and the internet in comparison to younger people. This creates an anxiety-provoking situation that many would choose to avoid (Porter & Donthu, 2006). Therefore, the following hypothesis has been proposed:

H13: *Age differences have an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

Academic Qualifications

Education is one of the most important variables that can determine the adoption or otherwise of technological innovations because users to learn to operate and appreciate innovation (Talukder, 2014). The decision to adopt and use any technological innovation is related to the amount of knowledge on the users' part (Porter & Donthu, 2006). Therefore, the following hypothesis is posited for testing:

H14: *Academic qualifications have an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

Position or Status

Position or job status is one of the predictors that could influence technology adoption. When an individual employee holds a senior position, that person might have the responsibility to implement an innovation. On the other hand, general employees might be under pressure to use certain innovations as directed by their senior management. Not many studies have been done on whether workplace position impacts on innovation adoption (Talukder, 2014). Therefore, the following hypothesis is worth testing:

H15: *Workplace position or status has an impact on the adoption of technological innovation by employees in an organization in Saudi Arabia.*

4.9 Attitudes

Attitudes to information systems have been extensively studied (Talukder, 2014). Weihrich and Koontz (2005) stated that attitude to a technology is a pre-condition of technology adoption. Lam et al. (2007) found that the intention to adopt an innovation is affected by employees' attitudes. A favorable attitude is likely to encourage individual employees to adopt and use the innovation (Talukder, 2014). It was discovered that employees are more likely to perform a behavior if they possess a positive attitude but are more likely not to do so if or when they possess a negative attitude. Kwok and Gao (2005), Lam et al. (2007) and Talukder (2014) stated there is a very strong link between attitude and the adoption of new technologies. It is evident that there is a strong correlation between the behavioral intention and the actual behavior (Venkatesh & Davis, 2000; Soliman et al., 2019). This is supported by Alam and Uddin (2019) who stated that the practical use of new technologies by employees depends entirely on their intention to use it. The behavioral intention is a significant predictor of the actual usage of new technologies (Sheppard et al., 1988; Venkatesh et al., 2000; Alam & Uddin, 2019). A meta-analysis by Legris et al. (2003) found a positive relationship between behavioral intention and actual usage in many studies (Alam & Uddin, 2019). However, not many analyses have been published on the influence of users' intention on ERP adoption (Alam & Uddin, 2019). Thus, the following hypothesis has been proposed:

H16: *Attitude toward technological innovation has an impact on acceptance behavior of individual employees in an organization in Saudi Arabia.*

4.10 Expected Benefits

Many positive outcomes are expected from the use of technology. Four of the outcomes have been selected for this research: cost effectiveness, organization efficiency, service products, and relationships with customers. Atkinson and McKay (2007) and Al-Sughair (2015) stated that technology usage in organizations can have positive effects in terms of economic benefits such as employment, productivity, efficient markets, and services. These are explained in more detail below.

Cost Effectiveness

Maxwell (2012) stated that using technology in organizations improves their business, reduces costs, and increases effectiveness. Zimmer (2018) recently mentioned that using ICT improves internal processes by reducing costs and enabling companies to do more with less, without sacrificing quality or value. Thus, following hypothesis has been proposed:

H17: *Usage of technology has an impact on cost effectiveness in the Saudi organization.*

Organizational Efficiency

According to Al-Sughair (2015) using technology in organizations increases their productivity and efficiency. This point has also been confirmed by Atkinson and McKay (2007). Efficiency and overall productivity increase through the use of technology when it is properly deployed (Mouelhi, 2009). When technology is adopted, the organization becomes more efficient in its regular tasks and procedures. Therefore, the following hypothesis has been proposed:

H18: *Usage of technology has an impact on the efficiency in the Saudi organization.*

Service Quality

Technology helps organizations to provide better services to their customers. Technology supports organizations to provide quick information to customers, deploy rapid communication and deliver products and services more quickly. High quality products and services are also expected as a result of using technology (Atkinson & McKay, 2007; Maxwell, 2012; Al-Sughair, 2015). Therefore, the following hypothesis is suggested:

H19: *Usage of technology has an impact on the service quality provided by the Saudi organization.*

Relationships with Customers

Technology enables organizations to create better relationships with customers and employees. Technology supports individuals to communicate instantly with the organization and the internal and external clients when there is a such need. According to Alyammahi (2018) the rise of the internet has helped businesses and all kinds of organizations to build and sustain better relationships with their customers. Using technology has given them access to customers and consumers, enabling companies to deliver new and enhanced products and goods or services (Zimmer, 2018). Based on these points the following hypothesis is proposed:

H20: *Usage of technology has an impact on customer service provided by the Saudi organization.*

Table 4.5 Research questions and corresponding hypotheses

Question Number	Research Question	Corresponding Hypotheses
RQ1	What is the impact of cultural values on the attitude toward the adoption of technological innovation by employees in an organization in Saudi Arabia?	**H1, H2, H3, H4, H5**
RQ2	What is the impact of social values on the attitude toward the adoption of technological innovation by employees in an organization in Saudi Arabia?	**H6, H7**
RQ3	What is the impact of religious values on the attitude toward the adoption of technological innovation by employees in an organization in Saudi Arabia?	**H8, H9, H10, H11**
RQ4	What is the impact of demographic characteristics on the attitude toward the adoption of technological innovation by employees in an organization in Saudi Arabia?	**H12, H13, H14, H16**
RQ5	What is the impact of attitude toward technological innovation on individual employees' acceptance and use of technological innovation in Saudi Arabia?	**H16**
RQ6	What is the effect of technology adoption by MOFA employees on the expected benefits from this usage?	**H17, H18, H19, H20**

Table 4.5 above documents the six research questions and the hypotheses corresponding to each one.

4.11 Summary

This chapter discussed the development of the conceptual model developed for this study. The chapter explains how the conceptual model was built using the: Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003); Innovation Diffusion Theory Model (IDT) by Rogers (2003); Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1980); Technology Acceptance Model (TAM) by Davis (1989); and finally, the Cultural Dimensions Theory (CDT) by Hofstede (1980). The chapter then reports existing literature to justify and develop hypotheses. Discussed here were three broad categories of factors, these being cultural factors, social factors and religious factors. The chapter then discussed the impact of demographics on attitude toward technology adoption. Finally, the chapter discussed how GRP system adoption can lead to better organizational performance and efficiency. After developing a theoretical model, the next chapter will discuss how to collect data, sample size, analysis technique followed by findings and results to test the model.

CHAPTER FIVE: RESEARCH METHODOLOGY

5.1 Introduction

After reviewing the existing literature, writing the theoretical framework, and developing the hypothesis, an appropriate methodology was found to answer the aims and objectives of the research. This chapter will discuss the methodology employed in this study. Methodology deals with the methods and principles that are used in research. Methodology explains how the research is done, the methods of data collection, the materials used, the subjects interviewed, the theories developed, and the data analysis technique (Alshehri, 2012; Gentles et al., 2016; Mohajan, 2018). This chapter will focus on the research design and methodology, the study location, target population and sample. Furthermore, the chapter will discuss the research variables, measures of the constructs, data collection, data analysis techniques, validity and reliability of the study.

5.2 Research Design

The purpose of this research is to study the impact of socio-cultural and religious values on the adoption of new technological innovations in Saudi Arabia. The study investigates the acceptance of the Government Resource Planning (GRP) system by employees of the Saudi Ministry of Foreign Affairs (MOFA). The survey method was used to collect data for this research (Khan & Rafiq, 2018). According to Neuman (2013) the survey method serves to precisely measure variables and test the advanced model linked to these variables. The quantitative method involved obtaining information from a questionnaire given to employees in the ministry to obtain further evidence. As this study testing hypotheses- identifying the strength of the variables and their connections/ impact as well as testing conceptual research model, quantitative approach is considered appropriate research design for this study.

When conducting a research study there are two types of techniques: qualitative and quantitative. In the literature, each technique fits certain types of research, meaning that selecting either one essentially depends on the research topic itself, as well as the research aim, objectives, questions and argument. Furthermore, the size of the sample involved in the data collection process can dictate which technique is more convenient and better able to provide

satisfactory outcomes for the research. Qualitative techniques usually incorporate in-depth interviews involving small numbers of individuals participating (Wright, 1996; Easterby-Smith et al., 2003). The quantitative technique is often associated with questionnaires, numbers and statistics, involving a larger sample than that employed in qualitative research (Burns & Grove, 2005; Kendall, 2014).

A variety of statistical techniques deemed appropriate for the analyses were undertaken. These techniques include summary statistics such as frequency distribution, principal component analyses, reliability and validity analyses, and correlation and regression analyses. Summary statistics provided the demographic characteristics of the respondents. Correlation analysis was employed to explore the initial nexus between the variables concerning the drivers and usage of the GRP system. A regression analysis served to ascertain the causal effects of independent variables on the dependent variables such as the impact of drivers on the attitude and the impact of attitude on usage of the GRP system. Similar to previous studies by Wang et al. (2007) and Law and Ngai (2007), this study implements the quantitative approach in a bid to examine the determinants of adoption and use of the GRP system in Saudi Arabia.

5.3 Location of the study

The study aims to investigate the acceptance and adoption of the Government Resource Planning (GRP) system by the employees at the Ministry of Foreign Affairs (MOFA) in Saudi Arabia. In an official Saudi report, it has been stated that:

> On March 9, 2017, Saudi Arabia's Ministry of Communications and Information Technology signed a memorandum of understanding with IBM for the training and qualification of more than 38,000 individuals over the next four years through 30 new educational institutions in information and communication technology (ICT) programs. By 2020, about 19,000 trainees are expected to acquire certification in the field (The Embassy of Saudi Arabia in Washington, 2017, p. 39).

The Ministry handles all foreign affairs matters for the Saudi government in addition to issuing visas. Its main headquarters is in Riyadh, consisting of multiple ministry branches and 125 embassies and consulates throughout the world. MOFA has a total of 4500 employees and contractors worldwide. The study includes different departments of the ministry that use this

system, the ministry branches in and outside Saudi Arabia. About 15% of these employees in the ministry are female employees. The location in which the study will be conducted includes men and women working in units inside and outside Saudi Arabia. These features will allow the researcher to collect data from employees with different backgrounds and different experiences. The data collection method used is the questionnaire. In this study, the use of only one technological innovation was investigated. This technological innovation is the Government Resource Planning (GRP) system, which was introduced to the ministry in September 2009.

5.4 Reasons for using the GRP system as the study tool

The GRP is the name used by the Saudi government for the Enterprise Resource Planning (ERP). The ERP software system is one of the biggest investments a company will have to make. It is not only a major financial decision, but also an effective solution that can affect all parts of the organization's business, like accounting, manufacturing, marketing, human resources, and more (O'Shaughnessy, 2020). ERP systems are described as a computer-based system designed to process organizations' transactions and facilitate integrated and real-time planning, production, and customer response (Barth & Koch, 2019). According to Mahraz (2019), the common database in the ERP system can allow every department of a business to store and retrieve information in real time. As well, the information should be reliable, accessible, and easily shared. ERP systems are large packaged enterprise information systems consisting of several integrated subsystems, which enable planning and control of resources and processes to be carried out. ERP systems are considered the backbone of a company because they facilitate a unified data source for all activities within an organization. This leads to a considerable improvement in the decision-making process, and contributes to making it consistent, timely and reliable across organizational units and geographical locations (Barth & Koch, 2019).

The ERP enables organizations to effectively process their business and manage their resources by consolidating business units (Alhirz & Sajeev, 2015). ERP implementation is essential if organizations want to transfer their traditional businesses into global ones because the internal business processes can be linked to external networks (Ifinedo, 2008). Many institutions look at the implementation of the ERP as a potential, vital and crucial solution to their businesses in order to gain efficiencies and be competitive (Mahraz, 2019). ERP is a new technology that

includes almost all the business processes and business activities (Basoglu et al., 2007; Almishal & Alsaud, 2015). ERP integrates all business activities into one integrated software package. ERP combines separate business departments such as HR, Finance, Procurement and others into one single system (Jones & Rama, 2002; Almishal & Alsaud, 2015). For organizations to stay competitive, they must make concerted effort to improve their business practices and procedures, shorten their procedures and enhance their productivity. To achieve these targets, organizations have been embracing ERP (Bhatti, 2005; Liu, 2011; Saleh et al., 2013).

Despite the great advantages for using the ERP system, its implementation has shown to have a high risk of failure rate. Terminanto et al. (2017) reported that about 70% of the ERP implementations fail to meet the adopting organizations' expectations. One of the main reasons for this high rate of failure is users resist the ERP system. Hence, users' acceptance of the ERP system is the key factor in ERP implementation (Soliman et al., 2019). According to (Basri & Siam, 2017) the unwillingness or reluctance to adopt a newly implemented ERP system by end-users has been reported as one of the most frequent reasons for the lack of adoption. Critical success factors (CSF) are very important in ERP implementation because they provide clear guidance to practitioners on where to focus and allocate resources reasonably in planning an ERP project (Ifinedo, 2008). In spite of the popularity of ERP, the failure rate of ERP implementation remains high (Zerbino et al., 2017). It is said that about 70% of ERP implementations fail to deliver anticipated benefits (Kumar et al., 2003).

Because ERP implementations cost a significant amount of time, money, and professional services, understanding and applying critical challenges during an ERP implementation is crucial for ensuring organizational success (Menon et al., 2019). A number of studies explore the possible factors that foster ERP implementation success (Umble et al., 2003; Zhang et al., 2005). According to Saleh et al. (2013) factors and challenges of implementing ERP in developing countries differ from those in Western countries. Very few analyses have scientifically examined the success factors of ERP implementation. Most of these studies have been undertaken in Western nations and very few of them had examined the implementation in Middle Eastern countries and none in Saudi Arabia (Saleh et al., 2013). These facts create a gap in the literature that examines Middle Eastern countries in general and in Saudi Arabia in particular.

Countries in the Middle East currently lack ERP acceptance and adoption studies (Maguire et al., 2010; Hossain et al., 2011; Abdelghaffar, 2012; Alhirz & Sajeev, 2015). Despite the extensive diffusion of ERP technologies in developed countries, the adoption and implementation in these countries is scarcely documented (Asamoah & Andoh-Baidoo, 2018; Alam & Uddin, 2019). Only a limited number of studies have investigated the factors influencing ERP software adoption in developing countries (Rajan & Baral, 2015; Alam & Uddin, 2019). Not much has been done on exploring the influence of external factors on behavioral adoption and acceptance of ERP (Sternad et al., 2011; Bandyopadhyay & Barnes, 2012; Alhirz & Sajeev, 2015). In the case of Saudi Arabia, most studies are associated with the implementation of ERP. Its acceptance and adoption from the perspectives of individual differences in cultural dimensions have not received much attention (Alhirz & Sajeev, 2015). Another dimension that should be evaluated is the behavioral acceptance and adoption of ERP by users (Al-Gahtani et al., 2007; Baker et al., 2010; Venkatesh & Zhang, 2010; Alhirz & Sajeev, 2015).

Saudi Gazette (2015) reported that the launching of the Program for Human Resources Development was approved by King Salman. The program, according to the report, aims at improving the workplace environment and boosting the productivity of government employees. The Minister of the Civil Service stated that the first phase of the program would be implemented on Oct. 14, 2015 for a period of one year (Saudi Gazette, 2015). The first phase was restricted to the ministries of justice, social affairs, agriculture, transport, communications and information technology, foreign affairs, and culture and information (Saudi Gazette, 2015). In addition, the Minister of the Civil Service stated that the program would lead to the creation of a functional and professional working environment based on a transparent, distinguished, and flexible civil service which will contribute to the empowerment of government departments. Doing so would strengthen the process of administrative development in the government sector (Ekhbariya.net, 2015).

The assistant to the Princess Nourah Bint Abdulrahman University (PNU) Vice Rector for Human Resources and supervisor of the General Administration for Human Resources, stated on January 6, 2017 that King Salman's program for developing human resources is an important national initiative in the field of institutional excellence. Developing the environment of public works would align with the objectives of the government's Vision 2030 economic strategy and the National Transformation Program 2020. The focus is on investment in human capital by

ensuring Saudi citizens are employed (PNU, 2017). The Minister of Culture and Information said that the program would change the concept of governmental entities (SPA, 2016). The Foreign Affairs minister and the Civil Service minister signed a service level cooperation agreement for the Human Resources Development (HRD) after the program was approved (MOFA, 2015). The objectives of the HRD are firstly, raising the quality of government employee performance and productivity at work; secondly, developing a good workplace environment; and thirdly, developing clear policies and procedures for human resources (MOFA, 2015). This study uses the GRP system as a tool to investigate factors that affect the adoption of technological innovation and validate the model developed in this research.

5.5 Population of the Study

Acceptance of IT in the workplace has long been a concern of scholars and practitioners (Venkatesh et al., 2000; Sherif et al., 2006; Talukder, 2014). Saudi Arabia is a developing country and investing millions of dollars on technology. Adoption of technological innovation in Saudi Arabia has been a challenging journey and the commonplace problem is employees' technology usage behavior. The Saudi government is trying to create efficient and productive public services for better implementation of government services by employees in various departments and have a better public reputation. Saudi Arabia is a society with strong cultural traditions, expectations, tribes and conservative ways of doing things. Often new technology implementation is obstructed by those socio-cultural and religious factors and money invested is in effect wasted. Therefore, it is important to explore how those factors affect technology implementation and what lessons management can learn for better technology acceptance and its continuous usage.

The study population comprises employees working at the Ministry of Foreign Affairs in Saudi Arabia. There are approximately 4500 in the workforce including Saudi Arabia and overseas locations. The main headquarters is located in Riyadh and there are 6 ministry branches in Saudi Arabia. There are 125 embassies and consulates across the globe. These employees are both men and women and from different backgrounds, diversified by old and young people, highly educated and lowly educated people, as well as people from rural and urban areas. An important point to consider is that the drivers of adoption and research on individual innovation acceptance in an organizational context are still not fully understood (Frambach & Schillewaert, 2002).

This study will help to deliver a better understanding of the factors affecting the adoption and implementation of technological innovation in Saudi Arabia.

5.6 Sample Size for this Study

The study used a total of 18 variables in the conceptual model. According to Hair et al. (2006) for the analysis of variances a minimum of 20 observations is recommended, although a larger size may be required for acceptable and more emphatic statistical power. Used here was multivariate statistical analysis. Hair et al. (1998, p. 166) stated that for each independent variable, there should be 5 observations. Reducing this ratio to below 5 is a risk, making the results too specific to the sample and rendering a lack of generalizability of the findings. To make the results generalizable there should be a minimum ratio of 5 to 1, although the desired level is between 15 to 20 observations for each dependent and independent variable, provided that the sample meets the established criteria. Stevens (2009) mentioned that 15 subjects are required for each predicting variable for a thorough cross-validation as required in social science studies. Based on these criteria, 15 to 20 observations for each dependent and independent variable were used to determine the sample size. As this study has a total of 18 variables (2 dependents and 16 independent variables), a sample of respondents ranging from 270 to 360 would be needed to generalize the results.

5.7 Research Instrument for the Study and Expert Opinion

The questions used in the measurement of the research model were based on validated items from previous studies (Lewis et al., 2003; Wu, 2006; Talukder, 2014; Ab. Wahab et al., 2016). However, the survey questions were paraphrased to suit the research objects by modifying some wording to fit the current research objects and aims. Data was collected by using a questionnaire administered online to the respondents. The instruments collected respondents' responses about various issues concerning the adoption and use of GRP systems within the Ministry of Foreign Affairs. The selection of factors was based on the research questions and the developed model. The questionnaire was constructed, based on a five-point Likert-type scale (Likert, 1932): 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A), and 5 = Strongly Agree (SA). The first stage after designing the questionnaire is ensuring that sentence structure is relevant to the types of questions and technical aspects.

Expert opinions were taken to further validate the items. Experts were asked about their opinion and comments regarding the questionnaire, sentence structure relevance, type of questions and technical aspects. It was modified after the experts gave their opinions. The study used 5 experts in the relevant areas of technological innovation adoption. Three experts were from academic areas and two from professional public service areas.

5.8 Pilot Study

Instruments of this study were pre-tested to identify and modify the items which might be misinterpreted by respondents, skipped over or answered improperly. A pilot study was conducted to pre-test and modify the items. The sample was drawn from the study population and the pilot study was helpful to verify the clarity of the questionnaire and solve unforeseen problems. It also helped to examine the instrument's validity and reliability. The questionnaire was sent to one of the MOFA's departments. The number of those who responded to the questionnaire was 45 employees. These 45 questionnaires were treated and analyzed as a pilot study sample. After confirming the validity and reliability of the instrument, the questionnaire was distributed to all employees using the MOFA's staff email system, excluding the employees of the department used in the pilot study.

5.9 Data Collection Process

The study is quantitative in nature. The choice of either qualitative or quantitative research depends on the nature of the research, research questions and hypotheses and research aim and objectives. Quantitative research focuses on collecting numeric/statistical data and then analyzing that information through techniques that involve counting or statistics. One of its central goals is to build accurate and reliable measurements that allow for statistical analysis (Alshehri, 2012; Goertzen, 2017). Normally, the sample size collected for a quantitative research approach is larger than that used for a qualitative research and is based on maintaining statistical relevance (Myers, 1997; Neuman, 2013).

This study used a quantitative method to explore the impact of socio-cultural norms and religious values on the adoption of technological innovations by employees in Saudi Arabian organizations. The quantitative method has been selected in order to be more aware of the influence and prevalence of socio-cultural norms on the acceptance and adoption of new

technologies at the Ministry of Foreign Affairs. The quantitative approach usually includes data collection through instruments to quantify certain phenomena (Creswell & Creswell, 2017). Quantitative research is very effective at answering the "what" or "how" of a given situation because it focuses on data that can be measured (Goertzen, 2017). In this study, survey was used as a tool to collect the data and it is good for large groups of people. The data may include demographic information, opinions, or satisfaction levels. The survey can be managed in person, by mail, over the phone, or via email or the Internet. In the survey, the researcher asks the same questions to all participants (Easterby-Smith et al., 2003; Alshehri, 2012). Using survey data will make it possible to gather the data from a sample for generalization in order to describe a population (Tabachnick & Fidell, 2001).

The survey questionnaire was used as the primary data collection method to test the list of factors that affect Saudi employees' adoption of a technological innovation and examine the advanced model developed for this study. The survey questionnaire is commonly used as a tool in the collection of data (Mkheimer & A. Mjlae, 2020). The primary procedure for obtaining data was the online survey questionnaire. Questionnaires are self-report data collection tools, which are answered at a distance for the researcher (Alshehri, 2012). Kim and Garrison (2009) stated that the questionnaire is one the most widely used data collection tools and considered the best choice for targeting the administration of a large numbers of participants in a short period.

The study employs an online survey for data collection. Survey instruments are often employed to test hypothesis-driven structural models for constructs that are associated with attitudes about technology, people's intent to use the technology, and actual use behavior (Jacobs et al., 2019). The online survey was selected because online surveys are very advantageous (Basri & Siam, 2017). They save researchers much time and expenses by overcoming geographical distance, assist in accessing unique subjects, are an appropriate tool for accessing both male and female participants, and ideal for Saudi Arabia because of the country's gender segregated society. This is why the researcher developed an online survey to examine the relationship between variables proposed in the research model.

Sample Frame and Distribution of the questionnaire

The online survey questionnaire was administered within the Ministry of Foreign Affairs. As stated earlier, based on Hair et al. (1998) assert that 15 to 20 subjects are needed for every

predictor. For a total of 18 variables, a 270 to 360 sample size was targeted for this research. Permission were obtained from the ministry to conduct the survey and it provided email access to employees. To get an adequate sample size the survey questionnaire was sent to randomly selected 1677 employees at the Ministry of Foreign Affairs in Saudi Arabia and foreign diplomatic missions.

Online Survey monkey were used to collect data. The questionnaire was sent to the Ministry of Foreign Affairs using an email link. After one week a reminder was sent via email encouraging people to respond to the questionnaire. Within a six weeks' period of time, the number of those who responded to the questionnaire was 377 which make the response rate 22.48%. A response rate of 22.48% is considered sufficient according to Shamsuddoha (2004) who stated that the respondents for any organizational study in developing country context is relatively low where 20% could be very optimistic. For instance, a recent study in one developing country context extracted 203 usable responses where the response rate was 17% (Shamsuddoha, 2004). According to Talukder et al. (2019) "public servants in Middle Eastern countries are usually very reluctant to participate in this kind of research since they are not very familiar with such research. Besides, participation was completely voluntary and there was no incentive attached to participation to increase the level of participation" (p. 223).

5.10 Data Analysis Process

Data analysis refers to the process of examining, transforming and arranging a given data set in specific ways in order to analyze its individual parts and extract useful information (Wulff, 2020). Walliman (2011) defined data analysis as the process of examining, categorizing, grouping, or otherwise recombining the collected raw data with the aim of finding answers to the research questions. The items used to measure the various constructs are adopted from previously developed and validated measures, which have been modified to suit the current study.

Data Screening

Data screening according to Levy (2006), is an essential step in the analysis process. It is a fundamental step before starting the data analysis to avoid incorrect findings and results (Field, 2005). Treating missing data is an essential step before starting the analysis procedure in order to define and treat any kind of missing data, such as incomplete answers or missing sections

(Hair et al., 2006). For the purpose of this study any questionnaire with any missing answers was discarded. According to this rule 37 out of 377 questionnaires were considered unusable because of missing data. Therefore, a total of 340 usable sample size were used to conduct the analysis.

Data Analysis Techniques

Statistical Package for Social Sciences (SPSS), ver. 23 was used to analyze the data. Multivariate statistical analysis was used, and the study conducted validity and reliability tests of the measurement (Cronbach's Alpha). These were consolidated by other statistical tests were employed including summary statistics, correlation analysis, and factor analysis. Finally, a multiple regression analysis was undertaken to test the model.

5.11 Validity and Reliability

Items of the questionnaire were empirically tested and validated in the context of innovation adoption. Items of the survey questionnaire were adopted and modified from previous studies. Reliability was checked using Cronbach's Alpha. Validity and reliability are the two most important and fundamental features in the evaluation of any measurement instrument or tool (Mohajan, 2018). According to Walliman (2011) there are two common measurements that need to be considered when determining if a study has been successful or not: validity and reliability. Ascertaining the validity and reliability of a measurement tool is one of the most common tasks often encountered in social science research (Bolarinwa, 2015). The validity and reliability of the factors were ascertained to establish if the factors are valid and reliable for further analysis (Talukder et al., 2014). Pre-testing of the research questionnaire is highly recommended to ensure that the questionnaire items are clear and understood by any normal respondent (Alshehri, 2012; Sekaran & Bougie, 2016).

Validity is concerned with if the researchers have actually studied what they intended to do and nothing else (Neuman, 2013). Moreover, it refers to the extent to which the data collected truly measures what it is meant to measure (Field, 2005; Bolarinwa, 2015). There are different ways to validate the questionnaire. One of these ways is that the questions used in the measurement of the research model were based on validated items from previous studies, then the survey questions were paraphrased to suit the specific research objective (Taylor & Todd, 1995;

Venkatesh & Davis, 2000; Venkatesh et al., 2003; Carter & Bélanger, 2005; Aladwani, 2006; Kripanont, 2007; Mann et al., 2009).

Reliability in technology acceptance models refers to the degree to which the variables, or indicators, are stable and consistent with what they are assumed to be measuring (Venkatesh et al., 2003; Singleton & Straits, 2017). According to Talukder (2011) "the higher the reliability range indicates the collected data maintains a high internal consistency" (p. 329). Reliability is defined as the degree to which the results obtained by a measurement and procedure can be replicated (Bolarinwa, 2015). The content and construct validity methods were employed to evaluate the instrument's validity. The content validity was used to determine the relevance of the items in the instrument. The construct validity of the instrument is a major component in testing all the outcomes of the instruments. The construct validity means that the scales in the questionnaire behave as expected (Shirali et al., 2018). The results of reliability analysis are discussed in detail in Chapter 6. However, the analysis results showed that all of the constructs had a high reliability of more than 0.7.

5.12 Definitions of the Constructs and Measure of the Variables

Cultural Dimensions

The items used to construct the questionnaire were adopted from previously developed and validated measures with appropriate modifications to make them specifically relevant to this study context. The original four cultural dimensions of Hofstede (power distance, uncertainty avoidance, masculinity, and collectivism) have been selected as independent variables for this study. The fifth dimension (long-term orientation) was excluded because it has been heavily criticized for not adding to the descriptive and explanatory power of the original four dimensions. However, the applicability of using Hofstede's (1980) four dimensions of national culture has been well documented by Sondergaard (1994) and Barkema and Vermeulen (1997).

The cultural value items selected for this study have been taken from Hofstede and bond's (1984) dimensions and these were subsequently updated by Dorfman and Howell (1988). Many researchers have used this measure in cultural studies, e.g. Fernandez et al. (1997) and Nicholson (1991). Dorfman and Howell (1988) scales were described by Nicholson (1991) as psychometrically more reliable than Hofstede and bond's (1984) scales. On this theme the cultural dimensions of uncertainty avoidance, power distance, individualism, and masculinity

have been developed by Hofstede (2001) based on over 116,000 survey responses, which was designed to measure work-related values at the company IBM which operated in nearly 60 countries between 1967 and 1971.

Hofstede's study was replicated and extended by the GLOBE research team in which 170 social scientists and management scholars from 62 societies were engaged. The data for this study was collected from 17,000 managers in 62 countries between 1994 and 1997. The GLOBE team differentiated between practices, which identify the degree to which certain values are implemented in society, and values which identify the degree to which certain values should also be implemented (House et al., 2004; Cardon & Marshall, 2008). Hofstede stated that the role of national culture regarding technology adoption relates to uncertainty avoidance and high uncertainty avoidance cultures are likely to invest more in technology (Hofstede, 2001; Cardon & Marshall, 2008). Definitions of constructs and measures of the independent and dependent variables are given below.

Uncertainty avoidance

Uncertainty avoidance indicates the degree to which members of society feel threatened by uncertain, ambiguous, or unknown situations. People living in uncertainty avoiding cultures generally exhibit extremely risk-averse tendencies (Hofstede, 1991). According to Hofstede (2003) low-uncertainty avoidance cultures make greater use of recent technological innovations. Members of societies characterized by strong certainty avoidance are likely to avoid or reduce risks induced by an unknown situation (Zhao et al., 2014). The level of uncertainty avoidance negatively influences ERP adopters (Van Everdingen & Waarts, 2003; Alhirz & Sajeev, 2015). Wu (2006) indicated that in high uncertainty avoidance organizations there are more written rules in order to reduce uncertainty. In low uncertainty avoidance organizations, there are fewer written rules and rituals. Items were modified from Wu (2006) who used these items to measure the uncertainty avoidance factor as shown below:

1. It is important to have job requirements and instructions spelled out in detail so that employees always know what they are expected to do.
2. Managers expect workers to closely follow instructions and procedures.
3. Rules and regularities are important because they inform workers what the organization expects of them.
4. Standard operating procedures are helpful to employees to do their job.

5. Instructions for operations are important for employees to do their job.

Power distance

Zhao et al. (2014) defined power distance as the degree to which members of a society expect and agree that power should be unequally shared. It reflects the range of answers to the basic questions of how to handle the fact that people are unequal (Sahin, 2006). Organizational hierarchy is more obvious in high power distance organizations; there is a line between managers and subordinates, while low power distance organizations tend to have a flat organizational structure (Wu, 2006). People in Saudi Arabia tend to accept a hierarchical order. Everyone has a place in society, and this is generally not questioned (Roberts, 2013). Power distance is likely to vary across employees due to its impact on the level of compliance, identification and internalization of system users (Srite & Karahanna, 2006; Alhirz & Sajeev, 2015). The following items are adopted from Wu's (2006) questionnaire to measure the power distance factor:

1. Managers should make most decisions without consulting subordinates.
2. It is frequently necessary for a manager to use authority and power when dealing with subordinates.
3. Managers should seldom ask for the opinions of employees.
4. Employees should not disagree with management decisions.
5. Managers should not delegate important tasks to employees.

In-group collectivism

In-group collectivism reflects the degree of individuals' expression of loyalty, pride, and cohesiveness in their organizations or families (Zhao et al., 2014). Collectivism characterizes societies that are integrated into strong, cohesive in-groups to protect them in exchange for unquestioning loyalty to a country's authorities (Hofstede, 1991). People in societies with high individualistic values, meanwhile, tend to care about self-actualization and career progress in the organization (Wu, 2006). Saudi Arabia has a collectivist society, and this is reflected in the long-term commitment to the members of the "Group", a close family, extended family, or extended relationships (Roberts, 2013). It is possible to claim that the differences within individualistic or collectively espoused cultural values are likely to influence perceptions of people's resistance to and involvement with ERP (Van Everdingen & Waarts, 2003; Rajapakse

& Seddon, 2005; Alhirz & Sajeev, 2015). The following items are adopted from Wu's (2006) questionnaire to measure the in-group collectivism factor:

(i) group welfare is more important than individual rewards.

(ii) group success is more important than individual success.

(iii) being accepted by the members of your workgroup is very important; and

(iv) employees should pursue their goals only after considering the welfare of the group.

Masculinism versus Feminism

Masculinity refers to the distribution of roles between the genders, and to how much a society values traditional male and female role. High masculinity societies scores are found where 'tough' values like assertiveness, heroism, and competition with the male role are identified (Yaseen & Omoush, 2012). This reflects a society that is strongly driven by competition, achievement and success, with success being defined by the winner/best in a certain field. In a low score masculine society (feminine society) the dominant values in society are caring for others and quality of life (Hofstede Insights, n.d.). Very few women can achieve higher-level and better-paying jobs in high masculine organizations but in low masculine organizations, the opposite is the case (Wu, 2006). Saudi Arabia is a masculine society in which business or organization managers are expected to be decisive and confident (Roberts, 2013). The following items were taken from Wu (2006) to measure the masculinity factor:

1. Meetings are usually run more effectively when they are chaired by a man.
2. It is more important for men to have a professional career than it is for women.
3. Men usually solve problems through logical analysis; women usually solve issues with intuition.
4. Solving organizational problems usually requires an active, forcible approach which is typical of men.
5. It is preferable to have a man in a high-level position rather than a woman.

Long-term orientation

Long-Term Orientation (LTO) is Hofstede's fifth dimension of national culture (Hofstede, 1991). This term refers to the extent to which a society reveals a pragmatic future-oriented perspective, rather than a conventional historic or short-term point of view (Ryu & Moon, 2009; De Mooij & Hofstede, 2010). According to Hofstede, this dimension connects the past to

current and/or future actions/challenges. The normative nature of Saudi Arabian society can be seen in its low score of 36 for this dimension. Saudi Arabia ranks high in long-term orientation due to the emphasis on social order and cohesion. Hofstede (2013) used these items to measure the long-term orientation factor: firstly, ordering relationships by status and observing this order is important in the workplace; secondly, thrift is important in the workplace; thirdly, persistence is important in the workplace; and fourthly, having a sense of shame is important in the workplace The following items are adopted from Wu's (2006) questionnaire to measure the masculinity factor:

1. Respect for tradition is important to me:
2. Family heritage is important to me:
3. I value a strong link to my past:
4. Traditional values are important to me

Social Dimensions

Social influence is considered to be a normative factor. Social influence is referred to by Fishbein and Ajzen (1980) as normative beliefs. Social influence is derived from the social environment. Employees' adoption of innovation is driven by their social environment and not just their economic context (Westphal et al., 1997; Peansupap & Walker, 2005; Talukder & Quazi, 2010). Talukder and Quazi (2011) stated that "the impact of peers and social network on employees' attitudes and practice of technological innovation in their workplace, has remained largely unexplored" (p. 113). Employees may accept an innovation because of perceived social pressure and not because of its usefulness (Talukder, 2012). The adoption of an innovation in the workplace is more likely to be affected when other employees use it in the same environment. Individuals are more likely to replicate an act if they perceive the existence of greater social pressure from salient referents to perform that act (Lam et al., 2007). The two variables considered in this study under the social influence are social network and peers' influence.

Social networks

The social network influence was measured using five items developed by Talukder (2014) in his study on a five-item scale. Three of these items were created by Talukder (2014) and the other two items were adopted from Lewis et al. (2003). These items have been modified, as follows, to suite the present study:

1) People in my discipline think that using the GRP application is valuable.
2) The opinions of people in my discipline are important to me.
3) I use the GRP application because our interrelated organizations also use it.
4) I use the GRP application because many of my friends in other divisions also use it.
5) I use the GRP application because our interrelated organizations also use it.

Peers' influence

One of the important motivational issues for embracing an innovation is encouragement from peers because they are the first people approached when seeking help with it, as indicated by Talukder (2014). Abrahamson and Rosenkopf (1997) stated that it is a largely internal influence that potential adopters exert on each other that persuades them to accept an innovation. To measure the influence of peers, employees were asked to specify, on a five-item scale, their agreement or disagreement with five statements concerning peers' influence (Talukder, 2014). As above, three elements of these five were created by (Talukder, 2014) and the other two were adopted from Lewis et al. (2003). These items have been modified, as follows, to suit the present study:

1) People in informal groups to which I belong think using the GRP application is valuable.
2) The opinions of the people in informal groups to which I belong are important to me.
3) I learned from my friends how to use the GRP application successfully.
4) Communicating with my friends helped me to learn more about the GRP application.
5) Observing my friends performing a task enhanced my intention to use the GRP application to perform a similar task.

Islamic Values

Most cultural studies conducted in Saudi Arabia have used the existing global cultural indices (e.g. Hofstede, GLOBE), which concentrate on cross-cultural values. Culture-focused research is becoming more widespread now and understanding culture is seen as increasingly important (De Mooij & Hofstede, 2010). Culture in this study was measured with special attention paid to the cultural norms in Saudi Arabia. Values are viewed as principles responsible for the successful management of a number of companies (Mitchell & Oneal, 1994; Ab. Wahab et al., 2016). Islamic workplace values are compatible with the current management style and are

applicable to a wide variety of universal applications (Robertson et al., 2002; Smith, 2002; Halstead, 2007; Ab. Wahab et al., 2016).

Islamic values do influence managerial attitudes and practices in Saudi Arabia (Siddique et al., 2016). Aldraehim et al. (2013) described Islam as the first factor that affects Saudi culture and forms the basis of their moral principles and behaviors as articulated in the Koran (the holy book) and the Sunna. Very few Islamic values have actually been empirically measured. The study by Ab. Wahab et al. (2016) concentrates on the impact of Islamic values on employees' performance in Malaysia. The Islamic values that affect the adoption of new technological innovation by employees are discussed in this thesis.

Perfection (Itqan)

Itqan is the Arabic word for perfectionism. It is considered to be an Islamic workplace value. Itqan (perfection) here means the attitude of being careful, hardworking, meticulous and excellent in carrying out and accomplishing tasks. The concept of *itqan* (perfectionism) emphasizes quality rather than quantity. Working with *Itqan* (perfectionism) includes being well-organized in performing a given task and using time efficiently. It means in effect not being too hasty, or tedious, but doing things accurately (Ab. Wahab, 2012). For the purpose of this research the following statements have been selected and modified from the study of Ab. Wahab et al. (2016) to measure Islamic values (perfectionism):

1) I would work on my assigned task with a systematic and well-organized plan.
2) Even if I were competent, I would not stop looking for ways to improve myself.
3) I do not like to see my work as being average in quality.
4) I always think of plans to improve my own performance.
5) I enjoy learning new skills which can help me to cope with changing work demands.

Cooperation (Ta'awun)

The Arabic word for cooperation is "ta'awun" which means working together with somebody else to achieve something (Ab. Wahab et al., 2016). Cooperation was defined by Endot (1995) as an act of helping others to get through difficulties, enjoining good and forbidding wrongdoing, working collectively and seeking advice or ideas concerning a difficult task. In Islam, cooperation is about doing good things that benefit other people and there is no harm

done to others. Cooperation is very important in organizations because it makes the task easier and helps get the job done (Ab. Wahab et al., 2016). For the purpose of this research the following statements have been selected and modified from Ab. Wahab et al. (2016) to measure the Islamic value of cooperation:

1) I always try to help others.
2) I always cooperate well with my colleagues at work.
3) I am willing to sacrifice my personal interest for the benefit of my co-workers.
4) Cooperation is a virtue in work.
5) I enjoy working with others more than working alone.

Responsibility (Mas'uliyyah)

*Mas'uliyya*h is the Arabic term for responsibility. In fact, *Mas'uliyyah* is a state of being where one is asked to be responsible. Specifically, *Mas'uliyyah* is based on the concept of trust, equity, balance and fairness, benevolence and excellence. In Islamic management, accountability comprises two dimensions: the first one is to feel responsible to God after leaving this world (life after death); and the second one is that the worker is accountable to his immediate manager/boss. In Islam, everyone is ultimately accountable to God and this accountability encompasses one's answerability to society (Sulaiman et al., 2004). For this study the following statements have been selected and modified from Ab. Wahab et al. (2016) to measure the Islamic value of responsibility:

1) I am aware that my employer relies on me to do my job to the best of my ability.
2) I work hard because that is what every employee is paid to do.
3) I do my work to the best that I can because of my sense of responsibility as an employee.
4) I feel guilty if I do not do my job as entrusted to me by my employer.
5) I perform my job properly and efficiently as I always feel accountable to God.

Transparency (Shaffaf)

Transparency means to put things into writing and ensuring there are witnesses of what has been done (Ab. Wahab, 2012). When applying the concept of transparency, corporations should disclose information regarding their strategies, actions, contributions to the wider community and how resources are used (Darwish, 2015). Transparency, as an Islamic value, is mentioned in the Koran in the verse: *"O ye who believe, when you deal with each other, in transactions*

involving future obligations in a fixed period of time, reduce them to writing. Let a scribe write down faithfully as between the parties: let not the scribe refuse to write: As Allah has taught him, so let Him write…" (Baqarah *282*).

For the purpose of this research the following statements have been selected and modified from the study by Ab. Wahab et al. (2016) to measure the Islamic value, piety:

1) It is important for me to put my work-related transactions into writing.
2) It is necessary to show both the positive and negative sides about my company's products/services.
3) Those who declare things frankly will not lead to that person being victimized.
4) When asked about my company's products/services, I will inform them about the advantages and disadvantages.
5) I only follow the rules if they are compatible with ethics.
6) It is never appropriate to conceal faults in a product.

Demographic Characteristics

Demographic characteristics are important predictors that influence individuals' attitudes towards technology adoption (Talukder, 2014). This has also been noted by Frambach and Schillewaert (2002) and Fishbein and Ajzen (1980). Demographics were included by Talukder (2014) in his proposed model as a separate category because they are directly related to individuals' characteristics which influence behavior.

Gender

Hu et al. (2010) in their study indicate that not much research has examined the effects of gender on technology acceptance in the Arab region. They did recognize gender as a critical contingency. The effect of gender on technology acceptance and adoption was examined by Venkatesh et al. (2000) and Gefen and Straub (1997). These studies examined what was happening in developed countries, whose socio-cultural backgrounds are completely different from those in the Arab region. Respondents in this study will be asked to specify his/her gender, i.e. male or female.

Age

Age has received very little attention in IT acceptance research (Venkatesh et al., 2000; Abbasi et al., 2011) even though it is evident that age is an important demographic predictor in organizational studies (Abbasi et al., 2015). For the age factor the respondent will be asked to specify the category he/she belongs to from four age categories which are: firstly, less than 25 years; secondly, 25-40 years; thirdly, 40-55 years; and fourthly, over 55 years.

Academic qualifications

A study by Rhee and Kim (2004) over a decade ago found that technology use is greater among higher educated people. Chawla and Joshi (2017) noted that the technology adoption decision is affected by the degree of knowledge or information one has. Each respondent will be asked to specify his/her level of education from four categories: High school graduate or equivalent; Bachelor's degree; Master's degree; and Doctorate degree.

Position

Eom et al. (2016) indicated that innovation acceptance and adoption is affected by a person's employment position or duties. The respondent will be asked to specify his/her job position from six choices, and these are: manager, technician, administrator, contractor, clerk, and other.

Attitude

Attitude refers to as a person's feelings (evaluative affect) about performing a behavior (Ajzen, 1985). Attitude toward a behavior is defined as an individual's positive or negative evaluation of performing the behavior (Kim et al., 2009). Attitude involves an individual's judgment that performing whether a behavior is good or bad and also a general evaluation that an individual is inclined or disinclined to perform the behavior (Fishbein & Ajzen, 1980).

A person's attitude is affected by all the above-mentioned variables and at the same time, it has an effect on individuals' adoption of new technologies. According to Talukder (2014) the attitude is also affected by the behavioral beliefs, normative beliefs, external factors and demographic factors. There is a very strong link between the adoption of new technologies and people's attitudes (Kwok & Gao, 2005; Lam et al., 2007). In the questionnaire the respondents

are asked to rate five items according to how their feel about using innovation on a five-point scale. These five items were devised by Talukder (2014) who adopted them from Lam et al. (2007), Al-Gahtani and King (1999) and Taylor and Todd (1995). These items have been modified, as follows, to suit the present study:

1) Using the GRP application is important to my job.
2) Using the GRP application is relevant to my job.
3) Using the GRP application is helpful.
4) Using the GRP application is practical.
5) I like the idea of using the GRP application.

The Dependent Variable

The dependent variable for this study is the adoption of technological innovation by personnel at the Ministry of Foreign Affairs in Saudi Arabia. According to Al-Gahtani and King (1999), Igbaria et al. (1997) and Igbaria et al. (1995), the usage of an innovation system is considered to be a good indicator of an operationalized system, measured by a self-reported method of actual adoption. To measure the individual adoption of the GRP by the MOFA employees, five indicators were chosen based on other studies' rationales. These five indicators are: actual amount of time spent; frequency of use; usage level; number of features used; and sophistication level of features used.

1) For the first indicator: Respondents were asked about the amount of time spent on using the GRP application per week. The question was: How much time do you spend on using the GRP application for job-related work?

The amount of time was measured on a five-point scale ranging from less than half an hour per week to more than 3 hours per week.

2) For the second indicator: Respondents were asked about how frequently they use GRP. The question was: How frequently do you use the GRP application for job-related work?

The frequency was measured on a five-point scale ranging from once a month to several times a day.

3) For the third indicator: Respondents were asked about the usage level of different features of GRP. The question was: Please indicate your level of usage of …….

The level of usage was measured on a five-point scale ranging from not used at all to used extensively.

4) For the fourth indicator: Respondents were asked about the number of features of the GRP application used. The question was: How many different GRP applications have you used? The level of usage was measured on a four-point scale ranging from nil to (number of features in the application).

Expected Benefits

Cost effectiveness

Cost effectiveness refers to organizations using the new innovative technology and systems efficiently and affordably according within internal and external mechanisms to reduce costs to the organization. Respondents were asked whether the acceptance of GRP systems had reduced average production costs and total costs in their workplace. On the basis of studies by Maxwell (2012) and Mitra and Chaya (1996), the following items were adopted:

1. The GRP system reduces the costs of operations in my organization.
2. The GRP system provides cost efficiency to my organization.
3. I believe the GRP system helps my organization to save money.
4. I think the GRP system helps to reduce the overall costs.
5. My organization is better at saving money now that the GRP system is in place.

Organizational efficiency

Organizational efficiency was measured by asking questions about whether usage of GRP systems increased organizational efficiency in terms of operations of the work processes. The following items are adopted from Mouelhi (2009), Badri and Alshare (2008) and Al-Khouri (2012):

1. Using the GRP system improves the efficiency of the organization.
2. The GRP system usage enables me to work more efficiently.
3. The GRP system increases my efficiency in collecting information.
4. The GRP system enhances my work efficiency.
5. The GRP system enables me to improve my efficiency in solving problems.

Service quality

Service quality refers to a development of a service system which is able to provide easy, convenient, accessible and comfortable services to customers, so that individuals have access information and services, can communicate and request further information effectively. The following items were adopted from Al-Jabri and Sohail (2012) and Ciampa (2013):

1. The GRP system provides convenience in completing tasks.
2. The GRP system enables me to save time and effort.
3. The GRP system helps me to access information easily.
4. The GRP system provides me with quick service.
5. The GRP system helps me to do the work with less effort.

Relationships with customers

Relationships with customers refer to a system that helps maintaining a better relationship with customers, better communication and contact with customers and clients, responding to their requests, solving problems and establishing congenial relationship among the parties involved. Items were adopted from Chan (2012), Akkucuk (2015) and Venkatesh et al. (2012):

1. The GRP system helps me to have close contact with customers.
2. The GRP system helps me to engage in good communication with customers.
3. The GRP system helps me to develop good understanding with customers.
4. The GRP system enables me to develop strong relationships with customers.

5.13 Ethical Considerations

Ethical considerations are an important aspect of any research design (Neuman, 2013). Researchers using human data in designing and conducting studies should consider the values and principles of ethical conduct (Kaewkungwal & Adams, 2019). They also noted that three core ethical considerations – risk/benefit, vulnerability, and confidentiality/privacy - are the most important ones for researchers. The American Psychological Association (APA) set five recommendations for researchers concerning the ethical issues in their work (Smith, 2003). These five recommendations are: **d**iscuss intellectual property, be conscious of multiple roles, follow informed-consent rules, respect confidentiality and privacy and tap into ethics resources.

It is very important in all research studies to protect human subjects through the application of appropriate ethical principles (Arifin, 2018). In this study, several steps were taken to ensure that the research followed the standards of ethical research practice.

Step 1: Ethical clearance was obtained prior to the study. Participation in this study was voluntary and data was collected anonymously. This study did not involve recording any personal information about subjects.

Step 2: Prior to commencing the survey in this study, all participants were made aware of the research significance and type of information being collected. They were informed about the researcher's topic (The impact of socio-cultural and religious values on the adoption of new technological innovations in Saudi Arabia) and how this study will help citizens and decision-makers to provide more efficient and effective services through online means.

Step 3: The researchers explained that participation in this research is based on subjects' interest, that they are under no obligation to take part, and that they may decline to participate at any time.

Step 4: Voluntary participation was emphasized to give respondents the right to participate and withdraw at any time.

Step 5: Assurance was also given to the participants that their data including personal information will be private, remain confidential and be secured by the researcher after the PhD thesis has been completed and papers based on it are published.

Step 6: Depending on the data collection technique and analysis, additional measures were taken to ensure that participants remained informed of the research results.

Step 7: The project was approved by the University's Human Research Ethics Committee with reference number (20180402).

Step 8: Finally, the contact details of the researcher and supervisor were given in the cover letter if respondents had any ethical concerns.

5.14 Summary

The study aims to investigate the impact of socio-cultural and religious values on the adoption of new technological innovations, particularly the implementation of the GRP system in Saudi Arabia. The population of the study consisted of employees at the Ministry of Foreign Affairs (MOFA). The quantitative survey method was used to obtain data from the study sample. A pilot study was conducted to test the instrument in order to identify and modify the items which

might be misinterpreted by respondents, skipped over or answered improperly. Validity and reliability tests were conducted to ensure that the factors are valid and reliable for further analysis. Different statistical techniques were used to analyze data collected from the sample. The chapter described in detail the constructs of the study. These constructs include cultural values, social values, religious values, demographics, and expected benefits from using the GRP system.

CHAPTER SIX: DATA ANALYSIS AND DISCUSSION

6.1 Introduction

This chapter presents the data analysis and discussions and it commences with brief information about the survey questionnaire through which the data were collected. Then it discusses the respondents' demographics information, specifically gender, age, educational qualifications and job positions. Then the chapter discusses the cross-tabulated demographics information with technology usage level. The chapter then presents the reliability, factor loading and correlations analyses. This is followed by a discussion of the regression analysis and checking the assumptions. Finally, it discusses the hypotheses results followed by the summary and conclusion.

6.2 The Questionnaire

The survey questionnaire comprised seven sections. The first section contains 4 questions about the demographic characteristics of respondents, namely gender, age, academic qualification(s), and position. The second section contains 6 questions about the usage of the GRP application, while the third comprises 23 statements about cultural values divided into 5 groups. This is followed by the fourth section containing 9 statements about the social dimensions divided into 2 groups. The fifth section contains 20 statements about Islamic values divided into 4 groups, while the sixth consists of 5 statements about respondents' attitudes. Lastly, the seventh section is concerned with 19 statements about the expected benefits which are divided into 4 groups.

The main strengths of the email survey method are anonymity, confidentiality and free expression and fairness of the responses (Bush & Hair Jr, 1985; Davis, 2000; Saleh, 2006). The self-administered mail survey approach was deemed most appropriate this kind of study (Zikmund, 2000; Saleh, 2006). To conduct the pilot study, the questionnaire was sent to one of the Ministry of Foreign Affairs (MOFA) departments which employs between 150 and 200 people. The number of those who responded to the questionnaire was 45 and their answers were treated and analyzed as a pilot study sample. Results of this study are shown later in this chapter. After confirming the validity and reliability of the instrument, the main questionnaire was emailed to the employees of the Ministry of Foreign Affairs (MOFA), excluding those who

participated in the pilot study. The total number of people who received the questionnaire was 1677.

After one week, a reminder was again sent by email encouraging the employees to respond to the questionnaire. The number of those who did so was 377, which produced a response rate of 22.48%. According to (Talukder et al., 2019):

> public servants in Middle Eastern countries are usually very reluctant to participate in this kind of research since they are not very familiar with such research. Besides, participation was completely voluntary and there was no incentive attached to participation to increase the level of participation (p. 223).

This response rate is considered sufficient according to Shamsuddoha (2004), who also stated that the number of respondents for any organizational study in a developing country is generally small, where 20% could be very optimistic. For instance, one study conducted in a developing country extracted 203 usable responses where the response rate was 17% (Shamsuddoha, 2004). In this study, any questionnaire with missing answers was discarded. It is essential before starting the analysis procedure to define and treat any kind of missing data, such as incomplete answers or missing sections (Hair et al., 2006). Out of the 377 questionnaire answers collected, 37 were considered unusable because they had missing response items. After excluding these 37 responses, the remaining 340 were analyzed as the study sample.

6.3 Demographic Information

This section describes the demographic characteristics of the participants in terms of gender, age, academic qualifications, and job position. The demographic data was evaluated in terms of descriptive and frequency analysis.

Demographic Characteristics of the respondents

Table 6.1 below provides a general overview of the respondents in terms of demographic information, with specific reference to gender, age, academic qualifications, and job position.

Table 6.1 Demographic Characteristics

Categories	Criteria	Frequency	Percentage
Gender	Male	290	85.3%
	Female	50	14.7%
Age	20-29	42	12.4%
	30-39	180	52.9%
	40-49	83	24.4%
	>=50	35	10.3%
Academic Qualification	High school (Year 12)	10	2.9%
	Diploma	43	12.6%
	Bachelor	184	54.1%
	Master	91	26.8%
	PhD	12	3.5%
Position	Manager	74	21.8%
	Technician	70	20.6%
	Administrator	108	31.8%
	Contractor	51	15.0%
	Diplomat	37	10.9%
	Total	340	100%

Gender

Gender is considered an important variable that influences people's acceptance and adoption of innovative or new technologies in Saudi Arabia. Participants were asked to indicate their gender by placing a tick next to the relevant option provided (male or female). Table 6.2 and Figure 6.1 below illustrate the gender distribution among the respondents.

Table 6.2 Gender distribution

Gender	Frequency	Percentage
Male	290	85.3%
Female	50	14.7%
Total	340	100%

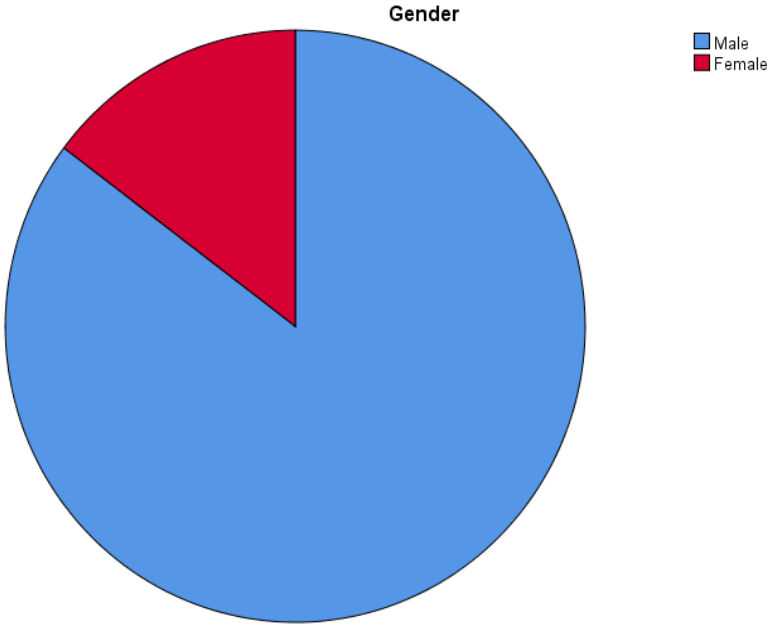

Figure 6.1 Gender distribution

As shown in Table 6.2 and Figure 6.1, 290 (85.3%) participants were men while women counted for only 50 (14.7%). The total number of female employees in the Ministry of Foreign Affairs in Saudi Arabia is between 650 and 700 out of the total of approximately 4500. This means there are 15% female employees in the ministry. With this in mind, we could say that the percentage of females in the study sample is a reasonable representation of female employees.

Age Groups

Participants were asked to tick the age category appropriate to them. Their ages ranged from 20 to more than 50. Table 6.3 and Figure 6.2 below represent the age groups of this study's respondents.

Table 6.3 Age group distribution

Age Group	Frequency	Percentage
20-29	42	12.4%
30-39	180	52.9%
40-49	83	24.4%
>=50	35	10.3%
Total	340	100%

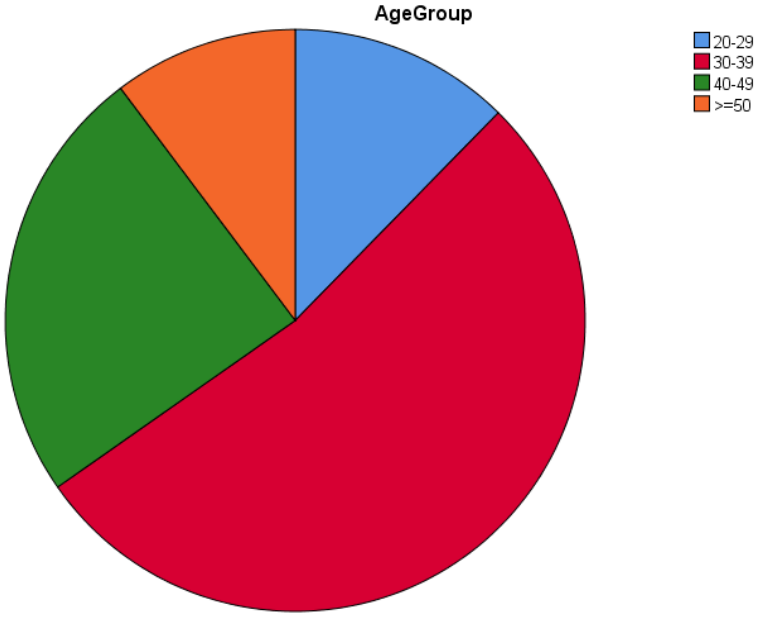

Figure 6.2 Age group distribution

The distribution of age groups shows that 42 (12.4%) were in the 21-30 age group. Most of the respondents, i.e. 180 (52.9%) fall in the second category between 31 and 40 years of age. The percentage of the 41 to 50 group was 83 (24.4%), while those older than 50 were 10.3% of the sample and they numbered 35.

Academic Qualifications

Academic qualifications and level of education constitute one factor that is expected to affect the attitude to technological innovations. Hence, the variable 'academic qualification' was investigated. Participants were asked to indicate their academic qualification by placing a tick next to the relevant option provided. The data pertaining to academic qualifications is presented in Table 6.4 and Figure 6.3.

Table 6.4 Academic Qualification

Academic Qualification	Frequency	Percentage
High school (Year 12)	10	2.9%
Diploma	43	12.6%
Bachelor	184	54.1%
Master	91	26.8%
PhD	12	3.5%
Total	340	100%

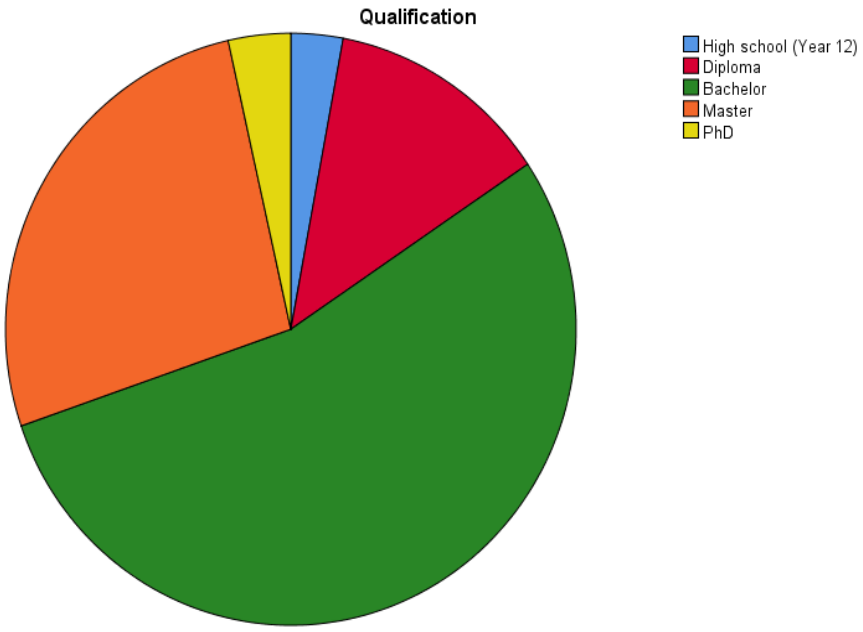

Figure 6.3 Academic Qualification Distribution

Table 6.4 and Figure 6.3 show that the majority of respondents (184) had a Bachelor degree (54.1%) followed by 91 with a Master's degree (26.8%), while 43 (12.6%) had a Diploma. Those who had a PhD numbered 12 respondents (3.5%), and only 10 (2.9%) had a high school certificate. It can be concluded from this outcome that the respondents had generally not pursued a higher education qualification, yet such a degree is considered critically important today to create a knowledge-based society that can easily use and learn from new technologies.

Job Position

A person's job socializes him or her to particular fashions, beliefs, causes, assumptions, etc., which in turn reflect that person's pattern of behaviors. In other words, a person's response to a problem is possibly determined by the type of job or she has; hence, the variable job position was investigated. Participants were asked to indicate their job position by placing a tick next to the relevant option provided. The data pertaining to job position is reflected in Table 6.5 and Figure 6.4.

Table 6.5 Job position distribution

Job Position	Frequency	Percentage
Manager	74	21.8%
Technician	70	20.6%
Administrator	108	31.8%
Contractor	51	15.0%
Diplomat	37	10.9%
Total	340	100%

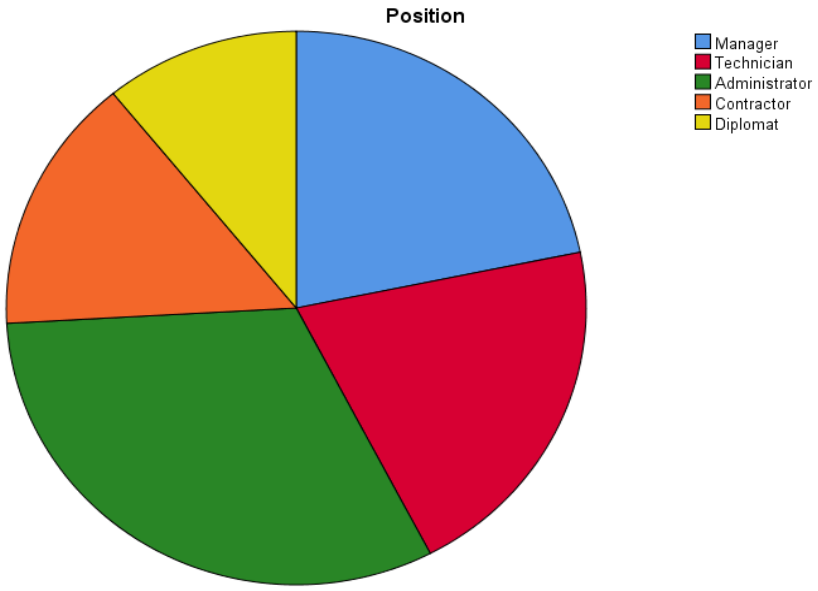

Figure 6.4 Job position distribution

The job position of the participants, as shown in Table 6.5 and Figure 6.4, shows that 108 (31.8%) worked as administrators. This was followed by managers who numbered 74 (26.8%). Meanwhile technicians were 70 (20.6%) and the contractors amounted to 51 (15%). The last category is that of diplomat and these numbered 37 (10.9%).

6.4 Cross-Tabulation for level of usage by demographics

The cross-tabulation shows the level of usage measured by time spent per day, frequency of use, using more than one feature, level of using ticketing, level of using services, and level of using training according to all respondents' demographic characteristics, i.e. gender, age,

academic level, and job position. This provides important information about how individual employees use the GRP application in their respective workplace.

Cross-Tabulation by Gender

Cross-Tabulation (Gender by time)

Table 6.6 below presents the cross-tabulation analysis for gender by time for men and women respondents. Results show that the percentage of the total number of respondents who most actively use the GRP application (more than 3 hours per day) in males is 27.4%, while for the female respondents it is 5.3%. In terms of usage duration for 2 to 3 hours per day, the percentage of male respondents is 27.9%, compared to the female participants (5.3%). The percentage of those who use the GRP application 1 to 2 hours each day is 27.6% males and 3.8% females. The lowest percentage which is less than one hour per day is 2.4% males and 0.3% females. Out of the total number of men and women respondents (340), 111 (32.6%) use the ERP system more than 3 hours every day. Meanwhile 113 respondents (32.2%) use the system 2 to 3 hours per day, while 107 (31.5%) utilize the system 1 to 2 hours during the day. Nine respondents (2.6%) use the system less than one hour per day.

Table 6.6 Cross-tabulation (Gender by time)

Gender	Time					Total
	Not at all	Less than one hour	1 to 2 hours	2 to 3 hours	More than 3 hours	
Male	0 0.0%	8 2.4%	94 27.6%	95 27.9%	93 27.4%	290 85.3%
Female	0 0.0%	1 0.3%	13 3.8%	18 5.3%	18 5.3%	50 14.7%
Total	0 0.0%	9 2.6%	107 31.5%	113 33.2%	111 32.6%	340 100.0%

Cross-Tabulation (Gender by frequency)

Table 6.7 below presents the cross-tabulation analysis for men and women's frequency in using the GRP application. Results show that the percentage of the total number of respondents who most actively use the GRP application (on a daily basis) is 29.1% for males and 5.3% females.

Those who use it several times per week amount to 33.8% for males and 5.6% for females. People who use the GRP application on a weekly basis are 19.7% for males and 3.5% for females. The lowest percentage of usage on a monthly basis is 2.6% for males and 0.3% for females. Out of the total number of 340 respondents,117 (34.4%) use the ERP system on a daily basis, while 134 (39.4%) use it more than once a week. 79 (23.2%) use the system once a week and 10 respondents (2.9%) use the system on a monthly basis.

Table 6.7 Cross-tabulation (Gender by frequency)

Gender	Frequency					Total
	Not at all	Monthly	Weekly	Several times per week	Daily	
Male	0 0.0%	9 2.6%	67 19.7%	115 33.8%	99 29.1%	290 85.3%
Female	0 0.0%	1 0.3%	12 3.5%	19 5.6%	18 5.3%	50 14.7%
Total	0 0.0%	10 2.9%	79 23.2%	134 39.4%	117 34.4%	340 100.0%

Cross-Tabulation (Gender by features)

Table 6.8 below presents the cross-tabulation analysis for the frequency of using more than one feature of the GRP application by male and female respondents. Results reveal that the percentages of those who use it all the time were 25.3% for males and 4.4% for females. Those who use it frequently are 26.2% for males and 4.4% for females. People who access the GRP application quite often are 26.8% for males and 4.1% for females. The least amount of usage which meant using it only rarely were for men, 7.1% and for women, 1.8%. Out of the total 340 respondents, 101 (29.7%) use the ERP system all the time, 104 respondents (30.6%) use the system frequently, and 105 respondents (30.9%) use the system quite often. 30 respondents (8.8%) use the system rarely.

Table 6.8 Cross-tabulation (Gender by features)

Gender	Features					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
Male	0 0.0%	24 7.1%	91 26.8%	89 26.2%	86 25.3%	290 85.3%
Female	0 0.0%	6 1.8%	14 4.1%	15 4.4%	15 4.4%	50 14.7%
Total	0 0.0%	30 8.8%	105 30.9%	104 30.6%	101 29.7%	340 100.0%

Cross-Tabulation (Gender by usage ticketing)

Table 6.9 below presents the cross-tabulation analysis regarding the frequency of male and female participants in using the ticketing module of the GRP application. Results indicate that the percentage of those who use it all the time is 28.5% for males and 5.6% for females. Those who use it frequently are 36.5% for males and 5.6% for females. Those men who use it quite often amount to 17.1% while for women it is 3.2%. The lowest percentages of usage and this refers to it on a rare basis, were 3.2% for males and 0.3% for females. Out of the total number of 340 respondents, 116 (34.1%) use the ERP system all the time, while 143 (42.1%) use it frequently. Furthermore 69 (20.3%) use it quite often and only 12 (3.5%) use it rarely.

Table 6.9 Cross-tabulation (Gender by usage-ticketing)

Gender	Usage- Ticketing					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
Male	0 0.0%	11 3.2%	58 17.1%	124 36.5%	97 28.5%	290 85.3%
Female	0 0.0%	1 0.3%	11 3.2%	19 5.6%	19 5.6%	50 14.7%
Total	0 0.0%	12 3.5%	69 20.3%	143 42.1%	116 34.1%	340 100.0%

Cross-Tabulation (Gender by usage-services)

Below, Table 6.10 summarizes the cross-tabulation analysis for the frequency of using the GRP application's services module by male and female respondents. Results show that the ratio of respondents who use it all the time were 23.5% for males and 3.5% for females. Those who use it frequently are 28.8% for males and 5.3% for females. People use it quite often are, firstly, for males 24.4% males and secondly, for females, 4.7%. The smallest percentages of usage for the

rarely use basis amounted to 8.5% males and 1.2% for females. Regarding the total number of respondents (340), 101 (29.7%) use the ERP system all the time, 104 (30.6%) use it frequently, 105 (30.9%) use it quite often, and lastly, 30 (8.8%) use it only rarely.

Table 6.10 Cross-tabulation (Gender by usage-services)

Gender	Usage-Services					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
Male	0 0.0%	29 8.5%	83 24.4%	98 28.8%	80 23.5%	290 85.3%
Female	0 0.0%	4 1.2%	16 4.7%	18 5.3%	12 3.5%	50 14.7%
Total	0 0.0%	33 9.7%	99 29.1%	116 34.1%	92 27.1%	340 100.0%

Cross-Tabulation (Gender by usage training)

Table 6.11 below presents the cross-tabulation analysis for the frequency of using the GRP application's training module by male and female respondents. The findings indicate that the proportion of respondents who use it all the time were 27.6% for males and 5.6% for females. Those who use it frequently are 38.2% for males and 5.3% for females. In terms of using it quite often, men amounted to17.4% while women constituted 3.8%. The smallest percentage of usage, i.e. rarely, was 1.8% for males and 0.0% for females. Those who did not use it at all were restricted only to the men and constituted only 0.3% of the sample. For the total number of 340 respondents, 113 (33.2%) use the ERP system all the time, 148 (43.5%) use it frequently, 72 (21.2%) use it quite often, 6 (1.8%) use it rarely while only one male (0.3%) did not use it at all.

Table 6.11 Cross-tabulation (Gender by usage training)

Gender	Usage-Training					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
Male	1 0.3%	6 1.8%	59 17.4%	130 38.2%	94 27.6%	290 85.3%
Female	0 0.0%	0 0.0%	13 3.8%	18 5.3%	19 5.6%	50 14.7%
Total	1 0.3%	6 1.8%	72 21.2%	148 43.5%	113 33.2%	340 100.0%

Cross-Tabulation for age

Cross-Tabulation (Age by time)

Results of the cross-tabulation for age by time are presented in Table 6.12 below. The percentages of the respondents in terms of age groups and referring to those who use the GRP application for more than 3 hours are as follows: 4.1% for the 20-29 group, 15.0% for the 30-39 group, 9.4% for the 40-49 group, and 4.1% for the 50 years old or over. The total percentage of all respondents who use the GRP application for more than 3 hours a day is 32.6%.

The percentages of participants who use the GRP application 2 to 3 hours per day are: 3.2% for the 20 to 29 age group, 18.8% for the 30 to 39 age group, 7.9% for the 40 to 49 age group, and 3.2% representing those in the 50 years old or over group. The total percentage of all respondents who use the GRP application 2 to 3 hours per day is 33.2%. Meanwhile the percentages of respondents who use the GRP application 1 to 2 hour per day are: 4.7% for the 20 to 29 age group, 17.6% for the 30 to 39 age group, 6.2% for the 40 to 49 age group, and 2.9% for those workers who are 50 years of age or older. The total percentage of all respondents who use the GRP application for 1 to 2 hours per day is 31.5%. Lastly, regarding the respondents who use the GRP application less than one hour per day, the percentages are: 0.3% for the 20-20 age group, 1.5% for the 30-39 age group, 0.9% for the 40-49 age group, and 0% for those who are 50 years old or over. The total percentage of all respondents who use the GRP application for less than 1 hour each day is 2.6%.

Table 6.12 Cross-tabulation (Age by time)

Age	Time					Total
	Not at all	Less than one hour	1 to 2 hours	2 to 3 hours	More than 3 hours	
20-29	0 0.0%	1 0.3%	16 4.7%	11 3.2%	14 4.1%	42 12.4%
30-39	0 0.0%	5 1.5%	60 17.6%	64 18.8%	51 15.0%	180 52.9%
40-49	0 0.0%	3 0.9%	21 6.2%	27 7.9%	32 9.4%	83 24.4%
50<	0 0.0%	0 0.0%	10 2.9%	11 3.2%	14 4.1%	35 10.3%
Total	0 0.0%	9 2.6%	107 31.5%	113 33.2%	111 32.6%	340 100.0%

Cross-Tabulation (Age by frequency)

The results for the cross-tabulation for age by time are presented in Table 6.13 below. Regarding how many respondents use the GRP application on a daily basis the percentages are: 4.4% for the 20-29 age group, 16.2% for the 330-39 age group, 9.4% for the 40-49 age group, and 4.4% referring to those who are 50 years old or over. The total percentage of all respondents who use the GRP application daily is 32.4%. Meanwhile, for those respondents who use the GRP application several times per week the figures are: 3.8% for the 20-29 age group, 22.4% for the 30-39 age group, 10.0% for the 40- 49 age group, and 3.2% for the 50 years old or older age group. The total percentage of all respondents who use the GRP application several times per week is 39.4%.

The percentage of those respondents who use the GRP application on a weekly basis is 3.5% in the 20 to 29 group, 12.6% for the 30 to 39 group, 5.0% for people aged 40 to 49 years, and 12.1% from those who are 50 years of age or more. The total percentage of all respondents who use the GRP weekly is reported to be 23.2%. Lastly, the figures for the respondents who use the GRP application on a monthly basis are: 0.6% for the 20 to 29 age group, 1.8% for the 30-39 age group, 0% for the 40-49 age group, and 0.6% for workers who are 50 years old or over. The total percentage of all respondents who use the GRP monthly is 2.9%.

Table 6.13 Cross-tabulation (Age by frequency)

Age	Frequency					Total
	Not at all	Monthly	Weekly	Several times per week	Daily	
20-29	0 0.0%	2 0.6%	12 3.5%	13 3.8%	15 4.4%	42 12.4%
30-39	0 0.0%	6 1.8%	43 12.6%	76 22.4%	55 16.2%	180 52.9%
40-49	0 0.0%	0 0.0%	17 5.0%	34 10.0%	32 9.4%	83 24.4%
50<	0 0.0%	2 0.6%	7 2.1%	11 3.2%	15 4.4%	35 10.3%
Total	0 0.0%	10 2.9%	79 23.2%	134 39.4%	117 34.4%	340 100.0%

Cross-Tabulation (Age by features)

Outcomes for the cross-tabulation for age when using more than one feature of the GRP application are presented in Table 6.14 below. The result shows that people who use more than one feature of the GRP application all-the-time amount to 3.8% in the 20 to 29 age group, while it is 14.1% in the 30 to 39 age group. For the 40-49 age group it is 7.4% and 4.4% in the 50 years old or older age group. The total percentage of all respondents who use the GRP application all the time is 29.7%. Regarding those respondents who use the GRP application frequently the percentages are: 3.5% for the 20 to 29 group, 17.4% for the 30 to 39 group, 7.6% for the 40 to 49 group, and 2.1% for the 50 years old or over age group. The total percentage of all respondents who use the GRP application frequently is 30.6%.

For the percentage of the respondents who use the GRP application quite often it is 4.4% in the 20 to 29 age group, and 16.8% for the 30 to 39 age group. Meanwhile, the percentage for the 40-49 age group is 6.8% followed by 2.9% for those who are 50 years old or over. The total percentage of all respondents who use the GRP quite often is 30.9%. Referring to the respondents who use the GRP application rarely, the percentages are as follows: 0.6% for the 20-29 age group, 4.7% for the 30-39 group, 2.6% for the 40-49 age group, and 0.9% for people who are 50 years old or over. The total percentage of all participants who use the GRP application GRP application rarely amounts to 8.8%.

Table 6.14 Cross-tabulation (Age by features)

Age	Features					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
20-29	0 0.0%	2 0.6%	15 4.4%	12 3.5%	13 3.8%	42 12.4%
30-39	0 0.0%	16 4.7%	57 16.8%	59 17.4%	48 14.1%	180 52.9%
40-49	0 0.0%	9 2.6%	23 6.8%	26 7.6%	25 7.4%	83 24.4%
50<	0 0.0%	3 0.9%	10 2.9%	7 2.1%	15 4.4%	35 10.3%
Total	0 0.0%	30 8.8%	105 30.9%	104 30.6%	101 29.7%	340 100.0%

Cross-Tabulation (Age by usage ticketing)

The results for the cross-tabulation for age by using the GRP application's ticketing module are presented in Table 6.15 below. Here the figures for respondents who use the ticketing module all the time is 3.8% for those aged 20 to 29 years, while it is 16.2% for those in the 30 to 39 age group. Meanwhile, 9.7% in the 40-49 age group employ this feature, followed by 4.4% for those who are 50 years old or over. The total percentage of all respondents who use the ticketing module all the time is 34.1%. Respondents who use the ticketing module frequently amount to 4.4% for the 20 to 29 age group, 22.4% for the 30 to 39 age group, 12.1% for the 40 to 49 age group, and 3.2% for those who are 50 years old or more. Percentage-wise all those respondents who use the ticketing module frequently constitute 42.1%.

The percentages of respondents who use the ticketing module quite often are: 3.5% for the 20 to 29 age group, 12.6% for the 30 to 39 age group, 2.1% for the 40 to 49 age group, and 2.1% from those who are 50 years old or over. The total percentage of all respondents who use the ticketing module quite often is 20.3%. Meanwhile the percentages of people who use the ticketing module rarely are: 0.6% for the 20 to 29 age group, 1.8% for the 30 to 39 age group, 0.6% for the 40 to 49 age group, and 0.6% for those aged 50 years or more. The total percentage of all respondents who use the ticketing module rarely is 3.5%.

Table 6.15 Cross-tabulation (Age by usage ticketing)

Age	Usage- Ticketing					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
20-29	0 0.0%	2 0.6%	12 3.5%	15 4.4%	13 3.8%	42 12.4%
30-39	0 0.0%	6 1.8%	43 12.6%	76 22.4%	55 16.2%	180 52.9%
40-49	0 0.0%	2 0.6%	7 2.1%	41 12.1%	33 9.7%	83 24.4%
50<	0 0.0%	2 0.6%	7 2.1%	11 3.2%	15 4.4%	35 10.3%
Total	0 0.0%	12 3.5%	69 20.3%	143 42.1%	116 34.1%	340 100.0%

Cross-Tabulation (Age by usage-services)

The results of the cross-tabulation for age by using the RP system's services module of the GRP are presented in Table 6.16 below. It emerges that the percentages of the respondents who use the services module all the time are as follows: 3.5% from for the 20 to 29 age group, 12.6% for the 30 to 39 age group, 7.1% for the 40 to 49 age group, and 3.8, for those who are 50 years old or over. The total percentage of all respondents who use the services module all the time is 27.1%. Referring to those respondents who use the services module frequently the figures are: 3.8% for the 20 to 29 age group, 17.9% for the 30 to 39 age group, 9.4% for the 40 to 49 age group, and 2.9% for the 50 and over age group. The total percentage of all respondents who use the services module frequently is 34.1%.

For those respondents who use the services module quite often the statistics are as follows: 3.5% for the 20 to 29 age group, 17.4% for the 30 to 39 age group, 5.6% for the 40 to 49 age group, and 2.6% in the 50 years old or over age bracket. The total percentage of all respondents who use the services module quite often amounts to 29.1%. Meanwhile with reference to respondents who use the services module rarely the following percentages apply: 1.5% for the 20 to 29 age group, 5.0% for the 30 to 39 age group, 2.4% for the 40 to 49 age group, and 0.9% for those who are 50 years old or more. The total percentage of all respondents who use the services module rarely is 9.7%.

Table 6.16 Cross-tabulation (Age by usage-services)

Age	Usage-Services					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
20-29	0 0.0%	5 1.5%	12 3.5%	13 3.8%	12 3.5%	42 12.4%
30-39	0 0.0%	17 5.0%	59 17.4%	61 17.9%	43 12.6%	180 52.9%
40-49	0 0.0%	8 2.4%	19 5.6%	32 9.4%	24 7.1%	83 24.4%
50<	0 0.0%	3 0.9%	9 2.6%	10 2.9%	13 3.8%	35 10.3%
Total	0 0.0%	33 9.7%	99 29.1%	116 34.1%	92 27.1%	340 100.0%

Cross-Tabulation (Age by usage-training)

Results for the cross-tabulation for age by using the GRP application's training module are presented in Table 6.17 below. Firstly, respondents who use the training module amount to 4.7% for the 20 to 29 age group. Secondly, it is 14.7% for the 30 to 39 age group, followed by 8.8% for the 40 to 49 age group, and lastly, 5.0% for the 50 years old or over age group. The total percentage of all respondents who use the training module all the time is 33.2%. With reference to those who utilize the training module frequently the percentages are: 4.4% for the 20 to 29 age group, 24.1% for the 30 to 39 age group, 11.2% for the 40 to 49 age group, and 3.8% for those workers who are 50 years old or over. The total percentage of all respondents who use the training module frequently is 43.5%.

For the respondents who use the training module quite often the relevant percentages are: 2.9% for the 20 to 29 age group, 12.6% for the 30 to 39 age group, 4.1% for the 40 to 49 age group, and 1.5% for those who are 50 years old or over. The total percentage of all respondents who use the training module quite often is 21.2, while the statistics for respondents who use the training module are: firstly, 0.3% for the 20 to 29 age group, secondly, 1.2% for the 30 to 39 age group, thirdly, 0.3% for the 40 to 49 age group, and fourthly, 0% for the 50 years old or over age group. The total percentage of all respondents who use the training module is 1.8%. Regarding those respondents who did not use the training module at all the figures are: 0% for the 20 to 29 age group, 0.3% for the 30 to 39 age group, 0% for the 40 to 49 age group, and 0% for those people who are 50 years old or over. The total percentage of all respondents who did not use the training module at all is 0.3%.

Table 6.17 Cross-tabulation (Age by usage training)

Age	Usage-Training					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
20-29	0 0.0%	1 0.3%	10 2.9%	15 4.4%	16 4.7%	42 12.4%
30-39	1 0.3%	4 1.2%	43 12.6%	82 24.1%	50 14.7%	180 52.9%
40-49	0 0.0%	1 0.3%	14 4.1%	38 11.2%	30 8.8%	83 24.4%
50<	0 0.0%	0 0.0%	5 1.5%	13 3.8%	17 5.0%	35 10.3%
Total	1 0.3%	6 1.8%	72 21.2%	148 43.5%	113 33.2%	340 100.0%

Cross-Tabulation for academic status

Cross-Tabulation (Academic status by time)

The results concerning the cross-tabulation for academic status by time are presented in Table 6.18 below. Here the percentages of the respondents who use the GRP application for more than 3 hours per day are: 1.5% for those with a high school certificate, 3.5% with a Diploma certificate, 17.9% with a Bachelor degree, 8.2% with a Master's degree, and 1.5% who have a PhD. The total percentage of all respondents who use the GRP application for more than 3 hours per day is 32.6%. Meanwhile, the percentages of respondents who use the GRP application from 2 to 3 hours are: 0% for those with a high school certificate, 6.2% with a Diploma, 17.6% with a Bachelor degree, 7.9% with a Master's degree, and 1.5% for those who have a PhD. The total percentage of all respondents who use the GRP application from 2 to 3 hours per day is 33.2%.

Table 6.18 Cross-tabulation (Academic by time)

Academic	Time					Total
	Not at all	Less than one hour	1 to 2 hours	2 to 3 hours	More than 3 hours	
High school (Year 12)	0 0.0%	0 0.0%	5 1.5%	0 0.0%	5 1.5%	10 2.9%
Diploma	0 0.0%	1 0.3%	9 2.6%	21 6.2%	12 3.5%	43 12.6%
Bachelor	0 0.0%	7 2.1%	56 16.5%	60 17.6%	61 17.9%	184 54.1%
Master	0 0.0%	1 0.3%	35 10.3%	27 7.9%	28 8.2%	91 26.8%
PhD	0 0.0%	0 0.0%	2 0.6%	5 1.5%	5 1.5%	12 3.5%
Total	0 0.0%	9 2.6%	107 31.5%	113 33.2%	111 32.6%	340 100.0%

The percentages of participants who use the GRP application from 1 to 2 hours are as follows: 1.5% with a high school certificate, 2.6% with a Diploma, 16.5% with a Bachelor degree, 10.3% with a Master's degree, and 0.6% who qualified with a PhD. The total percentage of all respondents who use the GRP application from 1 to hours per day is 31.5%. The percentage of

the respondents who use the GRP application for less than one-hour per day is 0% for those with a school certificate, while it is 0.3% for those with a Diploma. It is 2.1% for people with a Bachelor degree and 0.3% for those with a Master's degree. It is 0% from those who have a PhD. The total percentage of all respondents who use the GRP application for less than one hour per day is 2.6%.

Cross-Tabulation (Academic by frequency)

Findings concerning the cross-tabulation for academic status by the frequency of using the GRP application are presented in Table 6.19 below. For the respondents who use the GRP application on a daily bases the percentages are: 1.5% for those with a high school certificate, 3.2% for those with a Diploma, 17.9% for those with a Bachelor degree, 10.0% for those with a Master's degree, and 1.8% for people with a PhD. The total percentage of all respondents who use the GRP application daily is 34.4%. The statistics for those people who employ the GRP application several times per week are: 0.6% for those with a high school certificate, 6.8% for those with a Diploma, 20.3% for people with a Bachelor degree, 10. 6% who qualified with a Master's degree, and 1.2% for those with a PhD. The total percentage of all respondents who use the GRP application several times per week is 39.4%.

Table 6.19 Cross-tabulation (Academic status by frequency)

Academic	Frequency					Total
	Not at all	Monthly	Weekly	Several times per week	Daily	
High school (Year 12)	0 0.0%	0 0.0%	3 0.9%	2 0.6%	5 1.5%	10 2.9%
Diploma	0 0.0%	1 0.3%	8 2.4%	23 6.8%	11 3.2%	43 12.6%
Bachelor	0 0.0%	7 2.1%	47 13.8%	69 20.3%	61 17.9%	184 54.1%
Master	0 0.0%	2 0.6%	19 5.6%	36 10.6%	34 10.0%	91 26.8%
PhD	0 0.0%	0 0.0%	2 0.6%	4 1.2%	6 1.8%	12 3.5%
Total	0 0.0%	10 2.9%	79 23.2%	134 39.4%	117 34.4%	340 100.0%

For those respondents who use the GRP application weekly the percentages are: 0.9% for those with a high school certificate, 2.4% for those with a Diploma, 13.8% for those with a Bachelor degree, 5.6% for those with a Master's degree, and 0.6% for those with a PhD. The total percentage of all respondents who use the GRP application weekly is 23.2%. Meanwhile the percentages of respondents who use the GRP application on a monthly basis are: 0% for those with a high school certificate, 0.3% for those with a Diploma, 2.1% for people with a Bachelor degree, 0.6% from those having a Master's degree, and 0% for graduates with a PhD. The total percentage of all respondents who use the GRP application on a monthly basis is 2.9%.

Cross-Tabulation (Academic status by features)

Cross-tabulation results for academic status by using more than one feature of the GRP application are presented in Table 6.20 below. Percentages of the respondents who use the GRP application all the time are: 1.2% for those with a high school certificate, 2.9% for those with a Diploma, 15.9% for those with a Bachelor degree, 8.2% for those with a Master's degree, and 1.5% for people who have a PhD. The total percentage of respondents who use the GRP application all the time is 29.7%. The percentage of participants who use the GRP application frequently is 0.6% for those holding a high school certificate, followed by 5.3% who are people with a Diploma. In turn, 15.9% have a Bachelor degree, followed by 8.2% with a Master's degree. The last are 0.6% who have PhDs. The total percentage of all respondents who use the GRP application frequently is 30.6%.

Table 6.20 Cross-tabulation (Academic status by features)

Academic	Features					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
High school (Year 12)	0 0.0%	0 0.0%	4 1.2%	2 0.6%	4 1.2%	10 2.9%
Diploma	0 0.0%	3 0.9%	12 3.5%	18 5.3%	10 2.9%	43 12.6%
Bachelor	0 0.0%	18 5.3%	58 17.1%	54 15.9%	54 15.9%	184 54.1%
Master	0 0.0%	8 2.4%	27 7.9%	28 8.2%	28 8.2%	91 26.8%
PhD	0 0.0%	1 0.3%	4 1.2%	2 0.6%	5 1.5%	12 3.5%
Total	0 0.0%	30 8.8%	105 30.9%	104 30.6%	101 29.7%	340 100.0%

Regarding those respondents who use the GRP application quite often, the percentages are as follows: 1.2% for those with a high school certificate, 3.5% for those having a Diploma, 17.1% for those with a Bachelor degree, 7.9% from those who have a Master's degree, and 1.2% for those who have PhDs. The total percentage of all respondents who utilize the GRP application quite often is 30.9%. Percentage-wise, those respondents who use the GRP application rarely are as follows: 0% who have a high school certificate, 0.9% with a Diploma, 5.3% for those with a Bachelor degree, 2.4% for those with a Master's degree, and 0.3% who have achieved a PhD. The total percentage of all respondents who use the GRP application rarely is 8.8%.

Cross-Tabulation (Academic status by usage ticketing)

Results for the cross-tabulation concerning academic status by using the GRP application's ticketing module are presented in Table 6.2.1 below. The outcome shows that those respondents who use the ticketing module all the time is 1.2% for people with a high school certificate. It is 4.1% for those with a Diploma and 18.8% with a Bachelor degree. Meanwhile it is 8.2% from those who have a Master's degree and graduates with a PhD are 1.8% of the sample. The total percentage of all respondents who use the ticketing module all the time is 34.1%. The percentages of people who use it frequently are: 0.9% for those with a high school certificate, 6.8% for those with a Diploma, 21.5% for people with a Bachelor degree, 21.1% for people who have Master's degrees, and 0.9% for graduates with a PhD. The total percentage of all respondents who use the ticketing module frequently is 42.1%.

Percentages of respondents who use the ticketing module quite often are: 0.9% from those who have a high school certificate, 1.5% from those who have a Diploma, 10.9% from those who have a Bachelor degree, 6.2% from those who have Master's degrees, and 0.9% from those who have a PhD. All respondents who use the ticketing module quite often constituted 20.9% of the sample. Regarding those respondents who use the ticketing module rarely, the statistics are reported here: 0% for those with a high school certificate, 0.3% for those who have a Diploma, 2.9% for those with a Bachelor degree, 0.3% for those having a Master's degree, and 0% for those with a PhD. The total percentage of all respondents who use the ticketing module rarely is 3.5%.

Table 6.21 Cross-tabulation (Academic status by usage ticketing)

Academic	Usage-Ticketing					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
High school (Year 12)	0 0.0%	0 0.0%	3 0.9%	3 0.9%	4 1.2%	10 2.9%
Diploma	0 0.0%	1 0.3%	5 1.5%	23 6.8%	14 4.1%	43 12.6%
Bachelor	0 0.0%	10 2.9%	37 10.9%	73 21.5%	64 18.8%	184 54.1%
Master	0 0.0%	1 0.3%	21 6.2%	41 12.1%	28 8.2%	91 26.8%
PhD	0 0.0%	0 0.0%	3 0.9%	3 0.9%	6 1.8%	12 3.5%
Total	0 0.0%	12 3.5%	69 20.3%	143 42.1%	116 34.1%	340 100.0%

Cross-Tabulation (Academic status by usage-services)

Table 6.22 below summarizes the results of the cross-tabulation for academic status by using the services module of the GRP application. Here the percentage of respondents who use the services module all the time is 1.8% for those with a school certificate, and 2.6% for those who have a Diploma. Meanwhile it is 12.4% for people with a Bachelor degree, followed by 85% who have a Master's degree, and 1.8% for graduates with a PhD. The total percentage of all respondents who use the services module all the time is 27.1%.

Meanwhile the percentage of respondents who use the services module frequently is 0.6% for those with a high school certificate, followed by: 5.9% from those who have a Diploma, 17.4% who have a Bachelor degree, 6.5% for people with Master's degrees, and 0.6% for people with PhDs. For respondents who use services module frequently the total percentage is 34.1%. Referring to people who use the services module quite often the figures are: 0.6% for those with a high school certificate, 3.8% for those with a Diploma, 10.9% for those with a Bachelor degree, 6.2% for those workers with a Master's degree, and 0.9% for those with a PhD. The total percentage of all respondents who use the services module quite often is 29.1%.

The percentage of respondents who use the services module rarely is 0% and this refers to those with a high school certificate. It is 0.3% for those armed with a Diploma, 6.2% for those who

have a Bachelor degree, 2.9% for those with a Master's degree, and 0.3% for people who have PhDs. The total percentage of all respondents who use the services module system rarely is 9.7%.

Table 6.22 Cross-tabulation (Academic status by usage-services)

Academic	Usage-Services					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
High school (Year 12)	0 0.0%	0 0.0%	2 0.6%	2 0.6%	6 1.8%	10 2.9%
Diploma	0 0.0%	1 0.3%	13 3.8%	20 5.9%	9 2.6%	43 12.6%
Bachelor	0 0.0%	21 6.2%	59 17.4%	62 18.2%	42 12.4%	184 54.1%
Master	0 0.0%	10 2.9%	22 6.5%	30 8.8%	29 8.5%	91 26.8%
PhD	0 0.0%	1 0.3%	3 0.9%	2 0.6%	6 1.8%	12 3.5%
Total	0 0.0%	33 9.7%	99 29.1%	116 34.1%	92 27.1%	340 100.0%

Cross-Tabulation (Academic status by usage training)

Results for the cross-tabulation for academic status when using the training module of the GRP application are presented in Table 6.23 below. The percentages of respondents who use the training module all the time are: 1.8% for those with a high school certificate, 4.1% for those who have a Diploma, 17.4% for those with a Bachelor degree, 8.5% for people with a Master's degree, and 1.5% for those who have PhDs. The total percentage of all respondents who use the training module all the time is 33.2%. Meanwhile the percentage of respondents who use the training module frequently is 0.6% for people with a high school certificate, while it is 6.2% for those with a Diploma. The percentage is 23.5% for those who have a Bachelor degree and 11.5% for people with a Master's degree, and 1.8% for those with a PhD. The total percentage of all respondents who use the training module frequently is 43.5%.

The percentages of respondents who use the training module quite often are documented here: 0.6% for those with high school certificates, 1.8% for those people with Diploma, 21.1% for those who have a Bachelor degree, 6.5% for people with Master's degree, and 0.9% for those

who graduated with a PhD. The total percentage of all respondents who use the training module quite often is 21.2%.

Regarding the respondents who use the training module rarely the percentages are: 0% for those with a school certificate, 0.3% for those who have a Diploma, 0% for people who have Bachelor degrees, 0% from those who have Master's degrees, and 0% for people who have PhDs. The total percentage of all respondents who use the training module rarely is 1.8%. Meanwhile, the figures for those respondents who did not use the training module at all are: 0% for those with a high school certificate, 0.3% for those with Diplomas, 1.2% for those who have a Bachelor degree, 0.3% for those with a Master's degree, and 0% for people with PhDs. The total percentage of all respondents who use the training module rarely is 0.3%.

Table 6.23 Cross-tabulation (Academic status by usage training)

Academic	Usage-Training					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
High school (Year 12)	0 0.0%	0 0.0%	2 0.6%	2 0.6%	6 1.8%	10 2.9%
Diploma	1 0.3%	1 0.3%	6 1.8%	21 6.2%	14 4.1%	43 12.6%
Bachelor	0 0.0%	4 1.2%	41 12.1%	80 23.5%	59 17.4%	184 54.1%
Master	0 0.0%	1 0.3%	22 6.5%	39 11.5%	29 8.5%	91 26.8%
PhD	0 0.0%	0 0.0%	1 0.3%	6 1.8%	5 1.5%	12 3.5%
Total	1 0.3%	6 1.8%	72 21.2%	148 43.5%	113 33.2%	340 100.0%

Cross-Tabulation for position

Cross-Tabulation (Position by time)

The findings of the cross-tabulation for academic status by time are presented in Table 6.24 below. For the respondents who use the GRP application for more than 3 hours per day the percentage is 7.1% for those who have high school certificates. It is 5.0% for people with Diplomas and 11.2% for those with a Bachelor degree. The percentage is 5.6% for people with

Master's degrees, and 3.2% for those with a PhD. The total percentage of all respondents who use the GRP application for more than 3 hours per day is 32.6%. Regarding the percentages for respondents who use the GRP application from 2 to 3 hours, these are as follows: 7.9% for high school certificate holders, 7.9% for those with Diplomas, 9.4% for Bachelor degree holders, 5.3% for people with a Master's degree, and 2.6% for those with a PhD. The total percentage of all respondents who use the GRP application from 2 to 3 hours per day is 33.2%.

Respondents who use the GRP application from 1 to 2 hours have the following percentages: 6.5% for those with high school certificates, 7.6% for people with Diplomas, 10.0% for those with a Bachelor degree, 3.5% for people with a Master's degree, and 3.8% for workers with a PhD. The total percentage of all respondents who use the GRP application from 1 to hours per day is 31.5%. Regarding respondents who use the GRP application for less than one hour per day, the statistics are: 03% for those with high school certificates, 0% for those having Diplomas, 1.2% for people with Bachelor degrees, 0.6% for those with a Master's degree, and 0.6% for those with PhDs. The total percentage of all respondents who use the GRP application for less than one hour per day is 2.6%.

Table 6.24 Cross-tabulation (Position by time)

Position	Time					Total
	Not at all	Less than one hour	1 to 2 hours	2 to 3 hours	More than 3 hours	
Manager	0 0.0%	1 0.3%	22 6.5%	27 7.9%	24 7.1%	74 21.8%
Technician	0 0.0%	0 0.0%	26 7.6%	27 7.9%	17 5.0%	70 20.6%
Administrator	0 0.0%	4 1.2%	34 10.0%	32 9.4%	38 11.2%	108 31.8%
Contractor	0 0.0%	2 0.6%	12 3.5%	18 5.3%	19 5.6%	51 15.0%
Diplomat	0 0.0%	2 0.6%	13 3.8%	9 2.6%	13 3.8%	37 10.9%
Total	0 0.0%	9 2.6%	107 31.5%	113 33.2%	111 32.6%	340 100.0%

Cross-Tabulation (Position by frequency)

Results of the cross-tabulation for academic status by the frequency of using the GRP application are presented in Table 6.25 below. The percentage of respondents who use the GRP application on a daily basis is 7.6% for high school certificate holders, and 4.7% for people who have Diplomas. 11.8% is reported for those with a Bachelor degree and 5.9% for those with a Master's degree. The percentage for those with a PhD is 4.4%. The total percentage of all respondents who use the GRP application on a daily basis is 34.4%.

Table 6.25 Cross-tabulation (Position by frequency)

Position	Frequency					Total
	Not at all	Monthly	Weekly	Several times per week	Daily	
Manager	0 0.0%	2 0.6%	16 4.7%	30 8.8%	26 7.6%	74 21.8%
Technician	0 0.0%	0 0.0%	19 5.6%	35 10.3%	16 4.7%	70 20.6%
Administrator	0 0.0%	4 1.2%	25 7.4%	39 11.5%	40 11.8%	108 31.8%
Contractor	0 0.0%	3 0.9%	10 2.9%	18 5.3%	20 5.9%	51 15.0%
Diplomat	0 0.0%	1 0.3%	9 2.6%	12 3.5%	15 4.4%	37 10.9%
Total	0 0.0%	10 2.9%	79 23.2%	134 39.4%	117 34.4%	340 100.0%

Furthermore, the percentages of respondents who use the GRP application several times per week are reported here: 8.8% for those who have a high school certificate, 10.3% for people who have a Diploma, 11.5% for those with a Bachelor degree, 5.3% for people with Master's degrees, and 3.5% for those with a PhD. The total percentage of all respondents who use the GRP application several times per week is 39.4%. Respondents who use the GRP application weekly amount to 4.7% for those with a high school certificate, 5.6% for those who have Diplomas, 7.4% for those having Bachelor degrees, 2.9% for people with a Master's degree, and 2.6% for those who have PhDs. The total percentage of all respondents who use the GRP application weekly is 23.2%. The percentages of respondents who use the GRP application on a monthly basis are: 0.6% for high school certificate holders, 0% for those with Diplomas, 1.2%

for Bachelor degree holders, 0.9% for those with Master's degrees, and 0.3% for those with PhDs. The total percentage of all respondents who use the GRP application on a monthly basis is 2.9%.

Cross-Tabulation (Position by features)

Results regarding the cross-tabulation for academic status by using more than one feature of the GRP application are documented in Table 6.26 below. The respondents who use the GRP application all the time represent 7.1% and these are those people have high school certificates. It is 3.8% for those who have Diplomas and 10.0% for people with a Bachelor degree. The percentage is 5.6% for those with a Master's degree, and 3.2% for holders. The total percentage of all respondents who use the GRP application all the time is 29.7%. Meanwhile the percentages of respondents who use the GRP application frequently are: 4.7% for those who have a high school certificate, 8.2% for those with Diplomas, 10.3% for people with Bachelor degrees, 4.7% for those with a Master's degree, and 2.6% for people with a PhD. The total percentage of all respondents who use the GRP application frequently is 30.6%.

Table 6.26 Cross-tabulation (Position by features)

Position	Features					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
Manager	0 0.0%	5 1.5%	29 8.5%	16 4.7%	24 7.1%	74 21.8%
Technician	0 0.0%	4 1.2%	25 7.4%	28 8.2%	13 3.8%	70 20.6%
Administrator	0 0.0%	11 3.2%	28 8.2%	35 10.3%	34 10.0%	108 31.8%
Contractor	0 0.0%	6 1.8%	10 2.9%	16 4.7%	19 5.6%	51 15.0%
Diplomat	0 0.0%	4 1.2%	13 3.8%	9 2.6%	11 3.2%	37 10.9%
Total	0 0.0%	30 8.8%	105 30.9%	104 30.6%	101 29.7%	340 100.0%

The percentages of respondents who use the GRP application quite often are: 8.5% for those who have a high school certificate, 7.4% for people with a Diploma, 8.2% for Bachelor degree holders, 2.9% for people who have a Master's degree, and 3.8% for PhDs. The total percentage

of all respondents who use the GRP application quite often is 30.9%. Meanwhile, the percentages of respondents who use the GRP application rarely are: 1.5% for people with a high school certificate, 1.2% for people with Diplomas, 3.2% for those with a Bachelor degree, 1.8% for people who have a Master's degree, and 1.2% for those with a PhD. The total percentage of all respondents who use the GRP application rarely is 8.8%.

Cross-Tabulation (Position by usage ticketing)

The results of the cross-tabulation for academic status by using the ticketing module of the GRP application are presented in Table 6.27 below. They show that respondents who use the ticketing module all the time are 7.4% from those who have high school certificate, while it is 5.6% for those who have a Diploma. The percentage is 11.5% from those who have Bachelor degrees and 5.6% from those who have a Master's degree. It is 4.1% for people who have a PhD. The total percentage of all respondents who use the ticketing module all the time is 34.1%.

The percentages of respondents who use the ticketing module frequently are: 9.1% for those who have a high school certificate, 9.7% for those who have Diplomas, 12.4% for those who have Bachelor degrees, 6.2% for those who have a Master's degree, and 4.7% from those who have PhDs. The total percentage of all respondents who use the ticketing module frequently is 42.1%.

Table 6.27 Cross-tabulation (Position by usage ticketing)

Position	Usage-Ticketing					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
Manager	0 0.0%	3 0.9%	15 4.4%	31 9.1%	25 7.4%	74 21.8%
Technician	0 0.0%	0 0.0%	18 5.3%	33 9.7%	19 5.6%	70 20.6%
Administrator	0 0.0%	6 1.8%	21 6.2%	42 12.4%	39 11.5%	108 31.8%
Contractor	0 0.0%	2 0.6%	9 2.6%	21 6.2%	19 5.6%	51 15.0%
Diplomat	0 0.0%	1 0.3%	6 1.8%	16 4.7%	14 4.1%	37 10.9%
Total	0 0.0%	12 3.5%	69 20.3%	143 42.1%	116 34.1%	340 100.0%

Percentages of those respondents who use the ticketing module quite often are: 4.4% for those with a high school certificate, 5.3% for those who have a Diploma, 6.2% from those who have Bachelor degrees, 2.6% for those who have a Master's degree, and 1.8% for PhD holders. The total percentage of all respondents who use the ticketing module quite often is 20.3%. Furthermore, the percentages of the respondents who use the ticketing module rarely are: 0.9% for those who have high school certificates, 0% for people with Diplomas, 1.8% for those with a Bachelor degree, 0.6% for people with a Master's degree, and 0.3% for PhD recipients. The total percentage of all respondents who use the ticketing module rarely is 3.5%.

Cross-tabulation (Position by usage-services)

The results of the cross-tabulation for academic status by using the services module of the GRP application are presented in Table 6.28 below. Percentages of respondents who use the services module all the time are as follows: 6.2% for those who have high school certificate, 3.8% for those who have Diplomas, 10.0% from those who have Bachelor degrees, 3.5% for those who have a Master's degree, and 3.5% concerning those who have a PhD. The total percentage of all respondents who use the services module of the GRP application all the time is 27.1%. The percentages of respondents who use the services module of the GRP application frequently are: 8.2% from those who have high school certificate, 9.4% from those who have Diploma, 8.2% from those who have Bachelor, 6.2% from those who have a Master's degree, and 2.7% from those who have a PhD. The total percentage of all respondents who use the services module frequently is 34.1%.

The percentages of respondents who use the services module quite often are: 5.0% from those who have high school certificate, 6.8% from those who have Diploma, 9.4% from those who have Bachelor, 4.4% from those who have a Master's degree, and 3.9% from those who have a PhD. The total percentage of all respondents who use the services module quite often is 29.1%. The percentages of the respondents who use the services module rarely are: 2.4% from those who have high school certificate, 0.6% from those who have Diploma, 4.1% from those who have Bachelor, 0.9% from those who have a Master's degree, and 1.8% from those who graduated with a PhD. The total percentage of all respondents who use the services module rarely is 9.7%.

Table 6.28 Cross-tabulation (Position by usage-services)

Position	Usage-Services					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
Manager	0 0.0%	8 2.4%	17 5.0%	28 8.2%	21 6.2%	74 21.8%
Technician	0 0.0%	2 0.6%	23 6.8%	32 9.4%	13 3.8%	70 20.6%
Administrator	0 0.0%	14 4.1%	32 9.4%	28 8.2%	34 10.0%	108 31.8%
Contractor	0 0.0%	3 0.9%	15 4.4%	21 6.2%	12 3.5%	51 15.0%
Diplomat	0 0.0%	6 1.8%	12 3.5%	7 2.1%	12 3.5%	37 10.9%
Total	0 0.0%	33 9.7%	99 29.1%	116 34.1%	92 27.1%	340 100.0%

Cross-Tabulation (Position by usage-training)

Results concerning the cross-tabulation for academic status by using the training module of the GRP application are presented in Table 6.29 below. It emerges that respondents who use the training module all the time is 6.8% for people with a school certificate, while it was 4.4% for those with a Diploma. The statistics was 11.8% for those with a Bachelor degree, while it was 5.6% for people with a Master's degree. Those with a PhD amounted to 4.7% of the sample. The total percentage of all respondents who use the training module all the time is 33.2%.

The percentages of the respondents who use the training module frequently are: 10.6% from those who have high school certificates, 12.1% from those who have Diplomas, 11.8% from those who have Bachelor degrees, 6.2% from those who have a Master's degree, and 2.9% from those who have PhDs. The total percentage of all respondents who use the training module frequently is 43.5%. The percentages of the respondents who use the training module quite often are: 4.1% from those who have high school certificates, 3.8% from those who have Diplomas, 7.4% from those who have Bachelor degrees, 2.6% from those who have a Master's degree, and 3.2% from those who have a PhD. The total percentage of all respondents who use the training module quite often is 21.2%.

The percentages of the respondents who use the training module rarely are: 0.3% from those who have high school certificates, 0% from those who have Diplomas, 0.9% from those who have Bachelor degrees, 0.6% from those who have a Master's degree, and 0% from those who have PhDs. The total percentage of all respondents who use the training module rarely is 1.8%. The percentages of respondents who did not use the training module at all are: 0% for those with high school certificates, 0.3% for people with Diplomas, 0% for those with Bachelor degrees, 0% for those with a Master's degree, and 0% for those having PhDs. The total percentage of all respondents who use the training module rarely is 0.3%.

Table 6.29 Cross-tabulation (Position by usage training)

Position	Usage-Training					Total
	Not at all	Rarely	Quite often	Frequently	All the time	
Manager	0 0.0%	1 0.3%	14 4.1%	36 10.6%	23 6.8%	74 21.8%
Technician	1 0.3%	0 0.0%	13 3.8%	41 12.1%	15 4.4%	70 20.6%
Administrator	0 0.0%	3 0.9%	25 7.4%	40 11.8%	40 11.8%	108 31.8%
Contractor	0 0.0%	2 0.6%	9 2.6%	21 6.2%	19 5.6%	51 15.0%
Diplomat	0 0.0%	0 0.0%	11 3.2%	10 2.9%	16 4.7%	37 10.9%
Total	1 0.3%	6 1.8%	72 21.2%	148 43.5%	113 33.2%	340 100.0%

To examine whether demographic characteristics have an effect on individuals' attitudes regarding the adoption of GRP application by Saudi employees in the Ministry of Foreign Affairs (MOFA), an analysis of demographic features was conducted. To determine if there is any evidence of a relationship between demographic characteristics and attitude here, initial correlations between the variables were analyzed.

The results of this analysis, as shown in Table 6.30, clearly show there is a correlation between age groups and attitude (r=.105), gender and attitude (r=.047), academic qualifications and attitude (r=.041), and job position and attitude (r=.031). Given this evidence for poor relationship levels, no further analysis was done on the moderating effect of demographic characteristics.

Table 6.30 Correlation between demographics and attitudes towards smart system adoption

Variables	Gender	Age Group	Qualification	Position	Attitude
Gender	1				
Age Group	-.236**	1			
Qualification	.119*	.226**	1		
Position	.341**	-.289**	-.117*	1	
Attitude	.047	.105	.041	.031	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

6.5 Data Screening

In order to modify or fix the collected data, this study conducted data screening which is an essential part of any research (Levy, 2006). It is required prior to doing the data analysis in order to avoid incorrect results and findings (Field, 2005; Hair et al., 2006). For the purpose of this study any questionnaire with missing answers was discarded. A total of 377 completed questionnaires were received out of which 37 questionnaires had missing data. The study has omitted 37 respondents who did not complete 50-60% of the survey questionnaire. Therefore, a total of 340 completed respondents were used for further analysis. The analysis looked any outliers in the data set. No such issues were observed.

6.6 Normality

The univariate normality was tested using Pearson's skewness parameter. According to Field (2005), the statistical techniques of testing normality are sensitive to the size of research data, and as a result, it is recommended to check the histogram with the values of skewness and kurtosis to evaluate univariate normality. Table 6.31 summarizes the skewness and kurtosis of the study variables. The accepted range of skewness and kurtosis, according to Hair et al. (2006), is between -2.58 and +2.58. All the values of skewness and kurtosis in Table 6.31 below fall within this range except one kurtosis value which refers to peers' influence.

Table 6.31 Skewness and Kurtosis Statistics for the Study Variables (N=340)

Scale	Skewness	Kurtosis
Uncertainty Avoidance	-.773	2.447
Power Distance	-.868	.997
In-Group	-.739	1.956
Long-Term	-.146	.097
Masculinism	-.148	-.167
Social Network	-.157	.963
Peers	-.904	2.681
Perfection	-.950	1.899
Cooperation	-.807	.864
Responsibility	-.719	-.077
Transparency	.028	-.550
Attitude	-.713	1.766
Usage	-.324	-.738
Cost	-.498	.174
Efficiency	-.483	.251
Quality	-.652	.384
Customers	-.405	.184

6.7 Using the GRP Application

Length of time using the GRP application per day

Participants were asked to indicate how much time they spend using the GRP application each day by placing a tick next to the relevant option provided. The options are put in a five-level scale starting from less than one hour up to more than 3 hours per day. Results are reported in Table 6.32 below and they revealed respondents were high users of smart systems. The time spent using them indicates that 9 respondents (2.6%) spent less than 1 hour per day, 107 (31.5%) spent 1–2 hours per day, 113 (33.2%) spent 2–3 hours per day, and 111 (32.6%) spent more than 3 hours per day.

Table 6.32 Length of time using the GRP application per day

Usage Time	Frequency	Percentage
Not at all	0	0
Less than one hour	9	2.6%
1 to 2 hours	107	31.5%
2 to 3 hours	113	33.2%
More than 3 hours	111	32.6%
Total	340	100%

Frequency of using the GRP application

Participants were asked to indicate how frequently they use the GRP application by placing a tick next to the relevant option provided in the four-level scale ranging from daily to monthly. Outcomes of this query are tabulated in Table 6.33 below.

Table 6.33 Frequency of using the GRP application

Frequency of usage	Frequency	Percentage
Not at all	0	0
Monthly	10	2.9%
Weekly	79	23.2%
Several times per week	134	39.4%
Daily	117	34.4%
Total	340	100%

Table 6.33 summarizes the frequency of using the GRP application in job-related activities. Data analysis for usage levels shows that 10 respondents (2.9%) used the system once a month, whereas 79 (23.2%) did so weekly, 134 (39.4%) used it several times per week, and 117 (34.4%) used it on a daily basis.

Using more than one feature of the GRP application

Participants were asked to indicate how often they use more than one feature of the GRP application by placing a tick next to the relevant option provided in a five-level scale ranging from all the time to rarely. Results are presented in Table 6.34 below.

Table 6.34 Using more than one feature of the GRP application

Usage Features	Frequency	Percentage
Not at all	0	0
Rarely	30	8.8%
Quite often	105	30.9%
Frequently	104	30.6%
All the time	101	29.7%
Total	340	100%

Table 6.34 results are as follows: 30 respondents (8.8%) used more than one feature of the GRP application rarely, whereas 105 (30.9%) did so quite often, 104 (30.6%) did so frequently, and 101 (29.7%) used more than one feature all the time.

Using different features of the GRP Application

Ticket and Mission Services

Participants were asked to indicate the frequency in using the Ticket and Mission Services of the GRP application by placing a tick next to the relevant option provided in the four-level scale ranging from rarely to all the time. Results are reported in Table 6.35 below.

Table 6.35 Usage of Ticket and Mission Services

Level of Usage (Ticket Services)	Frequency	Percentage
Not at all	0	0
Rarely	12	3.5%
Quite often	70	20.6%
Frequently	141	41.5%
All the time	117	34.4%
Total	340	100%

Table 6.35 results revealed that respondents were high users of the Ticket and Mission Services feature: 12 respondents (3.5%) used it rarely, 70 (20.6%) used it quite often, 141 (41.5%) used it frequently, and 117 (34.4%) used it all the time.

General Services

Participants were asked to indicate the frequency of utilizing the General Services feature of the system by placing a tick next to the relevant option provided in the four-level scale ranging from rarely to all the time. Results are indicated below in Table 6.36.

Table 6.36 Usage of General Services

Level of Usage (General Services)	Frequency	Percentage
Not at all	0	0
Rarely	36	10.6%
Quite often	102	30.0%
Frequently	111	32.6%
All the time	91	26.8%
Total	340	100%

Results in Table 6.36 revealed the following: 36 respondents (10.6%) used it rarely, 102 (30.0%) used it quite often, 111 (32.6%) used it frequently, and 91 (26.8%) used it all the time.

Training Services

Participants were asked to indicate the frequency of using the Training Services feature of the GRP application by placing a tick next to the relevant option provided in the four-level scale ranging from rarely to all the time. The results are shown in Table 6.37 immediately below.

Table 6.37 Usage of Training Services

Level of Usage (Training Services)	Frequency	Percentage
Not at all	0	0
Rarely	7	2.1%
Quite often	73	21.5%
Frequently	146	42.9%
All the time	114	33.5%
Total	340	100%

Table 6.37 results are as follows: 7 respondents (2.1%) used it rarely, 73 (21.5%) used it quite often, 146 (42.9%) used it frequently, and 114 (33.5%) used it all the time.

6.8 Reliability and Validity

The validity and reliability of the factors were ascertained for further analysis. Pre-testing of the research questionnaire is highly recommended to ensure that all items are clear and understood (Sekaran & Bougie, 2016). Firstly, the questions used in the measurement were based on validated items from previous studies, and then the survey questions were paraphrased to suit the research object. According to several studies (Taylor & Todd, 1995; Venkatesh & Davis, 2000; Venkatesh et al., 2003; Carter & Bélanger, 2005; Ho Cheong & Park, 2005; Aladwani, 2006; Kripanont, 2007; Mann et al., 2009; Talukder et al., 2014), there are different ways to validate the questionnaire.

The second method for establishing if factors are valid and reliable is to conduct a pilot study. Reliability analysis was conducted using SPSS for all the variables of the model. In SPSS, the most popular test of reliability is Cronbach's alpha coefficient (Sekaran & Bougie, 2016). Hair et al. (1998) stated "the diagnostic measure is the reliability coefficient that assesses the consistency of the entire scale, with Cronbach' alpha being the most widely used measure" (p. 118). According to Sekaran and Bougie (2016) and Hair et al. (2006), Cronbach's alpha value should be in the 0.7 range to be acceptable. This will indicate adequate internal consistency. Meanwhile reliability values between 0.8 and 0.9 are considered to be very good.

Constructs' Reliability

Internal consistency refers to the degree to which responses are consistent across the items (variables) within a single measurement scale (Kline, 2005). To measure the internal consistency this study used Cronbach's coefficient alpha, which examined the internal research consistency of measurement (Straub et al., 2004; Field, 2005; Hinton et al., 2014). According to Hair et al. (2006) and Pallant (2005), construct reliability should be 0.7 or higher to indicate adequate convergence or internal consistency. The reliability coefficients in the form of Cronbach's alpha for dependent and independent variables are presented in Table 6.38. The scale shows good reliability with Cronbach's alpha greater than 0.70 for most of the constructs. The higher reliability range indicates the collected data maintains a high internal consistency.

As Hair et al. (1998) stated "the diagnostic measure is the reliability coefficient that assesses the consistency of the entire scale, with Cronbach's alpha being the most widely used measure"

(p. 118). According to DeVellis (2003), reliability values between .70 and .80 are considered "respectable" whereas reliability values between .80 and .90 are deemed to be "very good." Data shows that most of the instruments have strong reliability. Seventeen scales were employed in the survey questionnaire to measure the constructs proposed and each scale has a number of items. A reliability coefficient was run on SPSS for each set of constructs and the results are presented in Table 6.38, which shows the Cronbach's alpha (α) value for each variable.

Table 6.38 Cronbach's Alpha Reliability Results

Factor	No. of Items	Cronbach's alpha	Comments
Uncertainty Avoidance	5	0.834	High Reliability
Power Distance	5	0.861	High Reliability
In-Group Collectivism	5	0.780	High Reliability
Long-Term Orientation	4	0.785	High Reliability
Masculinism	4	0.906	Excellent Reliability
Social Network	5	0.640	Moderate Reliability
Peers' Influence	4	0.817	High Reliability
Perfection	5	0.849	High Reliability
Cooperation	5	0.804	High Reliability
Responsibility	5	0.779	High Reliability
Transparency	5	0.722	High Reliability
Attitude	5	0.878	High Reliability
Usage	6	0.927	Excellent Reliability
Cost effectiveness	5	0.941	Excellent Reliability
Organizational Efficiency	5	0.904	Excellent Reliability
Service Quality	5	0.916	Excellent Reliability
Relationship with Customers	4	0.931	Excellent Reliability

The construct's reliability in this study was determined using Cronbach's alpha coefficient. Results reveal that the alpha coefficients for most constructs were above .70, which is the standard threshold of reporting construct reliability. Results of the analysis show that 16 of 17 constructs got a high or excellent reliability in Cronbach's α value results ranging between 0.722 and 0.941. One construct, which is social network, got a moderate reliability of 0.640. Hair et al. (1998) claimed "the generally agreed upon lower limit for Cronbach's alpha is .70, although it may decrease to .60 in exploratory research" (p. 118). The overall result shows

that most alpha values of the study instrument are reliable and exhibit appropriate construct reliability.

Validity

Convergent and discriminant validity analysis was also used to measure the validity of the study instruments. Convergent validity is the extent to which items are thought to reflect one particular construct (Straub et al., 2004). As shown in Table 6.39, all factor loadings range from 0.59 to 0.88, which are considered adequate for this study. The items under each construct were loaded heavily within the defined constructs; this provides evidence for the constructs' convergent validity. According to Bagozzi and Yi (1988), AVE should be above at least 0.5. Moreover, an AVE in excess of 0.5 generally signifies appropriate convergent validity (Fornell & Larcker, 1981). Discriminant validity is considered to be adequate when constructs have an average variance extracted (AVE) loading greater than 0.50, which means that at least 50% of the measurement variance is captured by the constructs (Kim & Garrison, 2009). Table 6.39 illustrates that all constructs demonstrated an AVE score between 0.69 and 0.91, which is greater than the recommended minimum score of 0.50. It is therefore, confirmed that the instrument has achieved an acceptable level of discriminant validity.

Table 6.39 Results of reliability and convergent validity

Factor	Factor loading	Cronbach's alpha	AVE
Uncertainty Avoidance		.834	0.779
UncertaintyAvoidance1	.681		
UncertaintyAvoidance2	.712		
UncertaintyAvoidance3	.838		
UncertaintyAvoidance4	.828		
UncertaintyAvoidance5	.822		
Power Distance		.861	0.803
PowerDistance1	.815		
PowerDistance2	.840		
PowerDistance3	.793		
PowerDistance4	.769		
PowerDistance5	.795		
In-Group		.780	0.777

In-Group1	.760		
In-Group2	.791		
In-Group3	.795		
In-Group4	.761		
Long-Term		.785	0.782
LongTerm1	.720		
LongTerm2	.804		
LongTerm3	.770		
LongTerm4	.829		
Masculinism		.906	0.855
Masculinism1	.862		
Masculinism2	.881		
Masculinism3	.886		
Masculinism4	.807		
Masculinism5	.835		
Social Network		.640	0.694
SocialNetwork1	.701		
SocialNetwork2	.613		
SocialNetwork3	.708		
SocialNetwork4	.749		
Peers		.817	0.762
Peers1	.745		
Peers2	.705		
Peers3	.815		
Peers4	.833		
Peers5	.705		
Perfection		.849	0.790
Perfection1	.647		
Perfection2	.795		
Perfection3	.830		
Perfection4	.872		
Perfection5	.791		
Cooperation		.804	0.758
Cooperation1	.824		
Cooperation2	.804		
Cooperation3	.670		
Cooperation4	.791		
Cooperation5	.686		
Responsibility		.779	0.735

Responsibility1	.646		
Responsibility2	.749		
Responsibility3	.813		
Responsibility4	.708		
Responsibility5	.746		
Transparency		.722	0.689
Transparency1	.686		
Transparency2	.703		
Transparency3	.723		
Transparency4	.683		
Transparency5	.648		
Cost		.941	0.900
Cost1	.892		
Cost2	.902		
Cost3	.897		
Cost4	.917		
Cost5	.892		
Efficiency		.904	0.851
Efficiency1	.798		
Efficiency2	.875		
Efficiency3	.862		
Efficiency4	.876		
Efficiency5	.842		
Quality		.916	0.866
Quality1	.854		
Quality2	.875		
Quality3	.862		
Quality4	.874		
Quality5	.865		
Customer		.931	0.910
Customer1	.914		
Customer2	.926		
Customer3	.925		
Customer4	.875		
Attitude		.878	0.821
Attitude1	.852		
Attitude2	.817		
Attitude3	.833		
Attitude4	.785		
Attitude5	.815		

Usage		.927	0.860
Time	.849		
Frequency	.938		
Features	.803		
Usage1	.893		
Usage2	.836		
Usage3	.834		

AVE = SquareRoot (SUM(Communalities)/N)

6.9 Exploratory Factor Analysis (EFA)

Exploratory factor analysis (EFA) can be defined as an orderly simplification of interrelated measures. EFA has been used to explore the possible underlying factor structure of a set of observed variables without imposing a preconceived structure on the outcome (Child, 1990). EFA is used to explore data to determine the number or nature of factors that account for the co-variation between variables when the researcher does not have, a priori, sufficient evidence to form a hypothesis about the number of factors underlying the data. Therefore, EFA is generally thought of as more of a theory-generating rather than theory-testing procedure (Stevens, 2009). Exploratory factor analysis is useful in assessing the relationships among variables and in exploring the construct validity of test scales. In reality the majority of factor analysis studies have been exploratory (Kim et al., 1978; Gorsuch, 1983). Moreover, EFA is "data driven rather than theory or hypothesis driven" (Brown, 2006, p. 14). Another reason for using the Exploratory factor analysis method is that the sample of this study is unique. The sample represents the public sector in a country with a homogeneous culture based on the Islamic religion, Arabic culture and the Bedouin traditions. In this sense, it is different than the samples of other cultural studies such as Hostede's study in which he used employees working in the private sector in different countries with different cultural backgrounds. For these reasons using Exploratory factor analysis deemed appropriate. The statistical package SPSS 23.0 served to conduct the exploratory factor analysis. All scales of the research model were analyzed one by one, and details of the validation process and results are discussed in the following subsections.

Analysis of Uncertainty Avoidance Scale (UA)

As shown in Table 6.40, the results revealed that the correlation coefficients between items for the Uncertainty Avoidance Scale are generally greater than 0.3, which indicates they are suitable for factor analysis (Coakes, 2005). According to Pallant (2005), a value of the corrected item-total correlation of less than 0.30 indicates the variable is measuring something different from the construct as a whole. The researcher also examined the Kaiser-Meyer-Olkin (KMO) output provided in the factor analysis. According to Coakes (2005) and Pallant (2005), the KMO and Bartlett's test of sphericity are generally applied to determine the factorability of the output matrix. A KMO correlation above 0.60 to 0.70 is considered adequate for analyzing the EFA output (Netemeyer et al., 2003). Generally, a KMO measure should be greater than 0.5 (De Vaus, 2002; Field, 2005).

Table 6.40 Correlation Matrix for Uncertainty Avoidance (UA)

		UA1	UA2	UA3	UA4	UA5
Correlation	**UA1**	1.000	.381	.537	.396	.411
	UA2	.381	1.000	.511	.476	.447
	UA3	.537	.511	1.000	.594	.587
	UA4	.396	.476	.594	1.000	.704
	UA5	.411	.447	.587	.704	1.000

KMO and Bartlett's Test for Uncertainty Avoidance Scale

As Table 6.41 below shows the KMO statistic for Uncertainty Avoidance is 0.820, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), indicating sampling adequacy. Additionally, Bartlett's test of sphericity (chi-square = 660.349), was highly significant at $p<0.001$, meaning there were adequate relationships between the variables included in the analysis (Field, 2005). Therefore, it can be concluded that the data is appropriate for factor analysis.

Table 6.41 KMO and Bartlett's Test for Uncertainty Avoidance Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.820
Bartlett's Test of Sphericity	Approx. Chi-Square	660.349
	Df	10
	Sig.	.000

Factor Loading for Uncertainty Avoidance

Factor loading of scale items for uncertainty avoidance was examined. Generally, factor loadings below 0.4 are considered low, and low-loading items should be suppressed (Field, 2005; Hair et al., 2006). In this thesis, the recommended cut-off factor loading of 0.50 ensured that all variables had practical significance (Hair et al., 2006). As shown in Table 6.42, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.42 Factor Loading for Uncertainty Avoidance (UA)

Component Matrix[a]	
	Component
	1
UA1	.681
UA2	.712
UA3	.838
UA4	.828
UA5	.822

Extraction Method: Principal Component Analysis.
a. 1 component extracted

Analysis of Power Distance Scale (PD)

Table 6.43 below documents that the results of the correlation coefficients between items for Power Distance are generally greater than 0.3. It indicates they are suitable for factor analysis (Coakes, 2005).

Table 6.43 Correlation Matrix for Power Distance (PD)

		PD1	**PD2**	**PD3**	**PD4**	**PD5**
Correlation	**PD1**	1.000	.653	.587	.507	.510
	PD2	.653	1.000	.584	.531	.581
	PD3	.587	.584	1.000	.489	.525
	PD4	.507	.531	.489	1.000	.580
	PD5	.510	.581	.525	.580	1.000

KMO and Bartlett's Test for Power Distance Scale

As Table 6.44 below shows, the KMO statistic for Power Distance is 0.857, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), suggesting sampling adequacy. Additionally, Bartlett's test of sphericity (chi-square = 724.199) proved to be highly significant at $p<0.001$, indicating there were adequate relationships between the variables in the analysis (Field, 2005). Therefore, it can be concluded that the data is appropriate for factor analysis.

Table 6.44 KMO and Bartlett's Test for Power Distance

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.857
Bartlett's Test of Sphericity	Approx. Chi-Square	724.199
	df	10
	Sig.	.000

Factor Loading for Power Distance

Factor loading of scale items for Power Distance was examined. As shown in Table 6.45, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.45 Factor Loading for Power Distance (PD)

Component Matrix[a]	
	Component
	1
PD1	.815
PD2	.840
PD3	.793
PD4	.769
PD5	.795
Extraction Method: Principal Component Analysis. a. 1 component extracted	

Extraction Method: Principal Component Analysis.

Analysis of In-Group Collectivism Scale (IC)

In Table 6.46 the results revealed that the correlation coefficients between items for In-Group Collectivism are generally greater than 0.3, meaning they are in fact suitable for factor analysis (Coakes, 2005).

Table 6.46 Correlation Matrix for In-Group Collectivism (IC)

		IC1	IC2	IC3	IC4
Correlation	**IC1**	1.000	.528	.439	.404
	IC2	.528	1.000	.485	.435
	IC3	.439	.485	1.000	.534
	IC4	.404	.435	.534	1.000

KMO and Bartlett's Test for In-Group Collectivism Scale

As Table 6.47 shows, the KMO statistic for In-Group Collectivism is 0.766, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006). This suggests that sampling adequacy was evident. Additionally, Bartlett's test of sphericity (chi-square = 361.357), which was highly significant at $p<0.001$, indicated the relationships between the variables were adequate (Field, 2005). It can be concluded that the data is appropriate for factor analysis.

Table 6.47 KMO and Bartlett's Test for In-Group Collectivism

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.766
Bartlett's Test of Sphericity	Approx. Chi-Square	361.357
	Df	6
	Sig.	.000

Factor Loading for In-Group Collectivism

Factor loading of scale items for In-Group Collectivism was examined. As shown in Table 6.48, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.48 Factor Loading for In-Group Collectivism (IC)

Component Matrix[a]	
	Component
	1
IC1	.760
IC2	.791
IC3	.795
IC4	.761

Extraction Method: Principal Component Analysis.
a. 1 component extracted

Analysis of Long-Term Orientation Scale (LO)

In Table 6.49 the results revealed that the correlation coefficients between items for Long-Term Orientation are generally greater than 0.3, which indicates they are suitable for factor analysis (Coakes, 2005).

Table 6.49 Correlation Matrix for Long-Term Orientation (LO)

		LO1	LO2	LO3	LO4
Correlation	**LO1**	1.000	.406	.420	.470
	LO2	.406	1.000	.493	.591
	LO3	.420	.493	1.000	.498
	LO4	.470	.591	.498	1.000

KMO and Bartlett's Test for Long-Term Orientation Scale

As Table 6.50 shows, the KMO statistic for Long-Term Orientation is 0.777, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), and indicates sampling adequacy. Bartlett's test of sphericity (chi-square = 378.649) was highly significant at $p<0.001$, which suggests there were adequate relationships between the variables (Field, 2005). It can be stated here that the data is appropriate for factor analysis.

Table 6.50 KMO and Bartlett's Test for Long-Term Orientation Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.777
Bartlett's Test of Sphericity	Approx. Chi-Square	378.649
	Df	6
	Sig.	.000

Factor Loading for Long-Term Orientation Scale

Factor loading of scale items for Long-Term Orientation was examined. As shown in Table 6.51 immediately below, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.51 Factor Loading for Long-Term Orientation (LO)

Component Matrix[a]	
	Component

	1
LO1	.720
LO2	.804
LO3	.770
LO4	.829

Extraction Method: Principal Component Analysis.
a. 1 component extracted

Analysis of Masculinism Scale (MAS)

In Table 6.52 the results reveal that correlation coefficients between items for Masculinism are generally greater than 0.3. This means they are suitable for factor analysis (Coakes, 2005).

Table 6.52 Correlation Matrix for Masculinism (MAS)

		MAS1	MAS2	MAS3	MAS4	MAS5
Correlation	**MAS1**	1.000	.675	.745	.583	.672
	MAS2	.675	1.000	.699	.703	.681
	MAS3	.745	.699	1.000	.648	.684
	MAS4	.583	.703	.648	1.000	.533
	MAS5	.672	.681	.684	.533	1.000

KMO and Bartlett's Test for Masculinism Scale

As Table 6.53 shows, the KMO statistic for Masculinism is 0.870, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), thus confirming sampling adequacy. As well, Bartlett's test of sphericity (chi-square = 1086.936) was highly significant at $p<0.001$, indicating the relationships between the variables were adequate (Field, 2005). It can be stated here that the data is appropriate for factor analysis.

Table 6.53 KMO and Bartlett's Test for Masculinism Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.870
Bartlett's Test of Sphericity	Approx. Chi-Square	1086.936
	Df	10
	Sig.	.000

Factor Loading for Masculinism Scale

Factor loading of scale items for Masculinism was examined. According to Table 6.54, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.54 Factor Loading for Masculinism (MAS)

Component Matrix[a]	
	Component
	1
MAS1	.862
MAS2	.881
MAS3	.886
MAS4	.807
MAS5	.835
Extraction Method: Principal Component Analysis.	
a. 1 component extracted	

Analysis of Social Network Scale (SN)

In Table 6.55, the results reveal that the correlation coefficients between items for Social Network are generally greater than 0.3, suggesting they are suitable for factor analysis (Coakes, 2005).

Table 6.55 Correlation Matrix for Social Network (SN)

		SN1	**SN2**	**SN3**	**SN4**
Correlation	**SN1**	1.000	.309	.321	.313
	SN2	.309	1.000	.191	.291
	SN3	.321	.191	1.000	.421
	SN4	.313	.291	.421	1.000

KMO and Bartlett's Test for Social Network Scale

As Table 6.56 shows, the KMO statistic for Social Network is 0.684, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), therefore indicating sampling adequacy. Bartlett's test of sphericity (chi-square = 167.153) proved to be highly significant at $p<0.001$, meaning there were adequate relationships between the variables (Field, 2005). Therefore, it can be concluded that the data is appropriate for factor analysis.

Table 6.56 KMO and Bartlett's Test for Social Network Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.684
Bartlett's Test of Sphericity	Approx. Chi-Square	167.153
	df	6
	Sig.	.000

Factor Loading for Social Network

Factor loading of scale items for Social Network was examined. As shown in Table 6.57, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.57 Factor Loading for Social Network (SN)

Component Matrix[a]	
	Component
	1
SN1	.701
SN2	.613
SN3	.708
SN4	.749

Extraction Method: Principal Component Analysis.
a. 1 component extracted

Analysis of Peers' Influence Scale (PI)

Table 6.58 confirms that the results for the correlation coefficients between items for Peers' Influence are generally greater than 0.3. It is indicated here that they are suitable for factor analysis (Coakes, 2005).

Table 6.58 Correlation Matrix for Peers' Influence (PI)

		PI1	**PI2**	**PI3**	**PI4**	**PI5**
Correlation	**PI1**	1.000	.483	.492	.506	.364
	PI2	.483	1.000	.396	.468	.384
	PI3	.492	.396	1.000	.668	.497
	PI4	.506	.468	.668	1.000	.476
	PI5	.364	.384	.497	.476	1.000

KMO and Bartlett's Test for Peers' Influence Scale

Below as Table 6.59 shows, the KMO statistic for Peers' Influence is 0.815, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), indicating sampling adequacy. Bartlett's test of sphericity (chi-square = 564.832) was highly significant at $p<0.001$, indicating there were adequate relationships between the variables (Field, 2005). On this basis it can be concluded that the data is appropriate for factor analysis.

Table 6.59 KMO and Bartlett's Test for Peers' Influence Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.815
Bartlett's Test of Sphericity	Approx. Chi-Square	564.832
	Df	10
	Sig.	.000

Factor Loading for Peers' Influence

Factor loading of scale items for Peers' Influence was examined. As shown in Table 6.60, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.60 Factor Loading for Peers' Influence (PI)

Component Matrix[a]	
	Component
	1
PI1	.745
PI2	.705
PI3	.815
PI4	.833
PI5	.705
Extraction Method: Principal Component Analysis.	
a. 1 component extracted	

Analysis of Perfection Scale (PE)

In Table 6.61 below the results revealed that the correlation coefficients between items for Perfection Scale are generally greater than 0.3, therefore indicating they are suitable for factor analysis (Coakes, 2005).

Table 6.61 Correlation Matrix for Perfection (PE)

		PE1	PE2	PE3	PE4	PE5
Correlation	**PE1**	1.000	.463	.425	.392	.394
	PE2	.463	1.000	.567	.585	.517
	PE3	.425	.567	1.000	.725	.515
	PE4	.392	.585	.725	1.000	.674
	PE5	.394	.517	.515	.674	1.000

KMO and Bartlett's Test for Perfection Scale

It is documented in Table 6.62 below that the KMO statistic for Perfection Scale is 0.809, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), indicating sampling adequacy. Bartlett's test of sphericity (chi-square = 737.758) was highly significant at $p<0.001$, which suggests there were adequate relationships between the variables (Field, 2005). Here, it can be concluded that the data are suitable for the purposes of factor analysis.

Table 6.62 KMO and Bartlett's Test for Perfection Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.809
Bartlett's Test of Sphericity	Approx. Chi-Square	737.758
	df	10
	Sig.	.000

Factor Loading for Perfection Scale

Factor loading of scale items for Perfection Scale was examined. As shown in Table 6.63, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.63 Factor Loading for Perfection (PE)

Component Matrix[a]	
	Component
	1
PE1	.647
PE2	.795
PE3	.830
PE4	.872
PE5	.791
Extraction Method: Principal Component Analysis.	

a. 1 component extracted

Analysis of Cooperation Scale (CO)

Table 6.64 reports that the correlation coefficients between items for Cooperation Scale are generally greater than 0.3, which indicates they are suitable for factor analysis (Coakes, 2005).

Table 6.64 Correlation Matrix for Cooperation (CO)

		CO1	CO2	CO3	CO4	CO5
Correlation	**CO1**	1.000	.683	.416	.526	.433
	CO2	.683	1.000	.431	.500	.373
	CO3	.416	.431	1.000	.431	.324
	CO4	.526	.500	.431	1.000	.517
	CO5	.433	.373	.324	.517	1.000

KMO and Bartlett's Test for Cooperation Scale

In Table 6.65 below the KMO statistic for Cooperation Scale is 0.799, and this is above the minimum acceptable level of 0.60 (Coakes et al., 2006). It also indicates sampling adequacy. Bartlett's test of sphericity (chi-square = 562.342) was highly significant at $p<0.001$, suggesting the relationships between the variables were adequate (Field, 2005). Therefore, it can be concluded that the data is appropriate for factor analysis.

Table 6.65 KMO and Bartlett's Test for Cooperation Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.799
Bartlett's Test of Sphericity	Approx. Chi-Square	562.342
	df	10
	Sig.	.000

Factor Loading for Cooperation Scale

Factor loading of scale items for Cooperation Scale was examined. As shown in Table 6.66, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.66 Factor Loading for Cooperation (CO)

Component Matrix[a]	
	Component
	1
CO1	.824
CO2	.804
CO3	.670
CO4	.791
CO5	.686

Extraction Method: Principal Component Analysis.
a. 1 component extracted

Analysis of Responsibility Scale (RE)

In Table 6.67 the results concerning the correlation coefficients between items for Responsibility Scale are generally greater than 0.3, indicating that they are suitable for factor analysis (Coakes, 2005).

Table 6.67 Correlation Matrix for Responsibility (RE)

		RE1	RE2	RE3	RE4	RE5
Correlation	**RE1**	1.000	.358	.418	.329	.344
	RE2	.358	1.000	.529	.398	.440
	RE3	.418	.529	1.000	.466	.515
	RE4	.329	.398	.466	1.000	.420
	RE5	.344	.440	.515	.420	1.000

KMO and Bartlett's Test for Responsibility Scale

The KMO statistic for Responsibility Scale is 0.828 in Table 6.68 below, and it is above the minimum acceptable level of 0.60 (Coakes et al., 2006), indicating sampling adequacy. Bartlett's test of sphericity (chi-square = 428.317) was highly significant at $p<0.001$, which indicates there were adequate relationships between the variables (Coakes, 2005). It can therefore be concluded that the data is appropriate for factor analysis.

Table 6.68 KMO and Bartlett's Test for Responsibility scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.828
Bartlett's Test of Sphericity	Approx. Chi-Square	428.317
	df	10

	Sig.	.000

Factor Loading for Responsibility Scale

Factor loading of scale items for Responsibility Scale was examined. It appears in Table 6.69 that the loading values of all five items exceed the cut-off level of 0.50.

Table 6.69 Factor Loading for Responsibility (RE)

Component Matrix[a]	
	Component
	1
RE1	.646
RE2	.749
RE3	.813
RE4	.708
RE5	.746

Extraction Method: Principal Component Analysis.
a. 1 component extracted

Analysis of Transparency Scale (TR)

Table 6.70 shows the results regarding the correlation coefficients between items for Transparency Scale are generally greater than 0.3. For this reason, they are deemed suitable for factor analysis (Coakes, 2005).

Table 6.70 Correlation Matrix for Transparency (TR)

		TR1	**TR2**	**TR3**	**TR4**	**TR5**
Correlation	**TR1**	1.000	.519	.310	.226	.305
	TR2	.519	1.000	.327	.325	.233
	TR3	.310	.327	1.000	.446	.378
	TR4	.226	.325	.446	1.000	.357
	TR5	.305	.233	.378	.357	1.000

KMO and Bartlett's Test for Transparency Scale

As Table 6.71 shows, the KMO statistic for Transparency Scale is 0.720, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), so this confirms sampling adequacy.

Bartlett's test of sphericity (chi-square = 327.081) was highly significant at p<0.001, indicating there were adequate relationships between the variables (Field, 2005). Consequently, it can be concluded that the data is appropriate for factor analysis.

Table 6.71 KMO and Bartlett's Test for Transparency scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.720
Bartlett's Test of Sphericity	Approx. Chi-Square	327.081
	df	10
	Sig.	.000

Factor Loading for Transparency Scale

Factor loading of scale items for Transparency Scale was examined. As shown in Table 6.72, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.72 Factor Loading for Transparency (TR)

Component Matrix[a]	
	Component
	1
TR1	.686
TR2	.703
TR3	.723
TR4	.683
TR5	.648

Extraction Method: Principal Component Analysis.
a. 1 component extracted

Analysis of Effect of Demographics on Attitude to using the GRP application

Table 6.73 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.136	.018	.007	.99664876	1.826

a. Predictors: (Constant), Position, Qualification, Age, Gender

b. Dependent Variable: Attitude

The regression model summary as shown in Table 6.73 above, shows that demographic features exert no significant effect on the attitude to using the GRP application by Ministry of Foreign Affairs (MOFA) employees in Saudi Arabia.

Table 6.74 Result of regression analysis (demographics)

Coefficients

Independent Variables	Unstandardized Coefficients (B)	Standardized Coefficients Beta	T	Sig.
(Constant)	-2.362E-16	.054	.000	1.000
Gender	.060	.060	1.008	.314
Age	.131	.059	2.222	.027
Qualification	.010	.057	.172	.864
Position	.049	.060	.825	.410

Dependent Variable: Attitude

Table 6.74 above presents the results on the effect of demographic variables (gender, age, qualification, and position) regarding the employees' attitude to using the GRP application in the Ministry of Foreign Affairs (MOFA) in Saudi Arabia. The only feature that wields a significant effect on attitude is age group, with a significance level of 0.027. This finding agrees with Lerouge et al. (2005) and Lerouge et al. (2005) and Faqih and Jaradat (2015). The other three features, i.e. gender, qualification and position, had no significant effect on attitude, with significance levels of 0.314 for gender, 0.864 for qualification, and 0.410 for position.

Table 6.75 Analysis of Variance (ANOVA) for demographics

ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	6.242	4	1.560	1.571	.182[b]
Residual	332.758	335	.993		
Total	339.000	339			

a. Dependent Variable: Attitude

b. Predictors: (Constant), Position, Qualification, Age, Gender

Analysis of Attitude Scale (AT)

Table 6.76 the results of the correlation coefficients between items for Attitude Scale are generally greater than 0.3, which means they are suitable for factor analysis (Coakes, 2005).

Table 6.76 Correlation Matrix for Attitude (AT)

		AT1	AT2	AT3	AT4	AT5
Correlation	**AT1**	1.000	.705	.627	.562	.586
	AT2	.705	1.000	.603	.498	.540
	AT3	.627	.603	1.000	.570	.610
	AT4	.562	.498	.570	1.000	.612
	AT5	.586	.540	.610	.612	1.000

a. Determinant = .108

KMO and Bartlett's Test for Attitude Scale

As Table 6.77 shows, the KMO statistic for Attitude Scale is 0.858, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), indicating sampling adequacy. Bartlett's test of sphericity (chi-square = 838.949) was highly significant at $p<0.001$, indicating adequate relationships between the variables were evident (Field, 2005). It can therefore be stated that the data is appropriate for factor analysis.

Table 6.77 KMO and Bartlett's Test for Attitude

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.858
Bartlett's Test of Sphericity	Approx. Chi-Square	838.949
	Df	10
	Sig.	.000

Factor Loading for Attitude Scale

Factor loading of scale items for Attitude was examined. As shown in Table 6.78, the loading values of all five items exceed the cut-off level of 0.50.

Table 6.78 Factor Loading for Attitude (AT)

Component Matrix[a]	
	Component
	1
AT1	.852
AT2	.817
AT3	.833
AT4	.785

AT5	.815

Extraction Method: Principal Component Analysis.
a. 1 component extracted

6.10 Regression Analysis

The sample is regarded as adequate with the regression analysis specified in terms of dependent and independent variables and the assumptions for the individual variables are met. An estimate of the regression model and an assessment of the overall model fit were then done. The results are documented in Table 6.79; they reveal that r-square (R^2) is the correlation coefficient squared (R^2=.512), which is also the coefficient of determination.

Table 6.79 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.716	.512	.496	.70984016	1.993

a. Predictors: (Constant), Transparency, Power Distance, Perfection, Long-Term, Masculinism
Peers, UA, Cooperation, Network, In-group, Responsibility
b. Dependent Variable: Attitude

Table 6.79 above shows that the correlation coefficient squared (R^2=.512), is also known as the coefficient of determination. The R^2 value indicates the percentage of total variation of the dependent variable that is explained by the independent variables. In this analysis, 51% of the variation of employees' attitude to the GRP application can be explained by the effect of cultural, social, and religious variables. Prior research suggests that an R^2 of .15 indicates moderate variance while an R^2 of .35 suggests high variance (Cohen, 1988). The standard error of the estimate is another measure of the predictions' accuracy, which represents an estimate of the standard deviation of the actual dependent values around the regression line. Furthermore, results of Durbin-Watson statistics inform us there is no problem regarding autocorrelation. As a rule of thumb, values of less than 1 or greater than 3 are definitely cause for concern (Field, 2005, p. 189). For this study's data, the value is 1.993 so the assumption has been met.

Table 6.80 Result of regression analysis with attitude as dependent variable

Coefficients

Independent Variables	Unstandardized Coefficients (B)	Standardized Coefficients Beta	T	Sig.
Uncertainty Avoidance	.039	.039	.798	.426

Power Distance	.192	.192	4.653	.000
In-Group	.167	.167	3.437	.001
Long-Term	.041	.041	.962	.337
Masculinism	.144	.144	3.682	.000
Network	.151	.151	3.354	.001
Peers	.069	.069	1.479	.140
Perfection	.226	.226	5.382	.000
Cooperation	.134	.134	2.597	.010
Responsibility	.017	.017	.324	.746
Transparency	.134	.134	2.857	.005

Dependent Variable: Attitude

Table 6.80 above shows that seven out of the eleven variables had a significant effect on attitude to the adoption of technological innovations. These variables are:

From the cultural values category: Power Distance, In-Group collectivism, and Masculinism.

From the social values category: Social networks.

From the religious values category: Perfection, cooperation and transparency.

The variables which were found to have no significant effect on attitude to the adoption of technological innovations numbered four, as follows:

From the cultural values category: Uncertainty Avoidance and long-term orientation.

From the social values category: Peers' influence.

From the religious values category: Responsibility.

6.11 Inter-correlations among Study Variables

The purpose of this analysis is to explore whether there is any primary evidence for relationships between the variables. Results will then be used as the basis for further investigation, such as regression. For the purpose of this research, Spearman's correlation coefficient, *r,* was utilized. A correlation is a measure of the linear relationship between variables. According to Field (2005) Spearman's correlation coefficient is a non-parametric statistic which can be used when data have violated parametric assumptions, such as non-normally distributed data. It is also commonly used for small sample sizes – as was the case in this research. Spearman's test works by first ranking the data, and then applying Pearson's equation to those ranks.

Table 6.81 presents the correlations among all research variables. The table shows that attitude is significantly and positively related to the five cultural variables: Uncertainty Avoidance ($r = 0.394$, $p<0.01$), power distance ($r = 0.353$, $p<0.01$) In-Group Collectivism ($r = 0.458$, $p<0.01$), Long-Term Orientation, ($r = 0.332$, $p<0.01$), and Masculinism, ($r = 0.225$, $p<0.01$). The data also show that the attitude toward adoption is significant and positively related to two social factors: social network ($r = 0.393$, $p<0.01$), and peers' influence ($r = 0.401$, $p<0.01$). The analysis demonstrates that attitude is also significant and positively related to the four religious factors: perfection ($r = 0.449$, $p<0.01$), cooperation ($r = 0.436$, $p<0.01$), responsibility ($r = 0.388$, $p<0.01$), and transparency ($r = 0.402$, $p<0.01$).

Table 6.81 reports that correlations among dependent and independent variables ranged from $r = 0.225$ to $r = 0.458$ and correlations among all variables ranged from $r = 0.095$ to $r = 0.605$, indicating no multicollinearity problems among the variables. In the analysis, the correlation matrix table shows a significant positive correlation between the dependent and independent variables. The correlations analysis is presented in Table 6.81. Pearson's correlation coefficients (r) of the variables were significant at the 0.01 level. In the analysis, the correlation matrix table confirms there is a significant positive correlation between the dependent variable (attitude) and the independent variables.

Table 6.81 Inter-correlations among study variables

Variables	UA	PD	IC	LO	MAS	SN	PI	PE	CO	RE	TR	AT
UA	1	.121*	.519**	.243**	.048	.280**	.341**	.204**	.438**	.401**	.382**	.394**
PD	.121*	1	.159**	.267**	.081	.089	.175**	.243**	.145**	.097*	.039	.353**
IC	.519**	.159**	1	.310**	.064	.186**	.342**	.252**	.419**	.364**	.357**	.458**
LO	.243**	.267**	.310**	1	.120*	.225**	.214**	.189**	.224**	.235**	.264**	.332**
MAS	.048	.081	.064	.120*	1	.095*	.022	.079	.057	.094*	.035	.225**
SN	.280**	.089	.186**	.225**	.095*	1	.432**	.213**	.235**	.269**	.346**	.393**
PI	.341**	.175**	.342**	.214**	.022	.432**	1	.273**	.289**	.301**	.343**	.401**
PE	.204**	.243**	.252**	.189**	.079	.213**	.273**	1	.234**	.227**	.155**	.449**
CO	.438**	.035	.419**	.224**	.057	.235**	.289**	.234**	1	.605**	.385**	.436**
RE	.401**	.097*	.364**	.235**	.094*	.269**	.301**	.227**	.605**	1	.443**	.388**
TR	.382**	.039	.357**	.264**	.035	.346**	.343**	.155**	.385**	.443**	1	.402**
AT	.394**	.353**	.458**	.332**	.225**	.393**	.401**	.449**	.436**	.388**	.402**	1

Legend: UA= Uncertainty Avoidance, **PD**= Power Distance, **IC**=In-Group Collectivism, **LO**= Long-Term Orientation, **MAS**= Masculinism, **SN**= Social Network, **PI**=Peers' Influence, **PE**= Perfection, **CO**=Cooperation, **RE**=Responsibility, **TR**= Transparency, **AT**= Attitude.

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

6.12 Analysis of Attitude Effect on Usage

Table 6.82 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.878	.770	.769	.48022863	1.721

a. Predictors: (Constant), Attitude

b. Dependent Variable: Usage

Table 6.82 above on the effect of attitude regarding usage shows that the correlation coefficient squared (R^2=.770) is the coefficient of determination. In this analysis, 77% of the variation of employees' use of the GRP application can be explained by the effect of attitude. Prior research suggests that an R^2 of .15 indicates moderate variance and an R^2 of .35 indicates a large amount of variance (Cohen, 1988). The standard error of the estimate is another measure of the predictions' accuracy, which represents an estimate of the standard deviation of the actual dependent values around the regression line. Furthermore, results of Durbin-Watson statistics inform us there is no problem regarding autocorrelation. For this study's data, the value is 1.721 so the assumption has been met.

Table 6.83 Result of regression analysis with usage as dependent variable

Coefficients

Independent Variable	Unstandardized Coefficients (B)	Standardized Coefficients Beta	T	Sig.
(Constant)	1.863E-16	.026	.000	1.000
Attitude	.878	.026	33.645	.000

Dependent Variable: Usage

Table 6.83 above shows the result of the correlation coefficient indicates a highly significant relationship between the dependent variable (usage) and independent variable (attitude). The level of significance is 0.000. This finding agrees with the theory of reasoned action (Fishbein & Ajzen, 1975, 1980), which assumes the full mediating role

of attitude on behavioral intention. This outcome is slightly different from studies conducted using the technology acceptance model (Davis et al., 1989; Venkatesh & Davis, 2000). They argue for a partial or minimal mediating role of attitude on behavioral intention, and this finding is consistent with Kim et al. (2009). These scholars found that attitude to using the system is the most important determinant of behavioral intention.

6.13 Analysis of Outcome Variables

Analysis of Cost Effectiveness Scale (CE)

Table 6.84 Correlation Matrix for Cost Effectiveness (CE)

		CE1	CE2	CE3	CE4	CE5
Correlation	**CE1**	1.000	.804	.731	.754	.725
	CE2	.804	1.000	.758	.750	.749
	CE3	.731	.758	1.000	.811	.734
	CE4	.754	.750	.811	1.000	.807
	CE5	.725	.749	.734	.807	1.000

As shown in Table 6.84 above, the results revealed that the correlation coefficients between items for the Cost Effectiveness Scale are between 0.725 and 1.00 which is generally greater than 0.3. This indicates their suitability for factor analysis (Coakes, 2005).

KMO and Bartlett's Test for the Cost Effectiveness Scale

Table 6.85 KMO and Bartlett's Test for the Cost Effectiveness Scale

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.888
Bartlett's Test of Sphericity	Approx. Chi-Square	1514.139
	Df	10
	Sig.	.000

The researcher also examined the Kaiser-Meyer-Olkin (KMO) output provided in the factor analysis. A KMO correlation ranging from 0.60 to 0.70 is considered adequate for investigating the EFA output (Netemeyer et al., 2003). Table 6.85 above shows the KMO statistic for cost effectiveness is 0.888, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), thus indicating sampling adequacy. Bartlett's test of sphericity (chi-square = 1514.139) was highly significant at $p<0.000$, indicating the adequate nature of relationships between the variables (Field, 2005). The data is therefore appropriate for factor analysis.

Factor Loading for Cost Effectiveness

Table 6.86 Factor Loading for Cost Effectiveness (CE)

Component Matrix	
	Component
	1
CE1	.892
CE2	.902
CE3	.897
CE4	.917
CE5	.892
Extraction Method: Principal Component Analysis.	
a. 1 component extracted	

Factor loading of scale items for cost effectiveness was evaluated. According to Field (2005) and Hair et al. (2006) factor loadings below 0.4 are considered low, and low-loading items should be suppressed. It is documented in Table 6.86 that the loading values of all five items are between 0.892 and 0.917. This means they exceed the cut-off level of 0.50.

Analysis of Service Quality Scale (SQ)

Table 6.87 Correlation Matrix for Service Quality (SQ)

		SQ1	SQ2	SQ3	SQ4	SQ5
Correlation	**SQ1**	1.000	.738	.681	.636	.648
	SQ2	.738	1.000	.657	.713	.677
	SQ3	.681	.657	1.000	.704	.691
	SQ4	.636	.713	.704	1.000	.727
	SQ5	.648	.677	.691	.727	1.000

As shown in Table 6.87 above, the results revealed that the correlation coefficients between items for the Service Quality Scale are between 0.636 and 1.00 which is generally greater than 0.3. It indicates that they are suitable for factor analysis (Coakes, 2005).

KMO and Bartlett's Test for Service Quality Scale

Table 6.88 KMO and Bartlett's Test for Service Quality Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.879
Bartlett's Test of Sphericity	Approx. Chi-Square	1153.377
	Df	10
	Sig.	.000

Also examined here was the Kaiser-Meyer-Olkin (KMO) output provided in the factor analysis. Table 6.88 above shows the KMO statistic for service quality is 0.879, and this is above the minimum acceptable level of 0.60 (Coakes et al., 2006), indicating sampling adequacy. Bartlett's test of sphericity (chi-square = 1153.377) was highly significant at $p<0.000$, meaning there were adequate relationships between the variables Field (2005). Here it can be stated that the data is appropriate for factor analysis.

Factor Loading for Service Quality (SQ)

Table 6.89 Factor Loading for Service Quality (SQ)

Component Matrix	
	Component
	1
SQ1	.730
SQ2	.766
SQ3	.743
SQ4	.764
SQ5	.748
Extraction Method: Principal Component Analysis.	
a. 1 component extracted	

Factor loading of scale items for cost effectiveness was investigated. As shown in Table 6.89, the loading values of all five items are between 0.730 and 0.764, and these figures surpass the cut-off level of 0.50.

Analysis of Organizational Efficiency (OE)

Table 6.90 Correlation Matrix for Organizational Efficiency (OE)

		OE1	**OE2**	**OE3**	**OE4**	**OE5**
Correlation	**OE1**	1.000	.580	.677	.581	.583
	OE2	.580	1.000	.702	.746	.682
	OE3	.677	.702	1.000	.676	.609
	OE4	.581	.746	.676	1.000	.709
	OE5	.583	.682	.609	.709	1.000

As shown in Table 6.90 above, the results revealed that the correlation coefficients between items for Organizational Efficiency Scale are between 0.580 and 1.00. It means that because these figures are greater than 0.3, they are suitable for factor analysis (Coakes, 2005).

KMO and Bartlett's Test for Organizational Efficiency Scale

Table 6.91 KMO and Bartlett's Test for Organizational Efficiency Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.870
Bartlett's Test of Sphericity	Approx. Chi-Square	1057.324
	Df	10
	Sig.	.000

The Kaiser-Meyer-Olkin (KMO) output provided in the factor analysis was investigated. Table 6.91 above shows the KMO statistic for Organizational Efficiency is 0.870, which is above the minimum acceptable level of 0.60 (Coakes et al., 2006), indicating adequacy of the sampling. Additionally, Bartlett's test of sphericity (chi-square = 1057.324), which was highly significant at $p<0.000$. It confirms there were adequate relationships between the variables (Field, 2005). Consequently, it can be concluded that the data is appropriate for factor analysis.

Factor loading of scale for Organizational Efficiency (OE)

Table 6.92 Factor Loading for Organizational Efficiency (OE)

Component Matrix	
	Component
	1
OE1	.798
OE2	.875
OE3	.862
OE4	.876
OE5	.842
Extraction Method: Principal Component Analysis.	
a. 1 component extracted	

Factor loading of scale items for cost effectiveness was examined. As shown in Table 6.92, the loading values of all five items are between 0.798 and 0.876 which exceed the cut-off level of 0.50.

Analysis of Relation with Customers (RC)

Table 6.93 Correlation Matrix for the Relationship with Customers (RC)

		RC1	RC2	RC3	RC4
Correlation	**RC1**	1.000	.841	.779	.704
	RC2	.841	1.000	.808	.718
	RC3	.779	.808	1.000	.775
	RC4	.704	.718	.775	1.000

As shown in Table 6.93 above, the results revealed that the correlation coefficients between items for relationship with Customers Scale are between 0.704 and 1.00. Because these figures are more than 0.3, it means that they are suitable for factor analysis (Coakes, 2005).

KMO and Bartlett's Test for Relationship with Customers Scale

Table 6.94 KMO and Bartlett's Test for the Relationship with Customers Scale

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling AdeqRCcy.		.839
Bartlett's Test of Sphericity	Approx. Chi-SqRCre	1142.496
	Df	10
	Sig.	.000

The researcher also examined the Kaiser-Meyer-Olkin (KMO) output provided in the factor analysis. Table 6.94 above highlights the KMO statistic for the relationship with customers is 0.839, which is above the minimum acceptable level of 0.60 (Coakes et

al., 2006), indicating sampling adequacy. Bartlett's test of sphericity (chi-square = 1142.496) was highly significant at $p<0.000$, so it was evident there were adequate relationships between the variables (Field, 2005). Therefore, it can be concluded that the data is appropriate for factor analysis.

Factor Loading for the Relationship with Customers (RC)

Table 6.95 Factor Loading for the Relationship with Customers (RC)

Component Matrix[a]	
	Component
	1
RC1	.914
RC2	.926
RC3	.925
RC4	.875
Extraction Method: Principal Component Analysis.	
a. 1 component extracted	

Factor loading of scale items for cost effectiveness was examined. As shown in Table 6.95, the loading values of all five items are between 0.875 and 0.926 and these exceed the cut-off level of 0.50.

Analysis of Usage Effect on Cost Effectiveness

Table 6.96 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.166	.027	.025	.98765114	1.943

a. Predictors: (Constant), Usage

b. Dependent Variable: Cost

Table 6.96 above shows that the correlation coefficient squared (R^2=.027) accounts for only 2% of the variability. However, in social sciences low R-square values are often expected (Hossny, 2018). A low R-squared does not negate a significant predictor or change the meaning of its coefficient. R-squared is simply whatever value it is, and it does not need to be any particular value to make a valid interpretation possible (Minitab, 2013). Durbin-Watson statistics results inform us there is no problem regarding autocorrelation. For this study's data, the value is 1.866 so the assumption has been met.

Table 6.97 Coefficients for effect of usage on cost effectiveness

Coefficients

Independent Variable	Unstandardized Coefficients (B)	Standardized Coefficients Beta	T	Sig.
(Constant)	-8.085E-17	.054	.000	1.000
Usage	.166	.054	3.087	.002

a. Dependent Variable: Cost

In Table 6.97 above the result of the correlation coefficient indicates a highly significant relationship between the dependent variable (cost effectiveness) and the independent variable (usage). The significance level is 0.002.

Analysis of Usage Effect on Service Quality

Table 6.98 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.170	.029	.026	.98687097	2.023

a. Predictors: (Constant), Usage

b. Dependent Variable: Quality

Table 6.98 summarizes the effect of usage on the service quality, and it shows that the correlation coefficient squared (R^2=.029) accounts for only 2.9% of the variability. However, in the social sciences low R-square values are often expected (Hossny, 2018). A low R-squared does not negate a significant predictor or change the meaning of its coefficient. R-squared is simply whatever value it is, and it does not need to be any particular value to allow for a valid interpretation (Minitab, 2013). Findings of the Durbin-Watson statistics tell us that there is no issue concerning autocorrelation. For this study's data, the value is 1.887 so the assumption has been met.

Table 6.99 Coefficients for effect of usage on service quality

Coefficients

Independent Variable	Unstandardized Coefficients (B)	Standardized Coefficients Beta	T	Sig.
(Constant)	9.577E-17	.054	.000	1.000
Usage	.170	.054	3.175	.002

a. Dependent Variable: Quality

Table 6.99 above shows the correlation coefficient result indicates a highly significant relationship between the dependent variable (service quality) and the independent variable (usage). The significance level is 0.002.

Analysis of Usage Effect on Organizational Efficiency

Table 6.100 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.398	.158	.156	.91878723	1.898

a. Predictors: (Constant), Usage

b. Dependent Variable: Efficiency

Table 6.100 which summarizes the model for the effect of usage on organizational efficiency shows that the correlation coefficient squared (R^2=.158) accounts for only 15% of the variability. Results concerning the Durbin-Watson statistics tell us that there is no problem about autocorrelation. For this study's data, the value is 2.025 so the assumption has been met.

Table 6.101 Coefficients for effect of usage on organizational efficiency

Coefficients

Independent Variable	Unstandardized Coefficients (B)	Standardized Coefficients Beta	T	Sig.
(Constant)	2.684E-16	.050	.000	1.000
Usage	.398	.050	7.974	.000

a. Dependent Variable: Efficiency

Table 6.101 above reveals the outcome for the correlation coefficient, and it indicates a highly significant relationship between the dependent variable (organizational efficiency) and the independent variable (usage). The significance level is 0.00.

Analysis of Usage Effect on Relationship with Customers

Table 6.102 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.041	.002	-.001	1.00062334	2.097

a. Predictors: (Constant), Usage

b. Dependent Variable: Customers

Table 6.102 summarizes the model for the effect of usage on the relationship with customers. It shows that the correlation coefficient squared (R^2=.002) accounts for only 0.002% of the variability. Results arising out of the Durbin-Watson statistics confirm there

is no problem with autocorrelation. For this study's data, the value is 1.837 so the assumption has been met.

Table 6.103 Coefficients for effect of usage on relationship with customers

Coefficients

Independent Variable	Unstandardized Coefficients (B)	Standardized Coefficients Beta	T	Sig.
(Constant)	-5.929E-18	.054	.000	1.000
Usage	-.041	.054	-.760	.448

a. Dependent Variable: Customers

Table 6.103 above documents the result of the correlation coefficient and an insignificant relationship is indicated between the dependent variable (relationship with customers) and the independent variable (usage). The significance level is .448 which is higher than 0.05.

Table 6.104 Coefficients for the Effect of Usage on the Four Outcomes'

Coefficients

Independent Variables	Unstandardized Coefficients (b)	Standardized Coefficients (β)	T	R^2	F	Sig.
Cost Effectiveness	.166	.054	3.087	.027	9.530	.002
Service Quality	.170	.054	3.175	.029	10.080	.002
Organizational Efficiency	.398	.050	7.974	.158	63.578	.000
Relationship with Customers	-.041	.054	-.760	.002	0.578	.448

a. Predictors: (Constant), Usage

Table 6.104 summarizes the correlation coefficient of the four outcomes (cost effectiveness, service quality, organizational efficiency, and relationship with customers). It emerges that three variables have a significant relationship with the usage of the ERP system while only one variable, which is relationship with customers, has no significant relationship.

6.14 Checking Assumptions

To check the assumptions of the model, a statistical analysis was conducted, and the findings identified neither a problem regarding outliers nor one concerning multicollinearity. Durbin-Watson statistics prove that no autocorrelation exists. The plot of the standardized residuals against standardized predicted values (the histogram and the normal probability plot of the residuals) was investigated. The scatterplots show relationships between predicted values of dependent variables and residuals. This makes it possible to test linearity and homoscedasticity of residuals assumptions to occur. The graph of standardized residuals against standardized predicted values should look like a random array of dots evenly dispersed around zero. If any sort of curve is evident in this graph, then the chances are that the data has broken the assumption of linearity. If this graph funnels out, the odds are that there is heteroscedasticity in the data.

Regression Standardized Predicted Value

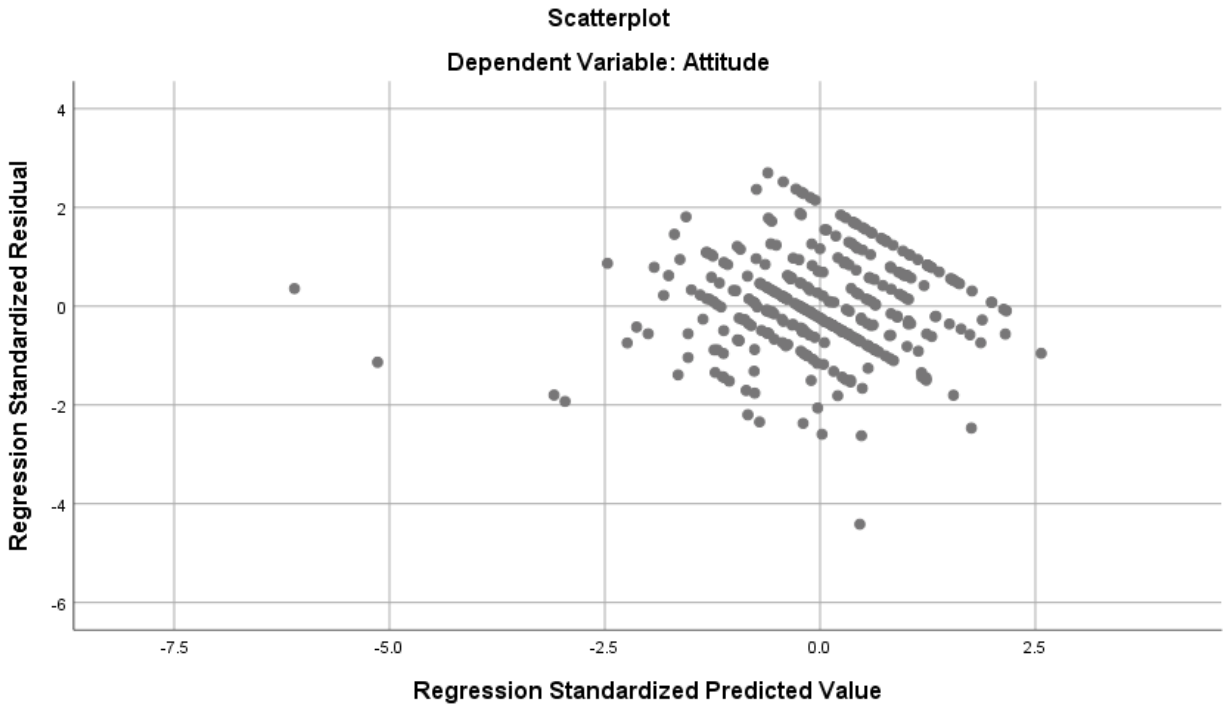

Figure 6.5 Plot of standardized residuals against standardized predicted values

Figure 6.5 plots the standardized residuals against standardized predicted values. The points are randomly and evenly dispersed throughout the plot. Most of the points are evenly dispersed around zero. There is no clear relationship between residuals and predicted values so linearity is evident and no violation of the assumption of homoscedasticity occurs although there are few residuals around the plots. The points do not form the shape of a funnel and there is no curvilinear relationship in the plots. This geographical pattern indicates a situation in which the assumptions of linearity and homoscedasticity have been met.

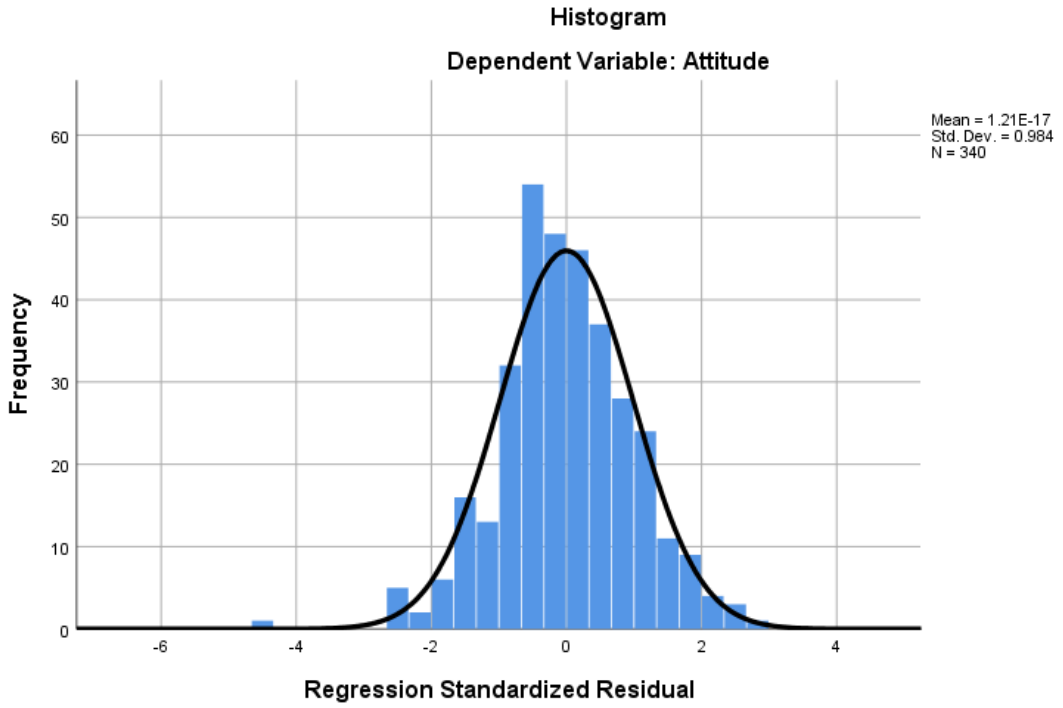

Figure 6.6 Histogram of normally distributed residuals

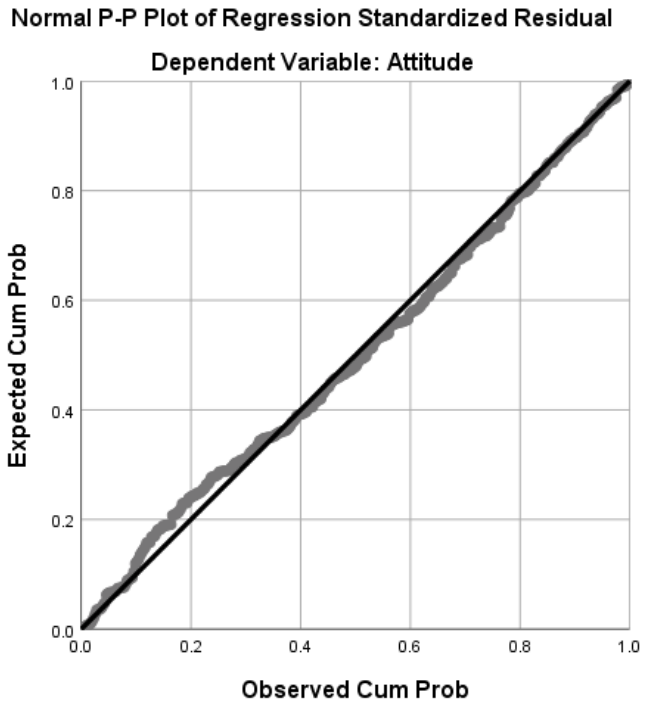

Figure 6.7 Normal Probability plot of regression standardized residuals

In order to test the normality of residuals and to check whether they are normally distributed, it is essential to check the histogram and the normal probability plots. The histogram should look like a normal distribution (a bell-shaped curve). On the other hand, a non-normal histogram shows distribution as skewed or unsymmetrical. In this study, a histogram shows that distribution is roughly normal although there is a slight deficiency of residuals in the middle. Subsequently, the histogram shows that data are normally distributed. Normal probability plots of the residuals were examined in order to check the normality assumption. The normal distribution and the points representing residuals were presented by a straight line. A perfectly normally distributed data set where all points lie on the line is what we see in this study. Both histogram and normal probability plots show relatively normal distribution, hence assumption is not violated. Figure 6.6 depicts a histogram of normally distributed residual and Figure 6.7 illustrates normal probability plot of regression standardized residuals.

6.15 Discussing the results of the hypotheses

The research aimed to examine the impact of socio-cultural and religious values on the adoption of new technological innovations in Saudi Arabia. The specific objective is to study the impact of cultural norms, social networks, religious values, and demographic characteristics on the attitude of Saudi employees in the Ministry of Foreign Affairs (MOFA) to using the GRP application and the impact of this attitude on outcome benefits. Because behavioral models are not universal from culture to culture (Moore & Benbasat, 1991; Datta, 2011) the study proposed a new conceptual model to examine the role of four different categories of factors, namely cultural, social, religious, and demographic factors. The developed conceptual model is based on existing technology acceptance theories, specifically, Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT) and Hofstede's Cultural Dimensions Theory (CDT). Results provide substantial support for the enhanced model which contends that innovation adoption and the relative contribution of the independent variables to variations in individuals' acceptance of innovation is valid.

Discussion of the international cultural values hypotheses (H1 to H5)

Five hypotheses were proposed to assess the impact of the cultural drivers on the attitudes to adopt GRP applications by employees in the Ministry of Foreign Affairs in Saudi Arabia. These are explained in more detail below.

The results of the cultural factors analysis show that three factors significantly affect attitude about accepting the GRP application: Power distance (significance level .000), In-group collectivism (significance level .001), and Masculinism (significance level .000). Subsequently, the hypotheses (*H2, H3,* and *H5*) are supported. Two factors do not have a significant effect on attitude, and these are Uncertainty avoidance (significance level .426) and Long-term orientation (significance level .337). Therefore, *H1* and *H4* are not supported. The results of these five factors are shown in Table 6.105. Compared to other studies, Ozbilen (2017) stated that power distance, uncertainty avoidance, individualism and long-term orientation dimensions wield a satisfactory influence on the adoption of new

technology at firm-level; however, masculinity does not affect it. Ebrahimi et al. (2010) in their study concluded that power distance, uncertainty avoidance, and collectivism/individualism have a positive significant correlation with behavioral intention to use new technologies. However, the correlation analysis in their study found there is no significant relationship between masculinity/femininity and behavioral intention. Al-Hujran et al. (2011) studied the role of national culture on citizens' adoption of e-government services. Their results match those of this thesis for only one factor - power distance. Furthermore, their findings show that only power distance and uncertainty avoidance wielded significant impacts on citizens' intention to adopt e-Government, while other cultural dimensions were not significant.

Discussion of the social values hypotheses (H6 and H7)

Two hypotheses were proposed to assess the impact of social value drivers on the attitudes regarding the adoption of GRP applications These are explained more precisely below.

The results of the social factors analysis show that one factor significantly affects attitudes on adopting GRP applications: social networks (significance level .001). So, hypothesis *H6* is supported and the analysis results reveal that peers' influence does not have any significant effect on attitude. Accordingly, hypothesis *H7* is not supported and the outcomes for these two hypotheses are presented in Table 6.106. Talukder et al. (2008) found that both social factors - peers and social network - are non-significant in organizations in Australia. The study by Hung et al. (2018) **concluded that** social impact only has a significant influence on inexperienced users' intention to accept.

Discussion of the religious values hypotheses (H8 to H11)

Four hypotheses were proposed to assess the impact of religious value drivers on the attitudes to adopt GRP applications. These are expanded on in the text which follows.

Results of the religious values analysis show that three factors significantly affect attitudes to adopt the GRP application: perfection (significance level .000), cooperation (significance level .010), and transparency (significance level .005). Subsequently, *H9, H8,*

and *H11* are supported in the model. One factor does not have any significant effect on attitude and that is responsibility (significance level .746), so hypothesis *H10* is not supported. The results of the four factors are shown in Table 6.107. Barnes (2009) studied the influence of religious faith on trusting beliefs in the context of technology acceptance. He stated that religious faith increases benevolence, which in turn influences perceived ease of use, perceived usefulness and behavioral intention. Sun et al. (2012) concluded that religious affiliation and commitment were both effective segmentation strategies, as differences in adoption intention were evident between Muslims and non-Muslims, as well as devout and casually religious Muslims. Overall, devout Muslims were socially oriented with their adoption criteria whereas casually religious and non-Muslims had more utilitarian attributes.

Discussion of the demographics characteristics hypotheses (H12 to H15)

Four hypotheses were proposed to assess the impact of religious demographic drivers on the attitudes to adopt GRP applications. These hypotheses are outlined below in more detail.

Results concerning the demographic factors analysis show that only one factor significantly affects attitude to embrace the GRP application: age (significance level .027). Accordingly, *H13* is supported while the other three factors (gender, academic qualification and job position) were found to wield no significant effect on attitude. Accordingly, *H12, H14* and *H15* are not supported in the model. The results of these four factors are shown in Table 6.108. According to Hung et al. (2018)**,** gender has a moderating effect only on the relationship of performance expectancy and behavioral intention of inexperienced users. Talukder et al. (2008) stated that demographic characteristics such as age and educational qualification did not indicate any significant impact on attitude regarding adoption and usage. This is consistent with the finding for the qualification factor in this study, and it contradicts the age-related result. It also contradicts Obisesan (2014) who discovered that gender differences have an impact on technology adoption in Nigerian farming households. It is also contrary to what Al-Shafi and Weerakkody (2010) and Goswami and Dutta (2016) found, specifically that gender can decide the adoption of a new technology. Concerning

the job position factor, one analysis (Eom et al., 2016) stated that employment position does have an impact on innovation adoption.

Discussion of the attitude hypothesis (H16)

One hypothesis assessed the impact of attitude on the adoption of the GRP applications. This is set out in more detail below.

The effect of attitude on GRP application usage is a highly significance level of .000 and this means *H16* is supported. The analysis of the effect of attitude on GRP application usage is shown in Table 6.109. This finding agrees with the theory of reasoned action (Fishbein & Ajzen, 1975, 1980), one that assumes the full mediating role of attitude on behavioral intention. The result does slightly differ from studies employing the technology acceptance model (Davis et al., 1989; Venkatesh & Davis, 2000), which argue for a partial or minimal mediating role of attitude on behavioral intention. The result does agree with that of Kim et al. (2009) who found that attitude to accessing the system is the most important determinant of behavioral intention. In his recent study Hussein (2017) concluded that attitude was a significant predictor of students' intention to use e-learning systems.

Discussion of the outcome hypotheses (H17 to H20)

Four hypotheses were proposed to assess the impact of GRP usage on the expected benefits for the organization. These are explained below in more detail.

The results for the analysis show that three outcomes are significantly affected by the usage of the GRP application: cost effectiveness (significance level .002), service quality (significance level .002), and organizational efficiency (significance level .000). Therefore, these hypotheses (*H17, H18,* and *H19*) are supported. One outcome is not significantly affected by usage of the GRP application and this is the relationship with customers (significance level .448). So *H20* is not supported and the results of these four factors are illustrated in Table 6.110. Maxwell (2012) reported that electronic delivery of services reduces costs and increases effectiveness with respect to making improvements in the way

an organization does business. Al-Khouri (2012) indicated that with reference to e-government, a government-owned management system can increase overall efficiency. Technology adoption can build better relationships between organizations and their customers (Kumar et al., 2007).

6.16 Summary of the hypotheses testing

The following table briefly summarizes the hypothesis testing.

Table 6.105 Summary of the hypotheses testing

Hypothesis	***Significance Level***	***Decision***
Cultural values hypotheses		
(1) Uncertainty Avoidance	0.426	Not Accepted
(2) Power distance	0.000	Accepted
(3) In-group collectivism	0.001	Accepted
(4) Long-term orientation	0.337	Not Accepted
(5) Masculinism	0.000	Accepted
Social values hypotheses		
(6) Social Networks	0.001	Accepted
(7) Peers' Influence	0.140	Not Accepted
Religious values hypotheses		
(8) Perfection	0.000	Accepted
(9) Cooperation	0.010	Accepted
(10) Responsibility	0.746	Not Accepted
(11) Transparency	0.005	Accepted
Demographic hypotheses		
(12) Gender	0.314	Not Accepted
(13) Age	0.027	Accepted
(14) Academic Qualification	0.864	Not Accepted
(15) Job Position	0.410	Not Accepted

Attitude hypothesis		
(16) Attitude	0.000	Accepted
Expected benefits hypotheses		
(17) Cost Effectiveness	0.002	Accepted
(18) Organizational Efficiency	0.002	Accepted
(19) Service Quality	0.000	Accepted
(20) Relationship with customers	0.448	Not accepted

6.17 Summary

This chapter explained the procedures for analyzing the data, and it also presented the main categories and themes that emerged from the data and offered a discursive analysis and interpretation of the findings. The on-line questionnaire was discussed, and the response rate was presented. The pilot study conducted in the research was explained. The chapter discussed the results concerning the impact of cultural values, social values, religious values, and the demographic characteristics on people's attitude to using the GRP application in Saudi Arabia. As well, the results of the effect of attitude on usage were presented as were the effects of usage on the outcomes. Results of the data findings were described in terms of correlations and presented as tabulations. Twelve out of the twenty studied variables were found to have a significant impact on the use of the GRP application while eight variables were found to have no significant effect. The next chapter summarizes the research findings and what their implications are, the contribution and limitations of the research. Furthermore, recommendations for future research will be suggested.

CHAPTER SEVEN: CONCLUSION, IMPLICATIONS & RECOMMENDATIONS

7.1 Introduction

This research is a response to the call for a more in-depth and comprehensive research on the ways in which individuals adopt innovation and the factors that influence employees' embracing of innovation. To increase the adoption rate of innovation in the workplace, managers must recognize the demographic, cultural, social and religious factors or issues that influence how this occurs. Adopting technological innovations helps to reduce commuting time, improves the quality of work, and enhances workplace productivity (Eom et al., 2016). It is essential to understand the determinants of technology adoption because these outcomes will not be realized if the technologies are not used effectively (Eom et al., 2016). This research develops a comprehensive conceptual model that seeks to explain the impact of cultural, social, religious, and demographic factors on the attitude of employees regarding the adoption of the GRP system in the Ministry of Foreign Affairs (MOFA) in Saudi Arabia. The proposed model was explored and tested using a quantitative questionnaire survey method, completed by 340 employees working at that particular ministry. This chapter summarizes how the study answered the research questions. Also broached here are the research contributions and their implications for the future. The final section assesses the limitations of the study and overviews the opportunities for further research.

7.2 Summary of the research

This study investigated the adoption of technological innovations by individual employees in a ministry of the Saudi Arabian government. Although extensive studies have been done on innovation adoption, our knowledge about the drivers of adoption and research on individual innovation acceptance in the organizational context is limited (Frambach & Schillewaert, 2002; Talukder, 2014). Only a few studies have been conducted on the

determinants of technological innovation adoption in the Middle East. The current literature shows that we know relatively little about individuals' innovation adoption. There is a gap in the current literature in that we know relatively little about the ways in which, or reasons why, individuals adopt innovations and what this means for the economies and social structures of the Arab countries.

This study investigates the determinants that affect the adoption of technological innovation by individual employees by exploring the GRP system in the Ministry of Foreign Affairs (MOFA) in Saudi Arabia. ERP technology, which is a synonym for GRP, has been seen as an off-the-shelf tool for optimizing business processes since its introduction to the market. The ERP system enhances interdepartmental collaboration and communication necessity and scope. It helps businesses to achieve their goals of increased communication and accessibility for all shareholders (Dedan & Lyimo, 2019).

Research questions and hypotheses were proposed in attempt to explain the factors that affect and determine the adoption and use of technological innovations by individual employees. The study is an attempt to explore the outcome of adopting and implementing GRP in Saudi Arabia. Six research questions were developed to examine the factors affecting the adoption of the GRP system in the Ministry of Foreign Affairs:

1. What is the impact of cultural values on the attitude to the adoption of technological innovation by employees in an organization in Saudi Arabia?
2. What is the impact of social factors on the attitude to the adoption of technological innovation by employees in an organization in Saudi Arabia?
3. What is the impact of religious values on the attitude to the adoption of technological innovation by employees in an organization in Saudi Arabia?
4. What is the impact of demographic characteristics on the attitude to the adoption of technological innovation in an organization in Saudi Arabia?

5. What is the impact of attitude to technological innovation on individual employees' acceptance and use of technological innovation in Saudi Arabia?
6. What are the expected benefits to Saudi organizations from adopting and using technological innovation?

The study developed an integrated conceptual research model based on existing technology acceptance theories and models to examine the effect of these factors. The developed conceptual model consists of four categories (cultural values, social values, religious values, and demographic characteristics) to measure their impact on the attitude concerning the usage of the GRP system. In the second stage, the model examines the effect of attitude on this system's usage. The third stage investigates the effect of using the GRP system on the perceived benefits.

The study used an online quantitative method to explore the impact of socio-cultural norms and religious values on the adoption of technological innovations by employees in Saudi Arabia's Ministry of Foreign Affairs. The quantitative method was chosen in order to be more aware of the influence and prevalence of socio-cultural and religious norms on the acceptance and use of new technologies at the ministry. The questionnaire was developed based on validated items from previous relevant analyses. The questions were reworded to suit the research objectives and aims of this thesis. To ensure the validity and reliability of the instrument, a pilot study was conducted to identify and modify any items which might be misinterpreted by respondents, skipped over or answered improperly.

Statistical analysis of data was done using the SPSS software package 23.0. The study calculated frequency distribution and percentages and several cross-tabulations were performed. The study also conducted correlation matrix, test for reliability and ANOVA. Multiple regression analysis was done on the collected data to test the proposed model. The analyses tested the enhanced model and the findings supported most of the hypotheses. The results show that seven out of the eleven cultural, social and religious variables did have a

significant effect on attitude to the adoption of technological innovations, while only one variable from the four demographic variables was found to have a significant effect on it. The details are reported below.

Five variables from the cultural values category were selected for this study. Three of them (power distance, in group collectivism, and masculinism) were found to have a significant effect on attitude to the adoption of technological innovations. Two variables (uncertainty avoidance and long-term orientation) wielded no significant effect on the attitude regarding the adoption of the GRP system. Two variables from the social values category were selected for this study. The first - social network - was found to have a significant effect on attitude to the adoption of the GRP system, while the second, peers' influence, had no significant effect.

Four variables were selected from the religious values category. Out of four, three of them (perfection, cooperation and transparency) were found to have a significant effect on attitude to the adoption of technological innovations, while responsibility was found to have no significant effect on the attitude to the adoption of the GRP system. Four variables were selected from the demographic's category: gender, age, academic qualification, and job position. Only one variable, age, was found to have significant effect on the attitude to adopting the GRP system, while the remaining three variables were found to have no significant effect on this aspect of technological adoption.

The result of the correlation coefficient indicates a highly significant effect of attitude on the level of usage of the ERP system. The correlation coefficient results of the four outcomes (cost effectiveness, service quality, organizational efficiency, and relation with customers) show that three out of these four variables had a significant relationship with the usage of the GRP. These three variables are cost effectiveness, service quality and organizational efficiency. Only one variable, which is relationship with customers, was found to have no significant relationship with the usage of the GRP system.

This study followed the quantitative approach which helped further in understanding the factors that affect the GRP system's adoption and usage. The study has shown that out of the 20 hypotheses selected for this study, 12 were accepted but eight were not accepted: three from the cultural values, one from the social values, three from the religious values, one from the demographics factors, the attitude factor, and three from the expected benefits. The eight rejected hypotheses comprise two from the cultural values, one from the social values, one from the religious values, three from the demographic factors, and one from the expected benefits. This outcome is presented in Table 7.1 below. The results of this study assisted in the validation of the proposal model.

Table 7.1 Summary of the hypotheses testing results

Hypothesis	**Path Direction**			**Significance Level**	**Decision**
Cultural values hypotheses	**IND**		**DEP**		
(1) Uncertainty Avoidance	UA	→	ATT	0.426	Not Accepted
(2) Power distance	PD	→	ATT	0.000	Accepted
(3) In-group collectivism	GC	→	ATT	0.001	Accepted
(4) Long-term orientation	LO	→	ATT	0.337	Not Accepted
(5) Masculinism	MS	→	ATT	0.000	Accepted
Social values hypotheses					
(6) Social Networks	SN	→	ATT	0.001	Accepted
(7) Peers' Influence	PI	→	ATT	0.140	Not Accepted
Religious values hypotheses					
(8) Perfection	PR	→	ATT	0.000	Accepted
(9) Cooperation	CO	→	ATT	0.010	Accepted
(10) Responsibility	RS	→	ATT	0.746	Not Accepted

(11) Transparency	TR	→	ATT	0.005	Accepted
Demographic hypotheses					
(12) Gender	GN	→	ATT	0.314	Not Accepted
(13) Age	AG	→	ATT	0.027	Accepted
(14) Academic Qualification	AQ	→	ATT	0.864	Not Accepted
(15) Job Position	JP	→	ATT	0.410	Not Accepted
Attitude hypothesis					
(16) Attitude	ATT	→	USA	0.000	Accepted
Expected benefits hypotheses					
(17) Cost Effectiveness	USA	→	CE	0.002	Accepted
(18) Organizational Efficiency	USA	→	OE	0.002.	Accepted
(19) Service Quality	USA	→	SQ	0.000	Accepted
(20) Relationship with Customers	USA	→	RC	0.448	Not accepted

Table 7.2 Summary of the research questions addressed

Research Questions	Summary of the results
1. What is the impact of cultural values on the attitude towards the adoption of technological innovation by employees in an organization in Saudi Arabia?	There were five cultural variables- power distance, in-group collectivism, masculinism, uncertainty avoidance and long-term orientation. Out of these five variables, three of the variables- power distance, in-group collectivism and masculinism shows significant impact on the attitude towards GRP system usage. Two factors uncertainty avoidance and long-term orientation revealed no positive effect.
2. What is the impact of social factors on the attitude to the adoption of technological innovation by employees in an organization in Saudi Arabia?	There were two social factors- social network and peers influence. Out of these two variables social network has significant impact on attitude towards GRP systems usage. Peers' influence did not show any significant effect on usage level.
3. What is the impact of religious values on the attitude to the adoption of technological innovation by employees in an organization in Saudi Arabia?	There were four religious factors- perfection (Itqan), cooperation (Ta'awun) transparency (Shaffaf) and responsibility (Masuliyyah) and out of these four variables three variables- perfection (Itqan), cooperation (Ta'awun) transparency (Shaffaf) were found to have significant effect, while responsibility (Masuliyyah) was found to have no significant impact.
4. What is the impact of demographic characteristics on the attitude to the adoption of technological innovation in an organization in Saudi Arabia?	Out of five demographic characteristics- gender, age, academic qualification and job position only age was found to have significant effect on the attitude, while the other three factors were found to no significant effect.
5. What is the impact of attitude to technological innovation on individual employees' acceptance and use of technological innovation in Saudi Arabia?	As for the fifth question, attitude has shown strong impact on the level of GRP systems usage.
6. What are the expected benefits to Saudi organizations from adopting and using technological innovation?	There were four outcome variables- cost effectiveness, organizational efficiency, service quality and relationship with customers. Out of four three variables- cost effectiveness, organizational efficiency and service quality were found to have strong relationship with the usage of the GRP system. The only one factor- relationship with customers found to have not significantly related with GRP systems usage.

7.3 Study Contribution

This study makes important theoretical and practical contributions to the topic. The study has contributed to knowledge and theory. Firstly, it is one of the most up-to-date analyses of the factors that affect the acceptance and use of ERP system in Saudi Arabia from the perspective of public sector employees. Secondly, it broadens our understanding of the factors affecting innovation adoption. Thirdly, it develops a coherent model of technology adoption to examine the impacting factors. The study also makes a practical contribution by explaining the implications for management, government and other organizations.

Theoretical contribution

The research on the drivers of individual employees' adoption of technological innovation is still very limited in the Middle East and especially Saudi Arabia. Only a few studies have been conducted on the determinants of technological innovation in this part of the world. Although many studies have looked at this topic in the developed countries, only a few have been done on the developing countries such as Saudi Arabia with reference to the GRP system. This study addresses a significant research deficiency in the literature by examining the effects of cultural, social and religious factors on the adoption of the GRP system in Saudi Arabia. It was timely to examine the factors that influence the adoption of technological innovations by individuals in a specific organizational context, in order to explain what these factors do for public service personnel.

The study validated and confirmed the significant role of certain socio-cultural and religious factors in addition to demographics as potential factors which affect the acceptance and use of the GRP system in a Saudi government institution. The study succeeded in validating the proposed research model and the supporting relationships among the key constructs in this context. Its enhanced theoretical model of innovation adoption combines multiple variables found in previous innovation acceptance models. This study has theoretically contributed to the topic by proposing an updated conceptual model of technology adoption with reference to GRP adoption in Saudi Arabia. The enhanced conceptual model developed for this thesis provides a new approach that will

provide better understanding and advance research in the field of innovation acceptance by adding some other variables to suit the social cultural values of the study population. According to Chang and Cheung (2001), only a few studies have extended these models by adding one or two variables. The model also serves as the framework for future research on innovation adoption.

Studies conducted since the early 21st century (Venkatesh & Davis, 2000; Frambach & Schillewaert, 2002; Mun et al., 2006; Schepers & Wetzels, 2007; Oostrom et al., 2013) suggested that it is essential to develop a coherent model examining adoption of technological innovation by individual employees in the workplace. The enhanced model developed for this study includes an extensive list of factors affecting employees in their decisions to adopt a new technological system. Such an extensive list of determinants examined here is not common in existing innovation adoption-related research. One of the major contributions lies in the combination and application of different theories developed in Western countries to study the process of adoption and use of technological innovation. The applicability of some research theories and models to developing countries has been questioned because of the great social, historical, cultural and economic differences between them. This research succeeded in making use of these theories to develop a conceptual model to test the acceptance and adoption of technological innovations in one developing country that is very different from a Western nation.

Research questions and hypotheses were proposed to explain the factors that affect the adoption and use of technological innovations by individual employees. The novelty of this study lies in the specification and development of four categories (cultural, social, religious, and demographics) as the predictive constructs affecting attitude, usage and benefits of the GRP system by employees in the Ministry of Foreign Affairs in Saudi Arabia. These categories have not been used in their present form in any other research. The combination of socio-cultural and religious variables into a single study context goes beyond previous research in an attempt to bring together all the relevant factors that may affect individual employees' innovation adoption into one coherent model. The research used sophisticated statistical analysis to let us understand the factors that affect and

determine individual employees' acceptance of technological innovation in a region which was rarely the focus of prior research.

Contribution to knowledge

This study has contributed to new knowledge by researching an area which has been unexplored in previous studies. The study adds knowledge on how cultural and religious factors affect individuals' perceptions of technology adoption in the Middle East. This may act as future source of reference for studies to be done in the area of technology acceptance in the Arab countries. The study will provide a good understanding of the factors that influence and determine organizations' employees' adoption of the GRP system. The socio-cultural and religious context model has been validated through rigorous quantitative analysis.

The quantitative instrument used in the study is a survey questionnaire that explains the current state of GRP system adoption by employees in a public sector organization. Most of the sustainable technology acceptance-related studies are of a qualitative nature that expresses attitudes and reality subjectively. The quantitative approach can better explain the phenomenon using a statistics/numbers-based method in order to generalize the findings more effectively. This study used a combination of variables that go beyond previous research in an attempt to combine all the relevant factors that may influence adoption of technological innovation into a coherent model. The empirical analysis of this research contributed to knowledge in the area of technological innovation adoption research. The study contributes to knowledge by providing a deep understanding of the cultural, social and religious factors affecting the acceptance and use of technological innovations in public sector organizations in Saudi Arabia. Social and religious factors in technology adoption research are rarely taken into account. This study fills that gap in our knowledge on this subject. Most previous research on the influence of cultural norms has been conducted in Western countries (Maguire et al., 2010; Hossain et al., 2011; Abdelghaffar, 2012; Balta-Ozkan et al., 2013; Alhirz & Sajeev, 2015).

The methodology used in this study is also considered one of the major contributions to knowledge. Primary data was collected using a survey questionnaire to test the proposed enhanced model. Questionnaires were then discussed with expert analysts on the subject of technology adoption. As stated previously, data was analyzed using the SPSS package. Frequency distribution and percentages were calculated. Several cross-tabulations were performed. Test for reliability, correlation matrix, and ANOVA tests were conducted. To test the proposed model, multiple regression analysis was conducted on the collected data. The analyses tested the enhanced model and the findings supported most of the hypotheses. The study is expected to provide greater understanding of how cultural, social and religious values affect employees' technological innovation adoption behaviors. Middle Eastern countries are a perfect example of where cultural values, social influences and religious values prevail in all aspects of an individual's life. On this theme, the study emphasizes the impact of national cultural dimensions that shape individuals' social characteristics and acceptance of technological innovations in Saudi Arabia.

7.4 Implications of the study

As stated earlier, this study has implications for management personnel, government officials and other public service organizations. These are explained in more detail below.

Implications for management personnel

This study has important implications for management personnel working for public sector organizations in the Middle East countries in general and Saudi Arabia specifically. The results of the research will help managers in general and managers specifically within the Ministry of Foreign Affairs to consider more carefully the factors influencing the effective adoption and usage of technological innovations in the workplace. The inference drawn from the results will encourage managers to take effective decisions and devise more modern policies regarding the efficient usage and implementation of technological innovation such as a GRP system. It is evident that cultural values are important in forming positive employees' attitude to technological innovation. Managers in the Ministry of Foreign Affairs may encourage the creation of professional social clubs, so personnel can

be exposed to word-of-mouth communication with their colleagues and friends about any new system. Such support is expected to create a positive attitude among them about an innovation and lead to its acceptance and effective use through training, familiarity with the system, etc.

Managers must take into account the importance of the relevant cultural, social and religious factors in the adoption and usage of technological innovations to help reduce the related costs and to act fast for new technologies to take hold. For example, management can appeal to employees' religious values, by linking the use of technology to their sense of duty, responsibility and commitment to help others in the workplace and the wider Islamic society. A country such as Saudi Arabia is one where religious values are observed strictly, can help management to implement new technology acceptance and continuous usage for the benefits of the organization. Religious values will motivate employees to adopt and use technological innovation as long as they are stated in certain ways and appear to be relevant the demands and procedures of the workplace. Managers will have to be vigilant regarding the identification of any problems that individual employees may encounter in adopting innovation, such as the need to improve staff members' skills, expertise and familiarity with computer-driven systems.

The research will assist managers to identify and benchmark strategies so that technology adoption occurs in their organizations and help them develop policies and procedures. These strategies should be customized to best fit the unique characteristics of end users, the role of a department, ministry or agency, and what policies or procedures it is attempting to deliver to internal and external clients. Here managers will need to identify how much resources and support services are needed for employees when a new technology is introduced to the workplace, so that it functions smoothly and facilitates the productive use of new technology that all parties can trust.

Implications for the Saudi Government

The study has important implications for the government and policymakers in relation to implementing technological innovation. The study investigates the factors affecting

individual employees' acceptance and use of the GRP system in government departments and the results help us to understand not just the determinants influencing adoption, but also providing guidelines on how to improve efficiency and reduce implementation-related costs. According to the Saudi Gazette (2015), the launching of the Program for Human Resources Development was approved by King Salman. This program seeks to improve the workplace environment and boosting the productivity of government employees (Saudi Gazette, 2015). The Minister of Civil Service stated that the program would lead to a more functional and professional working environment based on a transparent, distinguished, and flexible public service so that administrative responsibilities can be expedited properly and effectively (Ekhbariya.net, 2015). King Salman's program for the development of human resources is an important national initiative that should result in institutional excellence and one where the public sector helps fulfil the objectives of the Saudi Government's Vision 2030 and National Transformation Program 2020. The focus is on investment in human capital so that Saudi citizens are helped to better themselves and receive good and up-to-date government services (PNU, 2017). This study will also help Saudi government institutions to develop policies on how to implement the GRP system and other related innovative systems.

The findings of this study provide important information for top level policymakers, directors and IT specialists within the Ministry of Foreign Affairs to understand that in order to implement technology they will need to provide a conducive environment for internal and external users. The government needs to communicate the benefits and advantages of using a new technology through social networks and providing peer support services to implement the technological innovation. The government can do this by encouraging the collective efforts of employees that are synchronized with cultural values where individuals respect the collective decision to accept and employ a technological innovation. Government policymakers can use the results of this study to understand and implement technological innovation that will improve cost effectiveness, organizational workplace efficiency and lead to better service quality outcomes. The results of this thesis show that embracing technological innovations enhances productivity in government organizations if they are introduced in the right way.

This study produced a practical guideline and a strategic document based on the findings which could help the Saudi government agencies particularly the Ministry of Foreign Affairs to introduce new technological innovations for their staff and clients. It provides a comprehensive analysis of the factors that influence the adoption of technological innovations from the perspectives of the public sector employees. The findings revealed many beneficial outcomes for business from using technological innovation. Currently, however, Saudi Arabia has a relatively low innovation adoption culture due to the conservatism of the country which is mainly driven by its history, cultural and religious assumptions, limited resources and expertise in integrating new technology into the workplace system.

Implications for organizations

Organizations throughout the world have been continually adjusting to rapidly changing technologies and circumstances in their operations and service departments. It is therefore important to monitor the driving forces shaping the innovation adoption process continuously especially in a country like Saudi Arabia. Based on the findings, Saudi government departments including ministries should emphasize employees' cooperation to enhance the rate of technology adoption and its implementation. In the Middle East, most of its cultures put a high premium on the collective mindset and working together to get things done where there is a great emphasis on supporting each other. The trick is ensuring that modern management and workplace concepts such as 'transparency' help to consolidate the religious values or meaning of transparency.

Managers and organizations will benefit from this research in developing policies for the adoption and use of the GRP system in the Ministry of Foreign Affairs and other public sector organizations. This study effectively identifies the critical factors which are: improving organizational efficiency, employee productivity, increasing service quality and cost effectiveness within the organization. The extent to which technological innovations can be used to support organizational needs and improve the work environment is also

important. It is evident that adopting the GRP system brings many positive benefits to Saudi government organizations. It reduces operational costs, saves time and increases the quality of services being delivered to customers. Furthermore, when systems are implemented to get the right outcomes, they can reduce related costs and enable faster and more efficient individual uptake of innovation in the organization, such as less need for training sessions, which are themselves time- and budget-consuming. This study emphasizes that organizations will have to consider a variety of local contexts in which the Saudi government operates, when putting technological innovations in place. The GRP system will be of great help to the government and Saudi citizens throughout the country, but they may have to be further refined for each region, city, town or according to what the services are being provided for and the expected productivity of such a system.

7.5 Limitations of the research

Like any other study, this thesis does have its limitations. While the thesis presents a careful and systematic effort to examine the enhanced model of innovation adoption by individual employees within an organization, there were certain problems. Certainly, the enhanced model developed is empirically tested it and the proposed model is based on existing theories in the literature; therefore, the approach and methods of the research constitute a logical extension of previous research. Accordingly, the factors and relationships examined in this research were deemed appropriate in this sense. However, one limitation is that the study was conducted in a public sector institution and lacked any opportunity to compare it with a private sector one. Such a comparative analysis could enrich the findings of this research. The study of this topic should therefore be extended to other areas such as the private sector or services sector to broaden our understanding of the adoption of the GRP system.

Another limitation of the study is the geographical scope. The study encompasses a single institution which is the Ministry of Foreign Affairs (MOFA) in Saudi Arabia. The same research conducted in another setting might generate different results since cultural, social, and religious factors could vary according to cultural context. Since the data were collected

from one organization, the findings may not be generalizable to other institutions or countries with different environmental settings and factors. Because of practical constraints, another limitation is that all measurements were taken at a single point in time. A study done at different times might reveal different results. Longitudinal studies are needed to fully investigate the causal effects of various factors and their relationships and how these changes. A longitudinal study undertaken by future research would provide a better interpretation of the factors investigated here, as well as the impact of interventions on behavioral intention. It would also provide a better understanding of the relationship between behavior intention (BI) and actual usage (USE) of e-government services in the KSA. Another limitation is that the response rate was relatively low and the reason for this poor response rate has been explained in the methodology section.

Only four demographic variables have been utilized in this research. These four variables are not the only demographic variables found in the literature. It will bring more diversity in studies' results if more demographic variables are devised in this type of research. The study has focused on a specific technological innovation which is the GRP system. Studies could focus on other advanced technologies to provide greater insights into the changing face of technology adoption in the workplace settings, and how the GRP system compares to others.

Due to time constraints, this study did not employ a qualitative research approach. In order to further test the model, the researcher could use the qualitative approach to provide a deeper insight into innovation adaptation and usage level by government staff. The qualitative nature of information could enrich our understanding of the factors affecting the adoption of technological innovation. Furthermore, the findings rely on respondents' cross-sectional data, rather than longitudinal data. This may not reflect changing situations as cross-sectional data may be affected by the respondents' predisposition of any events that have happened in the immediate past or further back, and their influence on people's answering of the questionnaire could be important. The quantitative research method employed here did not have qualitative attributes added to it so that the variables could have been interpreted in other ways. Employing a qualitative method will provide

contextual insights into people's opinions about the variables which are not accounted for in a quantitative study.

7.6 Directions for future research

This study suggests some possibilities for future research to be undertaken in technological innovation adoption areas. The study derived a set of fifteen factors that affect attitude to the adoption and use of the GRP system in Saudi Arabia. Not all of these factors would be equally important in a specific organizational setting. Future research may incorporate more factors expected to affect the attitude regarding the acceptance of the GRP system.

This study was conducted in the Kingdom of Saudi Arabia. A cross-cultural study on the topic is needed in order to understand the perceptual differences and unique idiosyncratic factors that characterize the countries of the Middle East. The countries that make up the Gulf States include the United Arab Emirates, Kuwait, Bahrain, and Oman; these would make an interesting point of comparison. Future comparative studies could also address the differences in the GRP system adoption between developed and developing countries. This study examined only five cultural factors, two social factors, four religious' factors, and four demographic factors, but not all factors may be equally important or relevant in any specific context. Future analyses could incorporate more factors affecting individuals' attitudes on the adoption and use of the GRP system.

The enhanced model developed in this study has the potential to be applied to a large number of technology adoption and management problems in innovation adoption areas. Future studies would benefit from utilizing this model to identify important research areas in technology and innovation management. This conceptual model could be tested in other public and private sector institutions, such as manufacturing or production industries or where technology acceptance and usage is growing, given the ubiquity of computer/digital/online systems around the world, and which Saudi Arabia is increasingly influenced by. As stated earlier, this study was conducted at a single point in time. Future

work could employ a longitudinal research design to explain similar issues. Finally, a longitudinal study would make possible the use of personal growth in the workplace as a measure of performance.

Furthermore, it could have been better if the study used the Structural Equation Modelling (SEM) to test the model and verify the hypotheses. A future study could be conducted using Structural Equation Modelling (SEM) to confirm the results found in this study.

REFERENCES

Ab. Wahab, M. (2012). *The Impact of Islamic Work Values on Employees' Job Performance in Malaysia.* (PhD). University of Canberra,

Ab. Wahab, M., Quazi, A., & Blackman, D. (2016). Measuring and validating Islamic work value constructs: An empirical exploration using Malaysian samples. *Journal of business research, 69*(10), 4194-4204.

Abbasi, M. S., Chandio, F. H., Soomro, A., & Shah, F. (2011). Social influence, voluntariness, experience and the internet acceptance: An extension of technology acceptance model within a south-Asian country context. *Journal of Enterprise Information Management, 24*(1), 30-52.

Abbasi, M. S., Tarhini, A., Hassouna, M., & Shah, F. (2015). Social, organizational, demography and individuals' technology acceptance behaviour: a conceptual model. *European Scientific Journal, 11*(9), 48-76.

Abdelghaffar, H. (2012). Success factors for ERP implementation in large organizations: the case of Egypt. *The Electronic Journal of Information Systems in Developing Countries, 52*(1), 1-13.

Abrahamson, E., & Rosenkopf, L. (1997). Social network effects on the extent of innovation diffusion: A computer simulation. *Organization science, 8*(3), 289-309.

Abu Nadi, I. (2012). *Influence of culture on e-government acceptance in Saudi Arabia.* (PhD). Griffith University, Brisbane, QLD.

Abuznaid, S. (2006). Islam and management: what can be learned? *Thunderbird International Business Review, 48*(1), 125-139.

Addo-Tenkorang, R., & Helo, P. (2011). *Enterprise resource planning (ERP): A review literature report.* Paper presented at the Proceedings of the World Congress on Engineering and Computer Science.

Afuah, A. (2003). *Innovation management: strategies, implementation and profits*. New York, NY: Oxford University Press.

Ailon, G. (2008). Mirror, mirror on the wall: Culture's consequences in a value test of its own design. *Academy of management review, 33*(4), 885-904.

Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In *Action control* (pp. 11-39). New York ,NY: Springer.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior 1. *Journal of applied social psychology, 32*(4), 665-683.

Ajzen, I., & Fishbein, M. (2000). Attitudes and the attitude-behavior relation: Reasoned and automatic processes. *European review of social psychology, 11*(1), 1-33.

Akar, E., & Mardikyan, S. (2014). Analyzing factors affecting users' behavior intention to use social media: Twitter case. *International Journal of Business and Social Science, 5*(11), 85-95.

Akkucuk, U. (2015). *Handbook of Research on Developing Sustainable Value in Economics, Finance, and Marketing*. Hershey, PA: IGI Global.

Akman, İ., & Turhan, Ç. (2016). Factors influencing social media usage for learning and teaching purposes. *International Journal of New Trends in Education and their Implications, 7*(3), 52-59.

Al-Abdouli, S. B. T. (2004). *Organisation and management from Islamic and contemporary perspectives: the case of United Arab Emirates.* University of Paisley,

Al-Gahtani, S. S., Hubona, G. S., & Wang, J. (2007). Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. *Information & Management, 44*(8), 681-691.

Al-Gahtani, S. S., & King, M. (1999). Attitudes, satisfaction and usage: factors contributing to each in the acceptance of information technology. *Behaviour & Information Technology, 18*(4), 277-297.

Al-Ghaith, W. (2015). Understanding social network usage: impact of co-presence, intimacy, and immediacy. *(IJACSA) International Journal of Advanced Computer Science and Applications, 6*(8), 99-111.

Al-Hamidi, M. (2020). Saudi Arabia to Adopt Independent Policy in Digital Economy. Retrieved from https://aawsat.com/english/home/article/2152851/saudi-arabia-adopt-independent-policy-digital-economy

Al-Hujran, O., Al-dalahmeh, M., & Aloudat, A. (2011). The role of national culture on citizen adoption of eGovernment services: An empirical study. *Electronic Journal of E-government, 9*(2), 93-106.

Al-Jabri, I. M., & Sohail, M. S. (2012). Mobile banking adoption: Application of diffusion of innovation theory. *Journal of Electronic Commerce Research, 13*(4), 379-391.

Al-Jumeily, D., & Hussain, A. (2014). The impact of cultural factors on technology acceptance: A technology acceptance model across eastern and western cultures. *International Journal of Enhanced Research in Educational Development (IJERED), 4*(2), 37-62.

Al-Khouri, A. M. (2012). eGovernment strategies the case of the United Arab Emirates (UAE). *European Journal of ePractice, 17*(September), 126-150.

Al-Omar, A. B. H. (1994). *The Religion of truth*. Riyadh, KSA: Maktaba Dar-us-Salam.

Al-Rahmi, W. M., Yahaya, N., Aldraiweesh, A. A., Alamri, M. M., Aljarboa, N. A., Alturki, U., & Aljeraiwi, A. A. (2019). Integrating technology acceptance model with innovation diffusion theory: An empirical investigation on students' intention to use E-learning systems. *IEEE Access, 7*, 26797-26809.

Al-Shafi, S., & Weerakkody, V. (2010). *Factors affecting e-government adoption in the state of Qatar*. Paper presented at the European and Mediterranean Conference on Information Systems 2010, Abu Dhabi, UAE.

Al-sharif, H. (2014). *"The Impact of Saudi Arabia's Societal Culture on Human Resource Management Practices within The Public and Private Sectors: The Case of Saudi Arabian Airlines" By.* (PhD). Brunei University.,

Al-Sughair, S. (2015). Snapchat use: KSA tops Arab countries. Retrieved from https://www.arabnews.com/featured/news/779826

Al-Ghaith, W., Sanzogni, L., & Sandhu, K. (2010). Factors influencing the adoption and usage of online services in Saudi Arabia. *The Electronic Journal of Information Systems in Developing Countries, 40*(1), 1-32.

Al-Saggaf, Y. (2004). The effect of online community on offline community in Saudi Arabia. *The Electronic Journal of Information Systems in Developing Countries, 16*(1), 1-16.

Al Dossry, T. M. (2012). *Consumer Culture in Saudi Arabia (A Qualitative Study among Heads of Household).* University of Exeter,

Aladwani, A. M. (2006). An empirical test of the link between web site quality and forward enterprise integration with web consumers. *Business Process Management Journal, 12*(2), 178-190.

Alam, M. S., & Uddin, M. A. (2019). Adoption and implementation of enterprise resource planning (ERP): An empirical study. *Journal of Management and Research, 6*(1), 1-33.

Alanezi, M. A. (2018). Factors Influencing Cloud Computing Adoption in Saudi Arabia's Private and Public Organizations: A Qualitative Evaluation. *International Journal of Advanced Computer Science and Applications, 9*(4), 121-129.

AlAwadhi, S., & Morris, A. (2009). Factors influencing the adoption of e-government services. *Journal of Software, 4*(6), 584-590.

Albirini, A. (2008). The Internet in developing countries: A medium of economic, cultural and political domination. *International Journal of Education and Development using ICT, 4*(1), 49-65.

Aldraehim, M. S., Edwards, S. L., Watson, J., & Chan, T. (2013). *Cultural impact on e-service use in Saudi Arabia: The need for Service Oriented Culture*. Paper presented at the The 19th Americas Conference on Information Systems (AMCIS), Chicago, IL, USA.

Alharbi, S., & Drew, S. (2014). Using the technology acceptance model in understanding academics' behavioural intention to use learning management systems. *International Journal of Advanced Computer Science and Applications, 5*(1), 143-155.

Alhirz, H., & Sajeev, A. (2015). Do cultural dimensions differentiate ERP acceptance? A study in the context of Saudi Arabia. *Information Technology & People, 28*(1), 163-194.

Ali, A. J., & Wahabi, R. (1995). Managerial value systems in Morocco. *International Studies of Management & Organization, 25*(3), 87-96.

Ali, A. J., & Weir, D. (2005). Islamic Perspectives on Management and Organization. *Journal of Management, Spirituality & Religion, 2*(3), 410-415. doi:10.1080/14766080509518602

Ali, M., Brooks, L., & AlShawi, S. (2008, 14-17 August 2008). *Culture and IS: A criticism of predefined cultural archetypes studies.* Paper presented at the Proccedings of the Fourteenth Americas Conference on Information Systems, Toronto,Canada.

Ali, M., & Miller, L. (2017). ERP system implementation in large enterprises–a systematic literature review. *Journal of Enterprise Information Management, 30*(4), 666-692.

Alkahtani, H., Ray, D., & Russell, L. (2013). *The impact of culture on Saudi Arabian information systems security*. Paper presented at the the 21st International Conference on Software Quality Management (SQM 2013), Quality Comes of Age, Southampton.
https://repository.lboro.ac.uk/articles/The_impact_of_culture_on_Saudi_Arabian_information_systems_security/9405434

Almazroi, A. A. (2017). *An Empirical Study of Factors that Influence the Adoption of Cloud Computing Applications by Students in Saudi Arabian Universities.* Flinders University, School of Computer Science, Engineering and Mathematics.,

Almishal, A., & Alsaud, M. A. (2015). Implementing ERP Systems in Government: Case Study of Saudi Organization. *Lecture Notes on Software Engineering, 3*(2), 120-124.

Alomari, M. K. (2014). Discovering citizens reaction toward e-government: factors in e-government adoption. *JISTEM-Journal of Information Systems and Technology Management, 11*(1), 5-20.

Alotaibi, R. M., Ramachandran, M., Kor, A.-L., & Hosseinian-Far, A. (2016). Factors Affecting Citizens' use of Social Media to Communicate with the Government: a Proposed Model. *Electronic Journal of E-government, 14*(1), 60-72.

Alsaif, M. (2014). *Factors affecting citizens' adoption of e-government moderated by socio-cultural values in Saudi Arabia.* University of Birmingham,

Alshehri, M. A. (2012). *Using the UTAUT model to determine factors affecting acceptance and use of e-government services in the kingdom of Saudi Arabia.* (PhD). Griffith University,

Alyammahi, S. (2018). *Adoption of Smart System and its Impact on Organizational Performance in the United Arab Emirates. Doctoral thesis.* (PhD). University of Canberra, Australia.

Ameen, N., & Willis, R. (2015). The Effect of Cultural Values on Technology Adoption in The Arab Countries. *NNGT International Journal of Information Systems, 2*.

Amrouni, K. I., Arshah, R. A., & Kadi, A. J. (2019). A Systematic Review: Factors Affecting Employees' Adoption of E-government Using an Integration of UTAUT & TTF Theories. *KnE Social Sciences*, 54–65.

Anandarajan, M., Igbaria, M., & Anakwe, U. P. (2000). Technology acceptance in the banking industry: A perspective from a less developed country. *Information Technology & People, 13*(4), 298-312.

Anastasia, B. (2015). Understanding Cultures and People with Hofstede's Dimensions. Retrieved from https://www.cleverism.com/understanding-cultures-people-hofstede-dimensions

Arab News. (2016). KSA residents 'spend quarter of the day on social media'. Retrieved from https://www.arabnews.com/node/949376/saudi-arabia

Arifin, S. R. M. (2018). Ethical considerations in qualitative study. *International Journal of Care Scholars, 1*(2), 30-33.

Asamoah, D., & Andoh-Baidoo, F. K. (2018). Antecedents and Outcomes of Extent of ERP Systems Implementation in the Sub-Saharan Africa Context: A Panoptic Perspective. *Communications of the Association for information systems, 42*(1), 581-601.

Atkinson, R. D., & McKay, A. S. (2007). Digital Prosperity: Understanding The Economic Benefits of The Information Technology Revolution. *SSRN*. Retrieved from http://ssrn.com/abstract=1004516

Badri, M. A., & Alshare, K. (2008). A path analytic model and measurement of the business value of e-government: An international perspective. *International journal of information management, 28*(6), 524-535.

Bagozzi, R. P. (2007). The legacy of the technology acceptance model and a proposal for a paradigm shift. *Journal of the association for information systems, 8*(4).

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the academy of marketing science, 16*(1), 74-94.

Baker, E. W., Al-Gahtani, S. S., & Hubona, G. S. (2007). The effects of gender and age on new technology implementation in a developing country: Testing the theory of planned behavior (TPB). *Information Technology & People, 20*(4), 352-375.

Baker, E. W., Al-Gahtani, S. S., & Hubona, G. S. (2010). Cultural impacts on acceptance and adoption of information technology in a developing country. *Journal of Global Information Management (JGIM), 18*(3), 35-58.

Balta-Ozkan, N., Davidson, R., Bicket, M., & Whitmarsh, L. (2013). The development of smart homes market in the UK. *Energy, 60*, 361-372.

Bandyopadhyay, K., & Barnes, C. (2012). An analysis of factors affecting user acceptance of ERP Systems in the United States. *International Journal of Human Capital and Information Technology Professionals (IJHCITP), 3*(1), 1-14.

Barba-Sánchez, V., Martínez-Ruiz, M. d. P., & Jiménez-Zarco, A. I. (2007). Drivers, benefits and challenges of ICT adoption by small and medium sized enterprises (SMEs): a literature review. *Problems and Perspectives in Management, 5*(1), 103-114.

Barkema, H. G., & Vermeulen, F. (1997). What differences in the cultural backgrounds of partners are detrimental for international joint ventures? *Journal of international business studies, 28*(4), 845-864.

Barnes, S. J. (2009). Strength of religious faith, trusting beliefs and their role in technology acceptance. *International Journal Of Innovation And Organizational Learning, 6*(1), 110-126.

Barr, P. S., & Glynn, M. A. (2004). Cultural variations in strategic issue interpretation: Relating cultural uncertainty avoidance to controllability in discriminating threat and opportunity. *Strategic Management Journal, 25*(1), 59-67.

Barth, C., & Koch, S. (2019). Critical success factors in ERP upgrade projects. *Industrial Management & Data Systems, 119*(3), 656-675.

Barton, S. (2010). *Social and cultural factors that influence the uptake of e-learning: case studies in Malaysia, Indonesia, Turkey, Singapore and Australia.* RMIT University,

Basoglu, N., Daim, T., & Kerimoglu, O. (2007). Organizational adoption of enterprise resource planning systems: A conceptual framework. *The Journal of High Technology Management Research, 18*(1), 73-97.

Basri, W. S., & Siam, M. R. (2017). Identification of sense of urgency as critical success factor in implementation of ERP for educational sector of Saudi Arabia: a case study. *International Journal of Supply Chain Management (IJSCM), 6*(2), 155-165.

Bauhr, M., Grimes, M., & Harring, N. (2010). Seeing the State: The Implications of Transparency for Societal Accountability. *15*. Retrieved from https://www.qog.pol.gu.se/digitalAssets/1350/1350160_2010_15_bauhr_grimes_harring.pdf

Baxter, J. (1998). Saudi heads in the sand. *Management Today*, 30-31.

Benbasat, I., & Barki, H. (2007). Quo vadis TAM? *Journal of the association for information systems, 8*(4). Retrieved from http://aisel.aisnet.org/jais/vol8/iss4/7

Beugelsdijk, S., & Welzel, C. (2018). Dimensions and dynamics of national culture: Synthesizing Hofstede with Inglehart. *Journal of cross-cultural psychology, 49*(10), 1469-1505.

Bhattacherjee, A. (1998). Managerial influences on intraorganizational information technology use: a principal-agent model. *Decision sciences, 29*(1), 139-162.

Bhattacherjee, A., & Sanford, C. (2006). Influence processes for information technology acceptance: An elaboration likelihood model. *MIS quarterly*, 805-825.

Bhatti, T. (2005). *Critical success factors for the implementation of enterprise resource planning (ERP): empirical validation.* Paper presented at the the second international conference on innovation in information technology.

Bjerke, B., & Al-Meer, A. (1993). Culture′ s consequences: Management in saudi arabia. *Leadership & Organization Development Journal*.

Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Nigerian Postgraduate Medical Journal, 22*(4), 195-201.

Borg, I., Groenen, P. J., Jehn, K. A., Bilsky, W., & Schwartz, S. H. (2011). Embedding the organizational culture profile into Schwartz's theory of universals in values. *Journal of Personnel Psychology, 10*, 1-12.

Brancheau, J. C., & Wetherbe, J. C. (1990). The adoption of spreadsheet software: testing innovation diffusion theory in the context of end-user computing. *Information systems research, 1*(2), 115-143.

Branine, M., & Pollard, D. (2010). Human resource management with Islamic management principles: A dialectic for a reverse diffusion in management. *Personnel Review, 39*(6), 712-727.

Bridgwater, A. (2020). Saudi smartness: AI hackers gather in the Kingdom. Retrieved from https://www.computerweekly.com/blog/CW-Developer-Network/Saudi-smartness-AI-hackers-gather-in-the-Kingdom

Brown, S. A., & Venkatesh, V. (2005). Model of adoption of technology in households: A baseline model test and extension incorporating household life cycle. *MIS quarterly, 29*(3), 399-426.

Brown, T. (2006). *Confirmatory factor analysis for applied research.* . New York: The Guilford Press.

Burns, N., & Grove, S. K. (2005). *Study guide for the practice of nursing research: conduct, critique, and utilization*. Philadelphia, PA: Saunders.

Bush, A. J., & Hair Jr, J. F. (1985). An assessment of the mall intercept as a data collection method. *Journal of Marketing Research, 22*(2), 158-167.

Cardon, P. W., & Marshall, B. A. (2008). National culture and technology acceptance: The impact of uncertainty avoidance. *Issues in Information Systems, 9*(2), 103-110.

Carter, L., & Bélanger, F. (2005). The utilization of e-government services: citizen trust, innovation and acceptance factors. *Information systems journal, 15*(1), 5-25.

Cassell, M. A., & Blake, R. J. (2012). Analysis of Hofstede's 5-D model: the implications of conducting business in Saudi Arabia. *International Journal of Management & Information Systems (Online), 16*(2), 151-160.

Cavusgil, S. T., Knight, G. A., & Riesenberger, J. R. (2008). *International business: Strategy, management, and the new realities*. Upper Saddle River, NJ: Pearson Prentice Hall.

Chan, T. Y. (2012). Mobile customer relationship management: Factors affecting consumer mobile technology adoption within the hotel industry. *SURG Journal, 5*(2), 44-50.

Chang, M. K., & Cheung, W. (2001). Determinants of the intention to use Internet/WWW at work: a confirmatory study. *Information & Management, 39*(1), 1-14.

Chao, C.-M. (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. *Frontiers in psychology, 10*.

Chatti, M. A., Jarke, M., & Frosch-Wilke, D. (2007). The future of e-learning: a shift to knowledge networking and social software. *International journal of knowledge and learning, 3*(4-5), 404-420.

Chawla, D., & Joshi, H. (2017). *Role of demographics as moderator in mobile banking adoption.* Paper presented at the Twenty-third Americas Conference on Information Systems, Boston.

Cheung, R., & Vogel, D. (2013). Predicting user acceptance of collaborative technologies: An extension of the technology acceptance model for e-learning. *Computers & education, 63*, 160-175.

Chevrier, S. (2003). Cross-cultural management in multinational project groups. *Journal of world business, 38*(2), 141-149.

Child, D. (1990). *The Essentials of Factor Analysis* (2nd ed.). London, UK: Cassel Educational Ltd.

Cho, H. (2011). Theoretical intersections among social influences, beliefs, and intentions in the context of 3G mobile services in Singapore: Decomposing perceived critical mass and subjective norms. *Journal of Communication, 61*(2), 283-306.

Chung, J. E., Park, N., Wang, H., Fulk, J., & McLaughlin, M. (2010). Age differences in perceptions of online community participation among non-users: An extension of the Technology Acceptance Model. *Computers in Human Behavior, 26*(6), 1674-1684.

Chuttur, M. Y. (2009). Overview of the technology acceptance model: Origins, developments and future directions. *Working Papers on Information Systems, 9*(37), 9-37.

Ciampa, M. (2013). *Security awareness: Applying practical security in your world* (4th ed.). Boston, MA: Course Technology, Cengage Learning.

Clarke, R. (1999). A primer in diffusion of innovations theory. Retrieved from http://www.rogerclarke.com/SOS/InnDiff.html

Coakes, S. J. (2005). *Analysis without anguish: Version 12.0 for Windows* (1st ed.). Milton, Queensland: John Wiley & Sons, Inc.

Coakes, S. J., Steed, L. G., & Dzidic, P. (2006). *SPSS version 13.0 for windows: Analysis without anguish*. Milton, QLD: John Wiley & Sons.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed. Vol. 13). Hillsdale, New Jersey: Lawrence Erlbaum Associates Inc.

Collis, B. (1999). Designing for differences: Cultural issues in the design of WWW-based course-support sites. *British journal of educational technology, 30*(3), 201-215.

Consoli, D. (2012). Literature analysis on determinant factors and the impact of ICT in SMEs. *Procedia-social and behavioral sciences, 62*, 93-97.

Cooper, L., & Vyas, M. (2019). 10 principles for modernizing your company's technology. (95). Retrieved from https://www.strategy-business.com/article/10-Principles-for-Modernizing-Your-Companys-Technology?gko=011f8&sf208118656=1

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. London, UK: Sage publications.

Damanpour, F. (1996). Organizational Complexity and Innovation: Developing and Testing Multiple Contingency Models. *Management Science, 42*(5), 693-716. doi:10.1287/mnsc.42.5.693

Darwish, A. A. (2015). Principles of Good Governance in Islam.

Datta, P. (2011). A preliminary study of ecommerce adoption in developing countries. *Information systems journal, 21*(1), 3-32.

Davis, D. (2000). *Business Research for Decision Making* (fifth ed.). Belmont Durbury Press.

Davis, F. D. (1985). *A technology acceptance model for empirically testing new end-user information systems: Theory and results.* Massachusetts Institute of Technology,

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science, 35*(8), 982-1003.

De Mooij, M., & Hofstede, G. (2010). The Hofstede model: Applications to global branding and advertising strategy and research. *International Journal of advertising, 29*(1), 85-110.

De Vaus, D. (2002). *Surveys in Social Research* (5th ed.). London, UK: University College London Press.

Dedan, J., & Lyimo, B. (2019). Assessment of the implementation of Enterprise Resource Planning in Public Organizations, a case of Tanzania Revenue Authority -Arusha Region , Tanzania. *Olva Academy–School of Researchers, 2*(3), 1-38.

Dehghan Manshadi, A. (2017). *The influence of culture on innovation in multinational organisations: Evidence from the oil and gas industry*. Queensland University of Technology,

Del Galdo, E. M., & Nielsen, J. (1996). *International users interface*. Milton, QLD: John Wiley & Sons, Inc.

Department of Industry, I. a. S. (2016). Australian Innovation System Report. Retrieved from https://www.industry.gov.au/data-and-publications/australian-innovation-system-report/australian-innovation-system-report-2016

DeVellis, R. (2003). *Reliability. Scale development theory and applications*. New York, NY: Sage Publication.

Dillion, A., & Morris, M. (1996). User acceptance of new information technology: theories and models. In M. E. Williams (Ed.), (Vol. 31, pp. 3-32). Medford, NJ: Information Today.

Dimitrios, X., & Alali, A. (2014). *Investigating the attitude of the average Saudi towards the Social Media.* Paper presented at the The 13th International Conference on Applied Computer and Applied Computational Science (ACACOS'14), Kuala Lumpur, Malaysia.

Dorfman, P. W., & Howell, J. P. (1988). Dimensions of national culture and effective leadership patterns: Hofstede revisited. *Advances in international comparative management, 3*(1), 127-150.

Dulle, F. W., Minish-Majanja, M., & Cloete, L. (2010). *Factors influencing the adoption of open access scholarly communication in Tanzanian public universities.* Paper presented at the World library and information congress: 76th IFLA general conference and assembly.

Dumpit, D. Z., & Fernandez, C. J. (2017). Analysis of the use of social media in Higher Education Institutions (HEIs) using the Technology Acceptance Model. *International Journal of Educational Technology in Higher Education, 14*(1).

Dwyer, S., Mesak, H., & Hsu, M. (2005). An exploratory examination of the influence of national culture on cross-national product diffusion. *Journal of International Marketing, 13*(2), 1-27.

Easterby-Smith, M., Thorpe, R., & Lowe, A. (2003). *Management Research: An Introduction* (2nd edn ed.). California: SAGE Publications.

Ebrahimi, N., Singh, S. K. G., & Tabrizi, R. S. (2010). Cultural effect on using new technologies. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering, 4*(10), 2108-2112.

Egdair, I., Rajemi, M. F., & Nadarajan, S. (2015). Technology factors, ERP system and organization performance in developing countries. *International Journal of Supply Chain Management, 4*(4), 82-89.

Ekhbariya.net. (2015). Saudi minister says human resources program will improve productivity. Retrieved from http://alekhbariya.net/en/node/572

El Louadi, M., & Everard, A. (2004). *Information technology and the Arab world: a question of culture.* Paper presented at the AMCIS 2004 Proceedings, New York, NY.

Elgohary, E. (2019). The Role of ERP Capabilities in Achieving Competitive Advantage: An Empirical Study on Dakahlia Governorate Companies, Egypt. *The Electronic Journal of Information Systems in Developing Countries, 85*(4).

Endot, S. (1995). *The Islamisation Process in Malaysia.* The University of Bradford,

Eom, S.-J., Choi, N., & Sung, W. (2016). The use of smart work in government: Empirical analysis of Korean experiences. *Government Information Quarterly, 33*(3), 562-571.

Erumban, A. A., & De Jong, S. B. (2006). Cross-country differences in ICT adoption: A consequence of Culture? *Journal of world business, 41*(4), 302-314.

Faqih, K. M., & Jaradat, M.-I. R. M. (2015). Mobile healthcare adoption among patients in a developing country environment: Exploring the influence of age and gender differences. *International Business Research, 8*(9), 142-174.

Farg, M. H. M., Khalil, F. M. H., & Salih, H. I. (2017). Factors Affecting Perfection and Quality of Work (Itqan) Applied Study on Workers who belong to Shaqra University, College of Science and Humanities, Thadiq Branch, KSA. *International Journal of Social Sciences and Management, 4*(2), 127-136.

Fernandez, D. R., Carlson, D. S., Stepina, L. P., & Nicholson, J. D. (1997). Hofstede's country classification 25 years later. *The Journal of Social Psychology, 137*(1), 43-54.

Field, A. (2005). *Discovering Statistics Using SPSS.* (2nd edn ed.). London, UK: SAGE Publications.

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley Pub. Co.

Fishbein, M., & Ajzen, I. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Fishbein, M., & Ajzen, I. (2009). *Belief, Attitude, Intention, And Behavior: An Introduction To Theory And Research.* Reading, MA: Addisson-Wesley.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50.

Frambach, R. T., Barkema, H. G., Nooteboom, B., & Wedel, M. (1998). Adoption of a service innovation in the business market: an empirical test of supply-side variables. *Journal of business research, 41*(2), 161-174.

Frambach, R. T., & Schillewaert, N. (2002). Organizational innovation adoption: A multi-level framework of determinants and opportunities for future research. *Journal of business research, 55*(2), 163-176.

Friedman, R. (1999). The case of the religious network group. *Harvard business review, 77*(4), 28-30, 32-40, 183.

Frigui, S., Rouibah, K., & Marzocchi, G. L. (2013). Cross-Cultural Comparison Between Arabic and Western Countries in Location-Based Social Networking Usage on Mobile Phones: The Case of Facebook. *Issues in Information Systems, 14*(2).

Garg, P. (2010). Critical failure factors for enterprise resource planning implementations in Indian retail organizations: An exploratory study. *Journal of Information Technology Impact, 10*(1), 35-44.

Gatignon, H., Eliashberg, J., & Robertson, T. S. (1989). Modeling multinational diffusion patterns: An efficient methodology. *Marketing Science, 8*(3), 231-247.

Gay, G. (2000). *Culturally responsive teaching: Theory, practice and research*. New York, NY: Teachers College Press.

Geertz, C. (1973). *The interpretation of cultures* (Vol. 5019): Basic books.

Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: an integrated model. *MIS quarterly, 27*(1), 51-90.

Gefen, D., & Straub, D. W. (1997). Gender differences in the perception and use of e-mail: An extension to the technology acceptance model. *MIS quarterly*, 389-400.

Gentles, S. J., Charles, C., Nicholas, D. B., Ploeg, J., & McKibbon, K. A. (2016). Reviewing the research methods literature: principles and strategies illustrated by a systematic overview of sampling in qualitative research. *Systematic Reviews, 5*(1).

Gerring, J., & Thacker, S. C. (2004). Political institutions and corruption: The role of unitarism and parliamentarism. *British Journal of Political Science, 34*(2), 295-330.

Gidado, A. D., & Yusha'u, A. S. (2017). Influence of Accountability and Transparency on Governance in Islam. *International Journal of Academic Research in Business and Social Sciences, 7*(6), 449-456.

Global Media Insight. (2018). Saudi Arabia Social Media Statistics 2018. Retrieved from https://www.globalmediainsight.com/blog/saudi-arabia-social-media-statistics

Goertzen, M. J. (2017). Introduction to Quantitative Research and Data. *Library Technology Reports, 53*(4), 12-18.

González-Cruz, T. F., Roig-Tierno, N., & Botella-Carrubí, D. (2018). Quality management as a driver of innovation in the service industry. *Service Business, 12*(3), 505-524.

Gopalakrishnan, S., & Bierly, P. (2001). Analyzing innovation adoption using a knowledge-based approach. *Journal of Engineering and Technology Management, 18*(2), 107-130. doi:https://doi.org/10.1016/S0923-4748(01)00031-5

Gopalakrishnan, S., & Damanpour, F. (1997). A review of innovation research in economics, sociology and technology management. *Omega, 25*(1), 15-28. doi:https://doi.org/10.1016/S0305-0483(96)00043-6

Gorsuch, R. (1983). *Factor analysis* (2nd ed.). New Jersey, London: Lawrence Earlbaum Associates.

Goswami, A., & Dutta, S. (2016). Gender differences in technology usage—A literature review. *Open Journal of Business and Management, 4*(01), 51-59.
Guirdham, M. (2005). *Communicating Across Cultures at Work* (2nd ed.). New York, NY: PALGRAVE MACMILLAN.
Hagger, M. S. (2019). The Reasoned Action Approach and the Theories of Reasoned Action and Planned Behavior. In. New York, NY: Oxford University Press.
Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate data analysis* (Vol. 5). Upper Saddle River, NJ: Prentice Hall
Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis.* (Vol. 6). Upper Saddle River, NJ: Pearson Prentice Hall.
Hajar, M. A., Ibrahim, D. N., Darun, M. R., & Al-Sharafi, M. A. (2020). Value innovation activities in the wireless telecommunications service sector: A case study of the Malaysian market. *Journal of Global Business Insights, 5*(1), 57-72.
Halili, S. H., Sulaiman, H., & Razak, R. A. (2017). Information and Communications Technology Acceptance among Malaysian Adolescents in Urban Poverty. *Turkish Online Journal of Educational Technology-TOJET, 16*(1), 47-54.
Halstead, J. M. (2007). In place of a conclusion: The common school and the melting pot. *Journal of Philosophy of Education, 41*(4), 829-842.
Hammoudeh, M. M. (2012). *Islamic values and management practices: Quality and transformation in the Arab world*. Burlington, VT: Gower Publishing, Ltd.
Handoyo, S. (2018). The Role of National Culture in National Innovative Capacity. *The Asian Journal of Technology Management, 11*(2), 137-149.
He, J., & Freeman, L. A. (2019). Are men more technology-oriented than women? The role of gender on the development of general computer self-efficacy of college students. *Journal of Information Systems Education, 21*(2), 203-212.
Hill, C. E., Straub, D. W., Loch, K. D., Cotterman, W., & El-Sheshai, K. (1994). *The impact of Arab culture on the diffusion of information technology: a culture-centered model.* Paper presented at the Proceedings of The Impact of Informatics on Society: Key Issues for Developing Countries, IFIP.
Hinton, P. R., McMurray, I., & Brownlow, C. (2014). *SPSS explained*. New York, NY: Routledge.
Ho Cheong, J., & Park, M.-C. (2005). Mobile internet acceptance in Korea. *Internet research, 15*(2), 125-140.
Hofstede, G. (1980). Culture's consequences: International differences in work-related values. *Beverly Hills: Sage*.
Hofstede, G. (1991). *Cultures and Organizations: Software of the Mind*. London, UK: McGraw-Hill.
Hofstede, G. (1997). *Cultures and Organizations: Software of the Mind*. New York, NY: McGraw Hill.
Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. New York & London: Sage publications.
Hofstede, G. (2003). *Culture's Consequences: Comparing Values, Behaviours and Organisations across Nations.* New York: Sage Publications, Inc
Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. *Online readings in psychology and culture*, *2*(1). Retrieved from https://scholarworks.gvsu.edu/orpc/vol2/iss1/8/

Hofstede, G. (2013). The Hofstede center country dimensions: Saudi Arabia. Retrieved from http://geert-hofstede.com/Saudi-arabia.html

Hofstede, G., Hofstede, G. J., & Minkov, M. (2005). *Cultures and Organizations: Software of the Mind* (Vol. 2). New York, NY: McGraw-Hill.

Hofstede, G., Hofstede, G. J., Minkov, M., & Vinken, H. (2008). Values survey module 2008 manual. *Maastricht: Institute for Research on Intercultural Cooperation*.

Hofstede, G., & Peterson, M. F. (2000). Culture: National values and organizational practices. *Handbook of organizational culture and climate, 3*, 401-416.

Hofstede Insights. (n.d.). Country Comparison: What About Saudi Arabia? Retrieved from https://www.hofstede-insights.com/country-comparison/saudi-arabia/

Holden, R. J., & Karsh, B.-T. (2010). The technology acceptance model: its past and its future in health care. *Journal of biomedical informatics, 43*(1), 159-172.

Holdershaw, J., & Gendall, P. (2008). *Understanding and predicting human behaviour.* Paper presented at the ANZCA08: communication conference: power & place, Wellington, New Zealand.

Hossain, M. M., Bala, H., & Bhagwatwar, A. B. (2011). *Untold stories of ERP systems implementation: Role of ownership and governance, scope management, and employee empowerment.* Paper presented at the Proceedings of the ACIS 2011.

Hossny, H. (2018). What does it mean to have low MSE and low R2 coefficient in the same time?? And why may this happen? Retrieved from https://www.researchgate.net/post/What_does_it_mean_to_have_low_MSE_and_low_R2_coefficient_in_the_same_time_And_why_may_this_happen

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, leadership, and organizations: The GLOBE study of 62 societies*. New York & London: Sage publications.

Hu, H.-f., Al-Gahtani, S. S., & Hu, P. J.-H. (2010). Examining Gender Effects in Technology Acceptance by Arabian Workers: A Survey Study. *PACIS, 33*, 85-97.

Huang, Z., & Palvia, P. (2001). ERP implementation issues in advanced and developing countries. *Business Process Management Journal, 7*(3), 276-284.

Hung, W.-H., Hsieh, P.-H., & Huang, Y.-D. (2018). Critical Factors of the Adoption of e-Textbooks: A Comparison Between Experienced and Inexperienced Users. *International Review of Research in Open and Distributed Learning, 19*(4).

Hunter, M. (2012). Towards an Islamic business model: A tawhid approach. *International Journal of Business and Technopreneurship, 2*(1), 121-135.

Hussein, Z. (2017). Leading to intention: The role of attitude in relation to technology acceptance model in e-learning. *Procedia Computer Science, 105*, 159-164.

Ibn Baz, A. i. A., Hussain, M. R., & Abdul Ghaffar, S. H. (2005). *Indispensable implication of sunna and caution against innovation*. Riyadh, Kingdom of Saudi Arabia: Presidency of Islamic Research, Ifta Propagation, and Guidance.

Ifinedo, P. (2008). Impacts of business vision, top management support, and external expertise on ERP success. *Business Process Management Journal, 14*(4), 551-568.

Igbaria, M., Guimaraes, T., & Davis, G. B. (1995). Testing the determinants of microcomputer usage via a structural equation model. *Journal of management information systems, 11*(4), 87-114.

Igbaria, M., Zinatelli, N., Cragg, P., & Cavaye, A. L. (1997). Personal computing acceptance factors in small firms: a structural equation model. *MIS quarterly*, 279-305.

Internet Live Stats. (2019). Internet users in Saudi Arabia. Retrieved from https://www.internetlivestats.com/

Internet World Stats. (2019). World Internet Usage and Population Statistics 2019. Retrieved from https://www.internetworldstats.com/stats.htm

Internet World Stats. (2020). World Internet Users and 2020 Population Stats. Retrieved from https://www.internetworldstats.com/stats.htm

Ismail, A. I., Rose, R. C., Abdullah, H., & Uli, J. (2010). The relationship between organisational competitive advantage and performance moderated by the age and size of firms. *Asian Academy of Management Journal, 15*(2), 157-173.

Jaafreh, A. B. (2018). The Effect Factors in the Adoption of Internet of Things (IoT) Technology in the SME in KSA: An Empirical Study. *IRMBR International Review of Management and Business Research, 7*(1), 135-148.

Jacobs, J. V., Hettinger, L. J., Huang, Y.-H., Jeffries, S., Lesch, M. F., Simmons, L. A., . . . Willetts, J. L. (2019). Employee acceptance of wearable technology in the workplace. *Applied ergonomics, 78*, 148-156.

Jones, F. L., & Rama, D. V. (2002). *Accounting Information Systems: A Business Process Approach*. Cincinnati, OH: South-Western College Publishing.

Kaewkungwal, J., & Adams, P. (2019). Ethical consideration of the research proposal and the informed-consent process: An online survey of researchers and ethics committee members in Thailand. *Accountability in research, 26*(3), 176-197.

Kahttab, S. A., Al-Manasra, E. A., Zaid, M. K. S. A., & Qutaishat, F. T. (2012). Individualist, collectivist and gender moderated differences toward online purchase intentions in Jordan. *International Business Research, 5*(8), 85-93.

Kalliny, M., & Hausman, A. (2007). The impact of cultural and religious values on consumer's adoption of innovation. *Academy of Marketing Studies Journal, 11*(1), 125-136.

Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS quarterly*, 183-213.

Kendall, L. (2014). The conduct of qualitative interviews: Research questions, methodological issues, and researching online. In *Handbook of research on new literacies* (pp. 151-168). New York, NY: Routledge.

Khan, M. T., & Rafiq, M. (2018). Trends in Adoption of Social Networking Sites. *Pakistan Library & Information Science Journal, 49*(1).

Khashman, N., & Large, A. (2011). *Measuring cultural markers in Arabic government websites using Hofstede's cultural dimensions.* Paper presented at the International Conference of Design, User Experience, and Usability.

Kim, J.-O., Ahtola, O., Spector, P. E., & Mueller, C. W. (1978). *Introduction to factor analysis: What it is and how to do it*. London, UK: Sage Publication.

Kim, S., & Garrison, G. (2009). Investigating mobile wireless technology adoption: An extension of the technology acceptance model. *Information Systems Frontiers, 11*(3), 323-333.

Kim, Y. J., Chun, J. U., & Song, J. (2009). Investigating the role of attitude in technology acceptance from an attitude strength perspective. *International journal of information management, 29*(1), 67-77.

King, W. R., & He, J. (2006). A meta-analysis of the technology acceptance model. *Information & Management, 43*(6), 740-755.

Kirlidog, M. (1996). Information technology transfer to a developing country: executive information systems in Turkey. *Information Technology & People, 9*(3), 55-84.

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: The Guilford press.

Konana, P., & Balasubramanian, S. (2005). The social–economic–psychological model of technology adoption and usage: an application to online investing. *Decision support systems, 39*(3), 505-524.

Koul, S., & Eydgahi, A. (2018). Utilizing technology acceptance model (TAM) for driverless car technology adoption. *Journal of technology management & innovation, 13*(4), 37-46.

Kripanont, N. (2007). *Using technology acceptance model of internet usage by academics within Thai Business Schools.* (PhD). Victoria University,

Kumar, V., Maheshwari, B., & Kumar, U. (2003). An investigation of critical management issues in ERP implementation: emperical evidence from Canadian organizations. *Technovation, 23*(10), 793-807.

Kumar, V., Mukerji, B., Butt, I., & Persaud, A. (2007). Factors for successful e-government adoption: A conceptual framework. *Electronic Journal of E-government, 5*(1).

Kutbi, A. I. (2015). *How undergraduate female students in the Kingdom of Saudi Arabia perceive social media as a learning tool: An exploratory study.* University of Windsor,

Kwok, S. H., & Gao, S. (2005). Attitude towards knowledge sharing behavior. *Journal of computer information systems, 46*(2), 45-51.

Lai, P. (2017). The literature review of technology adoption models and theories for the novelty technology. *JISTEM-Journal of Information Systems and Technology Management, 14*(1), 21-38.

Lam, T., Cho, V., & Qu, H. (2007). A study of hotel employee behavioral intentions towards adoption of information technology. *International Journal of Hospitality Management, 26*(1), 49-65.

LaMorte, W. W. (2019). Diffusion of Innovation Theory. Retrieved from http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories4.html

Law, C. C., & Ngai, E. W. (2007). ERP systems adoption: An exploratory study of the organizational factors and impacts of ERP success. *Information & Management, 44*(4), 418-432.

Lawrence, B. B. (2000). *Shattering the myth: Islam beyond violence*. Princeton, New Jersey: Princeton University Press.

Lederer, A. L., Maupin, D. J., Sena, M. P., & Zhuang, Y. (2000). The technology acceptance model and the World Wide Web. *Decision support systems, 29*(3), 269-282.

Lee, S.-G., Trimi, S., & Kim, C. (2013). The impact of cultural differences on technology adoption. *Journal of world business, 48*(1), 20-29.

Lee, S. M., Kim, I., Rhee, S., & Trimi, S. (2006). The role of exogenous factors in technology acceptance: The case of object-oriented technology. *Information & Management, 43*(4), 469-480.

Lee, S. M., & Trimi, S. (2018). Innovation for creating a smart future. *Journal of Innovation & Knowledge, 3*(1), 1-8.

Lee, Y., Kozar, K. A., & Larsen, K. R. (2003). The technology acceptance model: Past, present, and future. *Communications of the Association for information systems, 12*(1), 752-780.

Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & Management, 40*(3), 191-204.

Leidner, D. E., & Kayworth, T. (2006). A review of culture in information systems research: Toward a theory of information technology culture conflict. *MIS quarterly, 30*(2), 357-399.

Lerouge, C., Newton, S., & Blanton, J. E. (2005). Exploring the systems analyst skill set: Perceptions, preferences, age, and gender. *Journal of Computer Information Systems, 45*(3), 12-23.

Levy, E. (2006). The Future of Materials Research. *Advanced Materials, 18*(1), 14-16.

Lewis, W., Agarwal, R., & Sambamurthy, V. (2003). Sources of influence on beliefs about information technology use: An empirical study of knowledge workers. *MIS quarterly*, 657-678.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology, 22 140*, 55-55.

Lindstedt, C., & Naurin, D. (2010). Transparency is not enough: Making transparency effective in reducing corruption. *International political science review, 31*(3), 301-322.

Lipford, J., McCormick, R. E., & Tollison, R. D. (1993). Preaching matters. *Journal of Economic Behavior and Organization, 21*(3), 235-250.

Liu, D., Maimaitijiang, R., Gu, J., Zhong, S., Zhou, M., Wu, Z., . . . Hao, Y. (2019). Using the Unified Theory of Acceptance and Use of Technology (UTAUT) to Investigate the Intention to Use Physical Activity Apps: Cross-Sectional Survey. *JMIR mHealth and uHealth, 7*(9).

Liu, P.-L. (2011). Empirical study on influence of critical success factors on ERP knowledge management on management performance in high-tech industries in Taiwan. *Expert Systems with Applications, 38*(8), 10696-10704.

Loch, K. D., Straub, D. W., & Kamel, S. (2003). Diffusing the Internet in the Arab world: The role of social norms and technological culturation. *IEEE transactions on engineering management, 50*(1), 45-63.

Long, D. E. (2005). *Culture and customs of Saudi Arabia*. University Park, PA: Penn State Press.

Louho, R., Kallioja, M., & Oittinen, P. (2006). Factors affecting the use of hybrid media applications. *Graphic arts in Finland, 35*(3), 11-21.

Maguire, S., Ojiako, U., & Said, A. (2010). ERP implementation in Omantel: a case study. *Industrial Management & Data Systems, 110*(1), 78-92.

Mahraz, M.-I. (2019, March 5-7, 2019). *Success Factors for ERP Implementation: a Systematic Literature Review.* Paper presented at the Proceedings of the International

Conference on Industrial Engineering and Operations Management, Bangkok, Thailand.
Mann, F., Von Walter, B., Hess, T., & Wigand, R. (2009). Open Access & Science Publishing. *Communications of the ACM, 52*(3), 135-139.
Martins, M., & Raposo, P. (2005). Measuring the Productivity of Computers: A Firm Level Analysis for Portugal. *Electronic Journal of Information Systems Evaluation, 8*(4), 197-204.
Mashlah, S. (2017). *The Impact of Fostering Personal Values on Leadership Mechanisms in Organisations: Narratives of CEOs, Managers, and Staff in Arab Countries.* Anglia Ruskin University,
Masrom, M., & Hussein, R. (2008). *User acceptance of Information Technology: Understanding theories and models*. Selangor, Malaysia: Venton Pub.
Mathkur, N. M. M. (2019). *Assessing the business ethics of Saudi Arabian Islamic banking sector: an analysis of banks' employees and customers perspectives.* University of Bolton,
Maxwell, A. (2012). Technological advancements in methods of training with reference to online training: Impact and issues for organizations. *Researchers World, 3*(3), 87-95.
McGrath, W. A., & Pinder, G. F. (2003). Search strategy for groundwater contaminant plume delineation. *Water resources research, 39*(10).
MCIT. (2019). Riyadh Set To Become The Arab World's First Ever Digital Capital City In 2020. Retrieved from https://www.mcit.gov.sa/en/media-center/news/217039
McNichols, C. W., & Zimmerer, T. W. (1985). Situational ethics: An empirical study of differentiators of student attitudes. *Journal of Business Ethics, 4*(3), 175-180.
McSweeney, B. (2002). Hofstede's model of national cultural differences and their consequences: A triumph of faith-a failure of analysis. *Human relations, 55*(1), 89-118.
Meglino, B. M., & Ravlin, E. C. (1998). Individual values in organizations: Concepts, controversies, and research. *Journal of management, 24*(3), 351-389.
Mellahi, K., & Budhwar, P. S. (2010). Introduction: Islam and human resource management. *Personnel review, 39*(6), 685-691.
Menon, S. A., Muchnick, M., Butler, C., & Pizur, T. (2019). Critical challenges in enterprise resource planning (ERP) implementation. *International Journal of Business and Management, 14*(7), 54-69.
Min, Q., Li, Y., & Ji, S. (2009). *The effects of individual-level culture on mobile commerce adoption: An empirical study*. Paper presented at the 2009 Eighth International Conference on Mobile Business.
Ministry of Civil Service. (2018). Ministry of Civil Service (2018). King Salman program for development of human resources. Retrieved from https://www.mcs.gov.sa/En/HR/Pages/default.aspx
Minitab. (2013). Regression Analysis: How Do I Interpret R-squared and Assess the Goodness-of-Fit? Retrieved from https://blog.minitab.com/blog/adventures-in-statistics-2/regression-analysis-how-do-i-interpret-r-squared-and-assess-the-goodness-of-fit
Minkov, M., & Hofstede, G. (2012). Hofstede's fifth dimension: New evidence from the World Values Survey. *Journal of cross-cultural psychology, 43*(1), 3-14.
Mitchell, R., & Oneal, M. (1994). Managing by values. *Business Week, 1*, 46-52.

Mitra, S., & Chaya, A. K. (1996). Analyzing cost-effectiveness of organizations: the impact of information technology spending. *Journal of management information systems, 13*(2), 29-57.

Mkheimer, I., & A. Mjlae, S. (2020). Factors of Employee Engagement and Organizational Development: Are they Linked? *International Journal of Recent Technology and Engineering, 8*, 788-797. doi:10.35940/ijrte.E5784.018520

MOFA. (2015). Ministry of Foreign Affairs and Ministry of Civil Service Agree on a Service Level Cooperation for King Salman Program for Human Resource Development. Retrieved from http://www.mofa.gov.sa/sites/mofaen/ServicesAndInformation/news/MinistryNews/Pages/ArticleID20151217133718868.aspx

Mohajan, H. K. (2018). Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People, 7*(1), 23-48.

Moon, H.-C., & Choi, E.-K. (2001). Cultural impact on national competitiveness. *Journal of International and Area Studies*, 21-36.

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information systems research, 2*(3), 192-222.

Motwani, J., Subramanian, R., & Gopalakrishna, P. (2005). Critical factors for successful ERP implementation: Exploratory findings from four case studies. *Computers in industry, 56*(6), 529-544.

Mouelhi, R. B. A. (2009). Impact of the adoption of information and communication technologies on firm efficiency in the Tunisian manufacturing sector. *Economic Modelling, 26*(5), 961-967.

Mulero, O., & Adeyeye, M. (2013). An empirical study of user acceptance of online social networks marketing. *South African Computer Journal, 50*(1), 6-14.

Mun, Y. Y., Jackson, J. D., Park, J. S., & Probst, J. C. (2006). Understanding information technology acceptance by individual professionals: Toward an integrative view. *Information & Management, 43*(3), 350-363.

Muscatello, J. R., & Parente, D. H. (2006). Enterprise resource planning (ERP): a postimplementation cross-case analysis. *Information Resources Management Journal (IRMJ), 19*(3), 61-80.

Myers, M. (1997). Qualitative Research in Information Systems. *MIS quarterly, 21*. doi:10.2307/249422

Nagy, H. (2010). *Transforming government and building the information society*. New York ,NY: Springer.

Najm, N. A. (2015). Arab Culture dimensions in the international and Arab models. *American Journal of Business, Economics and Management, 3*(6), 423-431.

Nedelko, Z., Brzozowski, M., & Bartkowiak, P. (2020). The Hierarchy of Managers' Personal Values and Universal Management Attributes: Empirical Evidence From Austria, Poland, and Slovenia. In *Recent Advances in the Roles of Cultural and Personal Values in Organizational Behavior* (pp. 152-166). Hershey, PA: IGI Global.

Nelson, D. L. (1990). Individual adjustment to information-driven technologies: A critical review. *MIS quarterly*, 79-98.

Netemeyer, R. G., Bearden, W. O., & Sharma, S. (2003). *Scaling procedures: Issues and applications*. New York & London: Sage Publications.
Neuman, W. L. (2013). *Social Research Methods: Qualitative and Quantitative Approaches*. London, England: Pearson Education Limited.
New Zealand Productivity Commission. (2019). Technological change and the future of work. Retrieved from https://www.productivity.govt.nz/inquiries/technology-and-the-future-of-work/
Nicholson, J. D. (1991). *The relationship between cultural values, work belief, and attitudes towards socio-economic issues: A cross cultural study*. (PhD). Florida State University., Florida, USA.
Nik Mustapha, N. (2003). Values-based worker–towards developing quality and productive personality. Dlm. Nik Mustapha Hj. Nik Hassan (pnyt.). *Values-based managenement–the way forward for the next millennium*, 35-55.
Nor Mohamed, Y. (2007). Disiplin Tinggi Pengurusan Majukan Malaysia.
Northouse, P. G. (2006). *Culture and leadership in leadership theory and practice* (4th ed ed.). New York, NY: SAGE Publications.
Norton, L. (2002). The expanding universe: internet adoption in the Arab region. *World Markets Research Centre, 3*.
Nunes, G. S., & Arruda Filho, E. J. M. (2018). Consumer behavior regarding wearable technologies: Google Glass. *Innovation & Management Review*.
Nutley, S., Davies, H., & Walter, I. (2002). *Conceptual synthesis 1: learning from the diffusion of innovations*: St Andrews: Research Unit for Research Utilisation, Department of Management, University of St Andrews.
O'Shaughnessy, K. (2020). ERP Trends: What You Should Know for 2020. Retrieved from https://www.selecthub.com/enterprise-resource-planning/erp-software-trends
Obeidat, B. Y., Shannak, R. O., Masa'deh, R., & Al-Jarrah, I. (2012). Toward better understanding for Arabian culture: Implications based on Hofstede's cultural model. *European Journal of Social Sciences, 28*(4), 512-522.
Obisesan, A. (2014). Gender differences in technology adoption and welfare impact among Nigerian farming households.
Olushola, T., & Abiola, J. (2017). The efficacy of technology acceptance model: A review of applicable theoretical models in information technology researches. *Journal of Research in Business and Management, 4*(11), 70-83.
Omar, J. (2014). *Factors Influencing Social Media Marketing In Different Culture Context*. University of Agder,
Ooi, K.-B., Sim, J.-J., Yew, K.-T., & Lin, B. (2011). Exploring factors influencing consumers' behavioral intention to adopt broadband in Malaysia. *Computers in Human Behavior, 27*(3), 1168-1178.
Oostrom, J. K., Van Der Linden, D., Born, M. P., & Van Der Molen, H. T. (2013). New technology in personnel selection: How recruiter characteristics affect the adoption of new selection technology. *Computers in Human Behavior, 29*(6), 2404-2415.
Oye, N., Iahad, N., & Rahim, N. A. (2014). The history of UTAUT model and its impact on ICT acceptance and usage by academicians. *Education and Information Technologies, 19*(1), 251-270.

Ozbilen, P. (2017). The impact of natural culture on new technology adoption by firms: A country level analysis. *International Journal of Innovation, Management and Technology, 8*(4), 299-305.

Paarlberg, L. E., & Perry, J. L. (2007). Values management: Aligning employee values and organization goals. *The American review of public administration, 37*(4), 387-408.

Pallant, J. (2005). *SPSS survival manual: A step by Step guide to data analysis using SPSS*. Crows Nest, Queensland: Allen and Unwin Publication.

Peansupap, V., & Walker, D. (2005). Exploratory factors influencing information and communication technology diffusion and adoption within Australian construction organizations: a micro analysis. *Construction Innovation, 5*(3), 135-157.

Peoples, J., & Bailey, G. (2011). *Humanity: An introduction to cultural anthropology* (9th ed.). Belmont, CA: Wadsworth Publishing.

PNU. (2017). PNU is 1st University to Implement King Salman bin Abdulaziz's Program for Human Resources Development. Retrieved from http://www.pnu.edu.sa/en/NewsActivities/News/Pages/News432.aspx

Porter, C. E., & Donthu, N. (2006). Using the technology acceptance model to explain how attitudes determine Internet usage: The role of perceived access barriers and demographics. *Journal of business research, 59*(9), 999-1007.

Portz, J. D., Bayliss, E. A., Bull, S., Boxer, R. S., Bekelman, D. B., Gleason, K., & Czaja, S. (2019). Using the technology acceptance model to explore user experience, intent to use, and use behavior of a patient portal among older adults with multiple chronic conditions: descriptive qualitative study. *Journal of medical Internet research, 21*(4).

Prasad, S., & Babbar, S. (2000). International operations management research. *Journal of Operations Management, 18*(2), 209-247. doi:https://doi.org/10.1016/S0272-6963(99)00015-7

Rajan, C. A., & Baral, R. (2015). Adoption of ERP system: An empirical study of factors influencing the usage of ERP and its impact on end user. *IIMB Management Review, 27*(2), 105-117.

Rajapakse, J., & Seddon, P. (2005). *ERP adoption in developing countries in Asia: a cultural misfit.* Paper presented at the 28th information systems seminar in Scandinavia, Kirstiansand.

Rajkhan, S. (2014). *Women in Saudi Arabia: Status, rights, and limitations.* (Master). University of Washington, Bothel, Washington.

Rawstorne, P., Jayasuriya, R., & Caputi, P. (2000). *Issues in predicting and explaining usage behaviors with the technology acceptance model and the theory of planned behavior when usage is mandatory.* Paper presented at the ICIS 2000 Proceedings.

Raymond, L., Bergeron, F., & Blili, S. (2005). The assimilation of E-business in manufacturing SMEs: Determinants and effects on growth and internationalization. *Electronic Markets, 15*(2), 106-118.

Reda, A. (2020). Saudi seven ICT sector's7 avenues of growth. Retrieved from http://www.saudigazette.com.sa/article/584760

Redzuan, H., Rahman, Z. A., & Aidid, S. (2009). Economic determinants of family takaful consumption: Evidence from Malaysia. *International Review of Business Research Papers, 5*(5), 193-211.

Rehman, A.-u.-., & Shahbaz , M. (2010). The relationship between religiosity and new product adoption. *Journal of Islamic marketing, 1*(1), 63-69.

Reinikka, R., & Svensson, J. (2005). Fighting corruption to improve schooling: Evidence from a newspaper campaign in Uganda. *Journal of the European economic association, 3*(2-3), 259-267.

Rezaeian, A. (2010). *Principles of Management*. Tehran, Iran: SAMT Publications.

Rhee, K. Y., & Kim, W.-B. (2004). The adoption and use of the Internet in South Korea. *Journal of Computer-Mediated Communication, 9*(4).

Robbins, S. P., Coulter, M., Sidani, Y., Jamali, D., & Robbins, S. P. (2011). *Management (Arab World Editions)*. London, UK: Pearson Education UK.

Roberts, J. (2013). Basic Culture and Business Etiquette of Saudi Arabia: Cultural Dimension.

Robertson, C. J., Al-Khatib, J. A., & Al-Habib, M. (2002). The relationship between Arab values and work beliefs: An exploratory examination. *Thunderbird International Business Review, 44*(5), 583-601.

Rogers, E. (1995). *Diffusion of Innovations* (4th ed.). New York: ACM The Free Press.

Rogers, E. M. (1962). *Diffusion of innovations*. New York: Free Press of Glencoe.

Rogers, E. M. (2003). *Diffusion of Innovation*. New York: The Free Press.

Rogers, E. M. (2004). A prospective and retrospective look at the diffusion model. *Journal of health communication, 9*(S1), 13-19.

Rogers, E. M., & Shoemaker, F. F. (1971). *Communication of Innovations; A Cross-Cultural Approach*. New York: The Free Press.

Rosly, S. A., & Abu Bakar, M. A. (2003). Performance of Islamic and mainstream banks in Malaysia. *International Journal of Social Economics, 30*(12), 1249-1265.

Rouhani, S., & Mehri, M. (2018). Empowering benefits of ERP systems implementation: empirical study of industrial firms. *Journal of systems and information technology, 20*(1), 54-72.

Rozlan, R., Nor, N. M., Mahaiyudin, M. R. M., & Noh, N. H. (2016). Islamic Management Practice: Little Caliphs International Sdn Bhd. *International Journal of Business and Management Invention, 5*(11), 27-30.

Ryu, S., & Moon, C. W. (2009). Long-Term Orientation as a Determinant of Relationship Quality Between Channel Members. *International Business & Economics Research Journal, 8*(11), 1-9.

Saad, W. (2016). Use of Social Media Apps in Saudi Arabia Growing Rapidly. *Saudi Gazette*. Retrieved from http://www.saudigazette.com.sa/article/155815

Sabbagh, S. (1996). *Arab Women Between Defiance and Restraint*. Ithaca, NY: Olive Branch Press.

Sahin, I. (2006). Detailed review of Rogers' diffusion of innovations theory and educational technology-related studies based on Rogers' theory. *Turkish Online Journal of Educational Technology-TOJET, 5*(2), 14-23.

Saleh, M. (2006). *Antecedents of commitment to an import supplier*. Queensland University of Technology,

Saleh, M. F., Abbad, M., & Al-Shehri, M. (2013). ERP implementation success factors in Saudi Arabia. *International Journal of Computer Science*

Security, 7(1), 15-30.

Samaradiwakara, G., & Gunawardena, C. (2014). Comparison of existing technology acceptance theories and models to suggest a well improved theory/model. *International technical sciences journal, 1*(1), 21-36.

Sarif, S. M. (2016). Managing companies with ukhuwwah approach as business core catalyst for sustainability. *International Journal of Business, Economics, Law, 3*(2), 9-17.

Sarif, S. M. (2018). Effects of strategic ta'awun on sustainable, entrepreneurial and urbanised smart society in muslim world. *Journal of Education and Social Sciences, 9*(3), 40-46.

Saudi Gazette. (2015). King approves launching of HR development program. Retrieved from https://saudigazette.com.sa/article/143806/King-approves-launching-of-HR-development-program

Schepers, J., & Wetzels, M. (2007). A meta-analysis of the technology acceptance model: Investigating subjective norm and moderation effects. *Information & Management, 44*(1), 90-103.

Sedikides, C. (2010). Why does religiosity persist? *Personality and Social Psychology Review, 14*(1), 3-6.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. Milton, QLD: John Wiley & Sons.

Shafique, M. N., Haseeb, M., Ahmad, N., Khurshid, M., & Ahmad, H. (2015). The Influence of Islamic work ethics on job satisfaction and organization commitment. *Journal of Marketing and Consumer Research, 14*(2), 23-28.

Shahzad, B., Alwagait, E., & Alim, S. (2014, 27-29 Aug. 2014). *Impact of Change in Weekend Days on Social Networking Culture in Saudi Arabia.* Paper presented at the 2014 International Conference on Future Internet of Things and Cloud.

Shamsuddoha, A. K. (2004). *Anticedents of Firm Export Performance.* (PhD). Queensland University of Technoloy,

Sharma, R., & Mishra, R. (2014). A review of evolution of theories and models of technology adoption. *Indore Management Journal, 6*(2), 17-29.

Shaw, M. (2014). Organization Theory and Societal Culture. *EDITORIAL STAFF, 7*(1), 1-9.

Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of consumer research, 15*(3), 325-343.

Sherif, K., Zmud, R. W., & Browne, G. J. (2006). Managing peer-to-peer conflicts in disruptive information technology innovations: the case of software reuse. *MIS quarterly*, 339-356.

Shi, X., & Wang, J. (2011). Interpreting Hofstede model and GLOBE model: which way to go for cross-cultural research? *International journal of business management Science, 6*(5), 93-99.

Shirali, G., Shekari, M., & Angali, K. A. (2018). Assessing reliability and validity of an instrument for measuring resilience safety culture in sociotechnical systems. *Safety and health at work, 9*(3), 296-307.

Sidani, Y. M., & Gardner, W. L. (2000). Work values among Lebanese workers. *The Journal of Social Psychology, 140*(5), 597-607.

Siddique, M., Khan, A., & Zia, K. (2016). The influence of Religion and Culture on HR practices: A Comparative study of Saudi Arabia and Iran. *Business Economic Review, 8*(2), 35-54.

Silva, P. M., & Dias, G. A. (2007). Theories about Technology Accepentace: Why the Users Accept or Reject the Information Technology? *Brazilian Journal of Information Science: Research Trends, 1*(2), 69-91.

Sim, K. N., & Stein, S. (2016). Reaching the unreached: de-mystifying the role of ICT in the process of doctoral research. *Research in Learning Technology, 24*.

Singleton, R. A., & Straits, B. C. (2017). *Appproaches to Social Research* (6th ed.). New York, NY: Oxford University Press.

Sivard, R. L. (2011). *Women: a world survey*. Washington DC: University Press. .

Smith, D. (2003). Five principles for research ethics. *American Psychological Association (APA), 34*(1), 56-60.

Smith, N. (2002). New globalism, new urbanism: gentrification as global urban strategy. *Antipode, 34*(3), 427-450.

Smith, P. B., Dugan, S., & Trompenaars, F. (1996). National culture and the values of organizational employees: A dimensional analysis across 43 nations. *Journal of cross-cultural psychology, 27*(2), 231-264.

Soliman, M. S. M., Karia, N., Moeinzadeh, S., Islam, M. S., & Mahmud, I. (2019). Modelling Intention to Use ERP Systems among Higher Education Institutions in Egypt: UTAUT Perspective. *Int. J Sup. Chain. Mgt Vol, 8*(2), 429-440.

Sondergaard, M. (1994). Research note: Hofstede's consequences: a study of reviews, citations and replications. *Organization studies, 15*(3), 447-456.

SPA. (2016). Minister of Culture and Information launches the ministry's King Salman Program for Human Resources development and self service. Retrieved from https://www.spa.gov.sa/viewfullstory.php?lang=en&newsid=1564316

Srite, M., & Karahanna, E. (2006). The role of espoused national cultural values in technology acceptance. *MIS quarterly*, 679-704.

Steers, R. M. (2005). *Managing in the Global Economy*. Armonk, NY: M.E. Sharpe.

Sternad, S., & Bobek, S. (2013). Impacts of TAM-based external factors on ERP acceptance. *Procedia Technology, 9*, 33-42.

Sternad, S., Gradisar, M., & Bobek, S. (2011). The influence of external factors on routine ERP usage. *Industrial Management & Data Systems, 111*(9), 1511-1530.

Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). New York, NY: Routledge.

Straub, D., Boudreau, M.-C., & Gefen, D. (2004). Validation guidelines for IS positivist research. *Communications of the Association for information systems, 13*(1), 380-427

Straub, D., Loch, K., & Hill, C. (2002). Transfer of Information Technology to the Arab World: A Test of Cultural Influence Modeling. *Journal of Global Information Management, 9*, 92-134. doi:10.4018/jgim.2001100101

Sulaiman, M. b., Nazli Nik Ahmad, N., & Alwi, N. (2004). Management accounting practices in selected Asian countries: a review of the literature. *Managerial Auditing Journal, 19*(4), 493-508.

Suleman, D., Zuniarti, I., Setyaningsih, E. D., Yanti, V. A., Susilowati, I. H., Sari, I., . . . Lestiningsih, A. S. (2019). Decision Model Based on Technology Acceptance Model (Tam) for Online Shop Consumers in Indonesia. *Academy of Marketing Studies Journal, 23*(4), 1-14.

Sun, S., Goh, T., Fam, K. S., & Xue, Y. (2012). The influence of religion on Islamic mobile phone banking services adoption. *Journal of Islamic marketing, 3*(1), 81-98.

Surendran, P. (2012). Technology acceptance model: A survey of literature. *International Journal of Business*

Social Research, 2(4), 175-178.

Suvarna, J. S., & Godavari, J. (2012). education through ICT in rural areas. *Golden Research Thoughts, 1*, 1-4.

Tabachnick, B., & Fidell, L. (2001). *Using multivariate statistics*. Boston: Allyn & Bacon.

Talukder, M. (2011). Development of an enhanced model of innovation adoption by individual employees. *Journal of Asia-Pacific Business, 12*(4), 316-339.

Talukder, M. (2012). Factors affecting the adoption of technological innovation by individual employees: An Australian study. *Procedia-Social and Behavioral Sciences, 40*, 52-57.

Talukder, M. (2014). *Managing Innovation Adoption: From Innovation to Implementation*. London: Ashgate Publishing, Ltd.

Talukder, M., Alyammahi, S., Quazi, A., Abdullah, A., & Johns, R. (2019). Users' sociocultural Orientation and Smart Systems Acceptance Link: Do Demographics Matter? *Journal of Organizational Computing and Electronic Commerce*, *29*(3), 223-247.

Talukder, M., Harris, H., & Mapunda, G. (2008). Adoption of innovations by individuals within organizations: An Australian study. *Asia Pacific Management Review, 13*(2), 463-480.

Talukder, M., & Quazi, A. (2010). Exploring The Factors Affecting Employees'adoption and Use of Innovation. *Australasian Journal of Information Systems, 16*(2), 1-12.

Talukder, M., & Quazi, A. (2011). The impact of social influence on individuals' adoption of innovation. *Journal of Organizational Computing*

Electronic Commerce, 21(2), 111-135.

Talukder, M., Quazi, A., & Sathye, M. (2014). Mobile phone banking usage behaviour: an Australian perspective. *Australasian Accounting, Business and Finance Journal, 8*(4), 83-104.

Taufiq, I. (2015). Transparency and accountability in the qur'an and its role in building good governance. *International Journal of Business, Economics Law, 6*(4), 73-81.

Taylor, P. (2013). The effect of entrepreneurial orientation on the internationalization of SMEs in developing countries. *African Journal of Business Management, 17*, 19-21.

Taylor, P. (2015). The importance of information and communication technologies (ICTs): An integration of the extant literature on ICT adoption in small and medium enterprises. *International Journal of Economics, Commerce and Management, 3*(5), 274-295.

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. *Information systems research, 6*(2), 144-176.

Terminanto, A., Hidayat, R., & Hidayanto, A. N. (2017). *Implementation of enterprise resource planning using Odoo module sales and CRM. Case study: PT Ecosains Hayati*. Paper presented at the IOP Conference Series: Materials Science and Engineering.

The Embassy of Saudi Arabia in Washington. (2017). Saudi Arabia and Political, Economic & Social Development. Retrieved from

https://www.saudiembassy.net/reports/white-paper-saudi-arabia-and-political-economic-social-development

The Interaction Design Foundation. (2016). The Diffusion of Innovation – Strategies for Adoption of Products. Retrieved from http://www.interaction-design.org/literature/article/the-diffusion-of-innovation-strategies-for-adoption-of-products

The Saudi Gazette Report. (2019). Riyadh named Arab world's first digital capital for 2020. Retrieved from http://saudigazette.com.sa/article/585353/SAUDI-ARABIA/Riyadh-named-Arab-worlds-first-digital-capital-for-2020

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: toward a conceptual model of utilization. *MIS quarterly*, 125-143.

Tlou, E. R. (2009). *The application of the theories of reasoned action and planned behaviour to a workplace HIV/AIDS health promotion programme.* University of South Africa Pretoria, South Africa,

Triandis, H. (1988). Collectivism v. individualism: A reconceptualisation of a basic concept in cross-cultural social psychology. In *Cross-cultural studies of personality, attitudes and cognition* (pp. 60-95). New York ,NY: Springer.

Trompenaars, A., & Hampden-Turner, C. (1997). *Riding the waves of culture understanding cultural diversity in business, second edition*. London, UK: Nicholas Brealey Pub.

Tse, T., Tiong, J., & Kangaslahti, V. (2004). The effect of cultural norms on the uptake of information and communication technologies in Europe: A conceptual analysis. *International Journal of Management, 21*(3), 382-392.

Twati, J. M. (2006). *Societal and organisational culture and the adoption of management information systems in Arab countries*. Unpublished PhD Dissertation. Brisbane, Griffith University.

Twati, J. M. (2008). The influence of societal culture on the adoption of information systems: The case of Libya. *Communications of the IIMA, 8*(1), 1-12.

Tylor, E. B. (1871). *Primitive Culture: Researches into the Development of Mythology, Philosophy, Religion, Art and Custom* (Vol. 2). London: John Murray.

Umble, E. J., Haft, R. R., & Umble, M. M. (2003). Enterprise resource planning: Implementation procedures and critical success factors. *European journal of operational research, 146*(2), 241-257.

Vallerand, R. J., Deshaies, P., Cuerrier, J.-P., Pelletier, L. G., & Mongeau, C. (1992). Ajzen and Fishbein's theory of reasoned action as applied to moral behavior: A confirmatory analysis. *Journal of personality and social psychology, 62*(1), 98–109.

van Everdingen, Y., & Wierenga, B. (2002). Intra-firm Adoption Decisions:: Role of Inter-firm and Intra-firm Variables. *European Management Journal, 20*(6), 649-663.

Van Everdingen, Y. M., & Waarts, E. (2003). The effect of national culture on the adoption of innovations. *Marketing Letters, 14*(3), 217-232.

Venkatesh, V. (1999). Creation of favorable user perceptions: Exploring the role of intrinsic motivation. *MIS quarterly*, 239-260.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research, 11*(4), 342-365.

Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision sciences, 27*(3), 451-481.
Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science, 46*(2), 186-204.
Venkatesh, V., Morris, M. G., & Ackerman, P. L. (2000). A longitudinal field investigation of gender differences in individual technology adoption decision-making processes. *Organizational behavior and human decision processes, 83*(1), 33-60.
Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.
Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178.
Venkatesh, V., & Zhang, X. (2010). Unified theory of acceptance and use of technology: US vs. China. *Journal of global information technology management, 13*(1), 5-27.
Venkatesh, V., Zhang, X., & Sykes, T. A. (2011). "Doctors do too little technology": A longitudinal field study of an electronic healthcare system implementation. *Information systems research, 22*(3), 523-546.
Vieregge, M., & Quick, S. (2011). Cross-cultural negotiations revisited. Are Asian generations X and Y members negotiation like their elders? *Cross Cultural Management, 18*(3), 313-336.
Walliman, N. (2011). *Your Research Project : Designing and Planning Your Work* (3rd ed.). New York & London: Sage Publications.
Wang, E. T., Lin, C. C.-L., Jiang, J. J., & Klein, G. (2007). Improving enterprise resource planning (ERP) fit to organizational process through knowledge transfer. *International journal of information management, 27*(3), 200-212.
Wang, Y. S., Wu, M. C., & Wang, H. Y. (2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British journal of educational technology, 40*(1), 92-118.
Webster, J., & Martocchio, J. J. (1992). Microcomputer playfulness: Development of a measure with workplace implications. *MIS quarterly*, 201-226.
Weihrich, H., & Koontz, H. (2005). *Management: A global perspective*. New York , NY: Tata McGraw-Hill.
Westphal, J. D., Gulati, R., & Shortell, S. M. (1997). Customization or conformity? An institutional and network perspective on the content and consequences of TQM adoption. *Administrative science quarterly*, 366-394.
Wisdom, J. P., Chor, K. H. B., Hoagwood, K. E., & Horwitz, S. M. (2014). Innovation adoption: a review of theories and constructs. *Administration and Policy in Mental Health and Mental Health Services Research, 41*(4), 480-502.
Worldometer. (2020). Countries in the world by population. . Retrieved from https://www.worldometers.info/world-population/population-by-country/
Wright, L. T. (1996). Exploring the in-depth interview as a qualitative research technique with American and Japanese firms. *Marketing Intelligence & Planning, 14*(6), 59-64.
Wu, M. (2006). Hofstede's cultural dimensions 30 years later: A study of Taiwan and the United States. *Intercultural Communication Studies, 15*(1), 33-42.

Wulff, N. (2020). What's the Difference Between Data Analytics and Data Analysis? Retrieved from https://www.getsmarter.com/blog/career-advice/difference-data-analytics-data-analysis/

Yarwood, V. I. (1993). God's Work: Does Business Needs Religion? *Management Auckland, 40*, 30-38.

Yaseen, S. G., & Omoush, K. (2012). Toward developing a model of Facebook adoption among Arab people. *Humanities and Social Sciences Review, 1*(2), 69-76.

Yeh, R.-s. (1988). On Hofstede's treatment of Chinese and Japanese values. *Asia Pacific Journal of Management, 6*(1), 149-160.

Youngberg, E., Olsen, D., & Hauser, K. (2009). Determinants of professionally autonomous end user acceptance in an enterprise resource planning system environment. *International journal of information management, 29*(2), 138-144.

Yousafzai, S. Y., Foxall, G. R., & Pallister, J. G. (2010). Explaining internet banking behavior: theory of reasoned action, theory of planned behavior, or technology acceptance model? *Journal of applied social psychology, 40*(5), 1172-1202.

Yu, C.-S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of Electronic Commerce Research, 13*(2), 104-122.

Zaltman, G., Duncan, R., & Holbek, J. (1973). *Innovations and organizations*. Milton, QLD: John Wiley & Sons.

Zerbino, P., Aloini, D., Dulmin, R., & Mininno, V. (2017). Framing ERP Success from an Information Systems Failure Perspective: A Measurement Endeavor. *Journal of Electronic Commerce in Organizations (JECO), 15*(2), 31-47.

Zhang, D., & Ma, L. (2009). *Research on the impact of staffs' cultural value orientation upon their acceptance intention of technology innovation of retail enterprise.* Paper presented at the 2009 International Joint Conference on Artificial Intelligence.

Zhang, X., & Maruping, L. M. (2008). Household technology adoption in a global marketplace: Incorporating the role of espoused cultural values. *Information systems frontiers, 10*(4), 403-413.

Zhang, Z., Lee, M. K., Huang, P., Zhang, L., & Huang, X. (2005). A framework of ERP systems implementation success in China: An empirical study. *International Journal of Production Economics, 98*(1), 56-80.

Zhao, F., Shen, K. N., & Collier, A. (2014). Effects of national culture on e-government diffusion—A global study of 55 countries. *Information & Management, 51*(8), 1005-1016. doi:https://doi.org/10.1016/j.im.2014.06.004

Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behavior, 26*(4), 760-767.

Zikmund, W. (2000). *Business Research Methods,6th ed* (6th ed.). Orlando: Dryden Press.

Zimmer, T. (2018). What Are the Advantages of Information Technology in Business? Retrieved from http://smallbusiness.chron.com/advantages-information-technology-business-774.html

Zuckerman, P. (2007). Atheism: Contemporary rates and pattern. *The Cambridge companion to atheism*, 47-67.

Appendix 1: Participant Information Form

Project Title

The Impact of Socio-Cultural and Religious Values on The Adoption of Technological Innovation in of Saudi Arabia.

Researcher

Abdullah Alsheddi
Faculty of Science and Technology
0488808844
Abdullah.alsheddi@canberra.edu.au

Supervisors

Primary Supervisor:
Prof. Dharmendra Sharma
62012131
Dharmendra.Sharma@canberra.edu.au

Secondary Supervisor:
Dr. Majharul Talukder
62012702
Majharul.Talukder@canberra.edu.au

Project Aim

The aim of this project is to investigate the impact of socio-cultural and religious values on the adoption of new technological innovations in Saudi Arabia.

Benefits of the Project

The project will contribute to knowledge development by studying a particular phenomenon in Saudi Arabia. Enrich the technology acceptance literature by addressing a construct, which combines adoption issues into a coherent model. Develop a conceptual model that helps in better understanding of the factors affecting individuals' acceptance of innovation in the Middle East context.

Assist managers to identify and benchmark strategies so that technology adoption occurs in their organizations. Help the Saudi government develop policies and procedures on the implementation of new technologies in various departments.

General Outline of the Project

The project will consist of seven chapters. The first chapter is the presentation of the topic's aim, objectives, significance, questions and methodology. The second and third chapters discuss the literature review and the general framework of the study. Chapter four is dedicated to building the conceptual model and the hypothesis of the study. Chapter five explains the methodology followed in this project, the data collection tools and procedures and the development of the instrument and the statistical analysis methods. Chapter six explains the data analysis techniques and the statistical analysis procedures used to obtain the results from this data. Finally, Chapter seven is the conclusion of the study which includes the results, the recommendations, and the suggestions.

Participant Involvement

Participants who agree to participate in the research will be asked to:

Fill out an online questionnaire which consists of several sections. The first section is personal data such as gender, age, academic qualifications, and position. The second section deals with the cultural values and its effect on the adoption of the GRP system. The third section is concerned with the social dimensions such as the effect of social network and peers influence. The fourth section concentrates on the effect of the religious values on the adoption. The fifth section is the effect of the attitude. Section six asks about the benefits expected from using the GRP system.

Participation in the research is completely voluntary and participants may, without any penalty, decline to take part or withdraw at any time without providing an explanation or refuse to answer a question.

Confidentiality

Only the researcher/s will have access to the individual information provided by participants. Privacy and confidentiality will be assured at all times. The research outcomes may be presented at conferences and written up for publication. However, in all these publications, the privacy and confidentiality of individuals will be protected.

Anonymity

All reports and publications of the research will contain no information that can identify any individual and all information will be kept in the strictest confidence.

Data Storage

The information collected will be stored securely on a password protected computer throughout the project and then stored at the University of Canberra for the required five years' period after which it will be destroyed according to university protocols.

Ethics Committee Clearance

The project has been approved by the Human Research Ethics Committee of the University of Canberra (HREC - 20180402).

Queries and Concerns

Queries or concerns regarding the research can be directed to the researcher and/or supervisor. Their contact details are at the top of this form. You can also contact the University of Canberra's Research Ethics & Integrity Unit. You can contact Ms. Maryanne Simpson via phone 02 6206 3916 or email: humanethicscommittee@canberra.edu.au

Appendix 2: Approval by Ethics Committee

From: donotreply@infonetica.net
Sent: Monday, October 29, 2018 8:28 AM
To: Abdullah.Alsheddi; abdullah.alsheddi@canberra.edu.sa; Dharmendra sharma; majharul.talukder@canberra.edu.au
Cc: humanethicscommittee@canberra.edu.au
Subject: 20180402 - Approved

Dear Abdullah

The Human Research Ethics Committee has considered your application to conduct research with human subjects for the project "20180402 - The Impact of Socio-Cultural and Religious Values on The Adoption of Technological Innovation in The Kingdom of Saudi Arabia.".

The Committee made the following evaluation: **Approved**

The approval is valid until: 31/12/2019

The following general conditions apply to your approval. These requirements are determined by University policy and the ***National Statement on Ethical Conduct in Human Research*** (National Health and Medical Research Council, 2007).

Monitoring

You must assist the Committee to monitor the conduct of approved research by completing project review forms, and in the case of extended research, at least annually during the approval period.

Reporting Adverse Events

You must report any unexpected adverse events or complications that occur anytime during the conduct of the research study or during the follow up period after the research. Please refer these matters promptly to the HREC. Failure to do so may result in the withdrawal of the Ethics approval.

Discontinuation of Research

You must inform the Committee, giving reasons, if the research is not conducted or is discontinued before the expected date of completion.

Extension of Approval

If your project will not be complete by the expiry date stated above, you must apply for extension of approval. This must be done before current approval expires.

Retention and Storage of Data

University policy states that all research data must be stored securely, on University premises, for a minimum of five years. You must ensure that all records are transferred to the University when the project is complete.

Contact Details and Notification of Changes

All email contact should use the UC email address. You should advise the Committee of any change of address during or soon after the approval period including, if appropriate, email address(es).

Please do not hesitate to contact us via email humanethicscommittee@canberra.edu.au if you require any further information.

All the best,

Hendryk Flaegel

Research Ethics & Integrity

Research Services

University of Canberra

29/10/2018

Appendix 3: Ministry of Foreign Affairs’ Approval Letter

KINGDOM OF SAUDI ARABIA
MINISTRY OF FOREIGN AFFAIRS

بسم الله الرحمن الرحيم

المملكة العربية السعودية
وزارة الخارجية
(٢٧١)

السادة / جامعة كانبرا

تحية طيبة

تقدم إلينا الطالب/ عبد الله محمد الشدي الموظف بسفارة المملكة العربية السعودية في كانبرا بطلب الحصول على موافقة وزارة الخارجية السعودية بالسماح له بجمع البيانات وآراء منسوبيها عن طريق مسح استطلاعي (استبيان) باستخدام البريد الإلكتروني.

نفيدكم بالسماح للطالب/ الشدي بإجراء البحث باستخدام نموذج الاستبيان على منسوبي الوزارة.

تقبلوا تحياتي وتقديري.

إدارة التواصل الداخلي

٢٠١٨/٦/٢٦

الرقم: .... التاريخ: ١٤٣٩/١٠/١١ .... الموافق: .... المرفقات: ....

www.mofa.gov.sa

ROYAL EMBASSY OF SAUDI ARABIA
CANBERRA

سفارة المملكة العربية السعودية
كانبرا

To the University of Canberra,

This is to certify that Mr. Abdullah Mohammad Alshedi, a student at your University, and an employee at the Royal Embassy of Saudi Arabia in Canberra, has submitted a request to the Ministry of Foreign Affairs in the Kingdom of Saudi Arabia to obtain the feedback and data of the Ministry's staff by using an electronic questionnaire survey which will be distributed via email.

Mr Alsheddi has been granted approval to send out the survey to the Saudi Foreign Ministry's staff in order for him to obtain the required information.

With kind regards and considerations.

Internal Communications Directorate

Ministry of Foreign Affairs – Saudi Arabia

26 July 2018

Appendix 4: Survey Questionnaire

Title: The Impact of Socio-Cultural and Religious Values on the Adoption of Technological Innovation in Saudi Arabia

Primary Researcher: Abdullah Alsheddi (PhD candidate),

Email: Abdullah.Alsheddi@canberra.edu.au

The research entails an empirical investigation of the impact of socio-cultural and religious values on the adoption of new technological innovations in Saudi Arabia. Very little research has been done to explore the effects of socio-cultural and religious factors on technology adoption in Saudi Arabia. The study concentrates on the adoption and use of the GRP system in Saudi public sector, particularly in the Ministry of Foreign Affairs (MOFA). Your participation will involve filling out a survey questionnaire in relation to the factors affecting the adoption and use of the GRP system by the ministry employees. The survey questionnaire will include structured questions in relation to the factors affecting the GRP adoption. Please read the questionnaire statements and circle the most appropriate number against each one. There is no right or wrong answer and no numeric information is required. It is your opinion that is important. The questionnaire was constructed based on a five-point Likert-type scale: Strongly Agree (SA) =1. Agree (A) = 2. Neutral (N) = 3. Disagree (DA) = 4. Strongly Disagree (SD) = 5.

The study will follow these measures:

a) Participation in this study is voluntary and you are under no obligation to participate.
b) Data for this study will be collected anonymously.
c) The data you provide, including personal information, will be private and secured by the researcher even after publishing the PhD thesis.

Select the appropriate answer:

(A) Demographics:

1) What is your gender? (a) Male (b) Female

2) Please indicate your age: ……..

3) Your academic qualifications (a) High school (Year 12) (b) Diploma (c) Bachelor (d) Master (e) PhD

4) What is your position? (a) manager (b) technician (c) administrator (d) contractor (e) other:……

(B) GRP Application Usage:

1) How much time do you spend on using the GRP system per day?

(a) Not at all (b) Less than one hour (c) 1 to 2 hours (d) 2 to 3 hours

(e) More than 3 hours

2) How frequently do you use the GRP system?

(a) Not at all (b) Monthly (c) Weekly (d) Several times per week

(e) Daily

3) Do you use more than one feature (service) of the GRP system?

(a) Not at all (b) Rarely (c) Quite often(d) Frequently (e) All the time

4) Please indicate the usage level of (Airline ticketing-Job transfer-Missions) services in GRP:

(a) Not at all (b) Rarely (c) Quite often (d) Frequently (e) All the time

5) Please indicate the usage level of employees' general services (leave, job performance, ,passport services, etc.) in GRP:

(a) Not at all (b) Rarely (c) Quite often (d) Frequently (e) All the time

6) Please indicate the usage level of employees' training in GRP:

(a) Not at all (b) Rarely (c) Quite often (d) Frequently (e) All the time

Cultural Values	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It is important to have job requirements and instructions spelled out in detail so that employees always know what they are expected to do:	1	2	3	4	5
Managers expect staff members to closely follow instructions and procedures:	1	2	3	4	5
Rules and regulations are important because they inform workers about what the organization expects of them:	1	2	3	4	5
Standard operating procedures are helpful to employees to do their job:	1	2	3	4	5

Instructions for operations are important for employees to do their job:	1	2	3	4	5
Managers should make most decisions without consulting subordinates:	1	2	3	4	5
It is frequently necessary for a manager to use authority and power when dealing with subordinates:	1	2	3	4	5
Managers should seldom ask for the opinions of employees:	1	2	3	4	5
Employees should not disagree with management decisions:	1	2	3	4	5
Managers should not delegate important tasks to employees:	1	2	3	4	5
Group welfare is more important than individual reward:	1	2	3	4	5
Group success is more important than individual success:	1	2	3	4	5
Being accepted by the members of your workgroup is very important:	1	2	3	4	5
Employees should pursue their goals only after considering the welfare of the group:	1	2	3	4	5
Respect for tradition is important to me:	1	2	3	4	5
Family heritage is important to me:	1	2	3	4	5
I value a strong link to my past:	1	2	3	4	5
Traditional values are important to me:	1	2	3	4	5
Meetings are usually run more effectively when they are chaired by a man:	1	2	3	4	5
It is more important for men to have a professional career than it is for women:	1	2	3	4	5
Men usually solve problems through logical analysis; women usually solve issues using intuition:	1	2	3	4	5
Solving organizational problems usually requires an active, forcible approach which is typical of men:	1	2	3	4	5
It is preferable to have a man in a high level position rather than a woman:	1	2	3	4	5

People in my discipline think that using the GRP application is valuable:	1	2	3	4	5
The opinions of people in my discipline are important to me:	1	2	3	4	5
I use the GRP application because our organization is linked to others and they also use it:	1	2	3	4	5
I use the GRP application because many of my friends in other divisions also use it:	1	2	3	4	5
People in informal groups to which I belong think using the GRP application is valuable:	1	2	3	4	5
The opinions of people in informal groups to which I belong are important to me:	1	2	3	4	5
I learned from my friends how to use the GRP application successfully:	1	2	3	4	5
Communicating with my friends helped me to learn more about the GRP application:	1	2	3	4	5
Observing my friends performing a task enhanced my intention to use the GRP application to perform a similar task:	1	2	3	4	5
I would work on my assigned task with a systematic and well-organized plan:	1	2	3	4	5
Despite my general competence, I would not stop looking for ways to improve myself:	1	2	3	4	5
I do not like to see my work as being average in quality:	1	2	3	4	5
I always think of plans to improve my own performance:	1	2	3	4	5
I enjoy learning new skills which can help me to cope with changing workplace demands:	1	2	3	4	5
I always try to help others:	1	2	3	4	5
I always cooperate well with my colleagues at work:	1	2	3	4	5
I am willing to sacrifice my personal interest for the benefit of my co-workers:	1	2	3	4	5
Cooperation is a virtue in work:	1	2	3	4	5
I enjoy working with others more than working alone:	1	2	3	4	5
I am aware that my employer relies on me to do my job to the best of my ability:	1	2	3	4	5
I work hard because that is what every employee is paid to do:	1	2	3	4	5

I do my work to the best that I can because of my sense of responsibility as an employee:	1	2	3	4	5
I feel guilty if I do not do my job as entrusted to me by my employer:	1	2	3	4	5
I perform my job properly and efficiently as I always feel accountable to God:	1	2	3	4	5
It is important for me to put my work-related transactions into writing:	1	2	3	4	5
It is necessary to show both the positive and negative sides about my company's products/services:	1	2	3	4	5
A person who states issues frankly will not hurt other people:	1	2	3	4	5
When asked about my company's products/services, I will inform them about the advantages and disadvantages:	1	2	3	4	5
I only follow the rules if they are compatible with ethics:	1	2	3	4	5
Attitudes					
Using the GRP application is important to my job.	1	2	3	4	5
Using the GRP application is relevant to my job.	1	2	3	4	5
Using the GRP application is helpful.	1	2	3	4	5
Using the GRP application is practical.	1	2	3	4	5
I like the idea of using the GRP application.	1	2	3	4	5
Expected Benefits					
Cost Effectiveness					
The GRP system reduces the costs of operations in my organization.	1	2	3	4	5
The GRP system helps my organization be cost-efficient.	1	2	3	4	5
I believe the GRP system helps my organization to save money.	1	2	3	4	5
I think the GRP system helps to reduce the overall costs.	1	2	3	4	5
My organization is better at saving money now that the GRP system is in place.	1	2	3	4	5
Organizational Efficiency					
Using the GRP system improves the efficiency of the organization.	1	2	3	4	5
Using the GRP system enables me to work more efficiently.	1	2	3	4	5
The GRP system increases my efficiency in collecting information.	1	2	3	4	5
The GRP system enhances my work efficiency.	1	2	3	4	5

The GRP system enables me to improve my efficiency in solving problems.	1	2	3	4	5
Service Quality					
The GRP system provides convenience in completing tasks.	1	2	3	4	5
The GRP system enables me to save time and effort.	1	2	3	4	5
The GRP system helps me to access information easily.	1	2	3	4	5
The GRP system provides me with quick service.	1	2	3	4	5
The GRP system helps me to do the work with less effort.	1	2	3	4	5
Relationship with Customers					
The GRP system helps me to have close contact with customers.	1	2	3	4	5
The GRP system helps me to engage in good communication with customers.	1	2	3	4	5
The GRP system helps me to develop good understanding with customers.	1	2	3	4	5
The GRP system enables me to develop strong relationships with customers.	1	2	3	4	5

if you wish to receive the results of this survey. Please indicate your email in the appropriate place. you will be notified when the result is available.

Email: ……..