EXTENDING THE UTAUT MODEL TO EXAMINE SECURITY HESITATION OF MOBILE MONEY IN SOMALIA

AYUB SULEIMAN JAMA

A project report submitted in partial fulfilment of the
requirements for the award of the degree of
Master of Science (Information Security)

School of Computing
Faculty of Engineering
Universiti Teknologi Malaysia

FEBRUARY 2021

ACKNOWLEDGEMENT

This work was done with invaluable support from many people to whom I owe a lot of gratitude and appreciation. In particular, I would like to express my sincere gratitude to my supervisor PROF DR. NORAFIDA BINTI ITHNIN for her patience, valuable guidance and ongoing support and encouragement at all stages of this thesis. I would also like to thank Telesom staff for their support in evaluating and assessing the questionnaire, which I am especially grateful for.

ABSTRACT

Mobile money (MM) is an integral part of the financial system in Somalia. MM services are widely accepted and adopted by different segments of the population. Despite the growth and popularity of mobile money services in Somalia, the limited use of mobile money services other than mobile money transfers remains to be examined. The current study attempts to investigate the security hesitation factors that affect the adoption of MM services. Accurate identification of critical factors affecting customer acceptance is an essential requirement for Mobile network operator (MNO) to identify to increase the use of MM. This study extends the original UTAUT model, by integrating the perceived risk of identification, perceived risk of authentication and perceived risk of authorisation as a significant determinant. A total of 330 respondents were received from customers who use MM. The study applied partial least squares-structural equation modeling (PLS-SEM) to test the proposed conceptual model. The path significance levels were estimated using the bootstrapping method (5000 resamples). The findings of this study revealed that performance expectancy (PE), Facilitating Condition(FC), Perceived risk of authentication (PRA), to be significant determinants in explaining customer's behavioural intention and usage of MM. The findings of this research contribute to the literature by validating and supporting our extended UTAUT model's applicability. The study concludes with suggestions for various Security Enhancement/Best practices to improve the current adoption rate of MM services.

ABSTRAK

Wang mudah alih adalah bahagian tidak terpisahkan dari sistem kewangan di Somalia. Perkhidmatan ini diterima secara meluas dan diterima pakai oleh segmen penduduk yang berlainan. Walaupun terdapat pertumbuhan dan popularitiperkhidmatan wang mudah alih di Somalia, penggunaan perkhidmatan wang mudah alih yang terhad selain pemindahan wang mudah alih masih perlu dikaji. Kajian semasa cuba menyiasat faktor keraguan keselamatan yang mempengaruhi penggunaan perkhidmatan wang mudah alih. Pengenalpastian tepat mengenai faktor kritikal yang mempengaruhi penerimaan pelanggan adalah syarat penting bagi pengendali rangkaian bergerak untuk mengenal pasti untuk meningkatkan penggunaan wang mudah alih. Kajian ini memperluas model UTAUT yang asli, dengan mengintegrasikan risiko pengenalan yang dirasakan, risiko pengesahan yang dirasakan dan risiko pengesahan yang dirasakan sebagai penentu yang signifikan. Sebanyak 330 responden diterima dari pelanggan yang menggunakan perkhidmatan wang mudah alih. Kajian ini menggunakan pemodelan persamaan struktur-struktur separa terkecil untuk menguji model konsep yang dicadangkan. Tahap kepentingan jalan dianggarkan menggunakan kaedah bootstrapping. Hasil kajian ini menunjukkan bahawa jangkaan prestasi (PE), Fasilitating Condition (FC), Persepsi risiko pengesahan (PRA), menjadi penentu penting dalam menjelaskan niat dan penggunaan MM pelanggan. Penemuan penyelidikan ini menyumbang kepada literatur dengan mengesahkan dan menyokong penerapan model UTAUT kami yang lebih luas. Kajian ini diakhiri dengan cadangan untuk pelbagai Peningkatan Keselamatan / Amalan terbaik untuk meningkatkan kadar penggunaan perkhidmatan MM semasa.

TABLE OF CONTENTS

	TITLE	PAGE
	DECLARATION	**iii**
	DEDICATION	**iv**
	ACKNOWLEDGEMENT	**v**
	ABSTRACT	**vi**
	ABSTRAK	**vii**
	TABLE OF CONTENTS	**viii**
	LIST OF TABLES	**xii**
	LIST OF FIGURES	**xiii**
	LIST OF ABBREVIATIONS	**xiv**
	LIST OF APPENDICES	**xv**
CHAPTER 1	**INTRODUCTION**	**1**
1.1	Problem Background	2
1.2	Problem Statement	3
1.3	Aims and Objectives of the Project	3
1.4	Research Questions	4
1.5	Scope of the Study	5
1.6	Significance of the Study	5
1.7	Thesis-organization	6
CHAPTER 2	**LITERATURE REVIEW**	**7**
2.1	Introduction	7
2.2	Structure of Mobile Money	7
2.3	Review Of Extant User Acceptance Models	8
2.4	Technology Acceptance Theories And Models	9
2.5	Prior TAM models	12
2.5.1	Theory of Reasoned Action (TRA)	13
2.5.2	Social Cognitive theory (SCT)	13

2.5.3 Motivational Model (MM) 16
2.5.4 Theory of planned behavior (TPB) 17
2.5.5 Model of PC Utilization (MPCU) 18
2.5.6 Innovation Diffusion Theory (IDT) 19
2.5.7 Technology Acceptance Model (TAM) 20
2.5.8 Unified theory of acceptance and use of technology (UTAUT) 20
2.6 Security Hesitation 21
2.6.1 Identification 22
2.6.2 Authentication 22
2.6.3 Authorisation 23
2.7 Research limitations and gap analysis 24

CHAPTER 3 RESEARCH METHODOLOGY 25
3.1 Research Paradigm 25
3.2 Research Approach 26
3.3 Research Design 26
3.4 Population And Sampling 27
3.4.1 Justifications for the use of convenience sampling 28
3.4.2 Sample Size 28
3.5 Survey Design 29
3.6 Instrumental Design 29
3.7 Data Collection Method 29
3.8 Validity 32
3.9 Reliability 33
3.10 Pilot Test 34
3.11 Result Of The Pilot Study 34

CHAPTER 4 DESIGN AND IMPLEMENTATION 37
4.1 Theoretical basis and Conceptual Framework 37
4.2 Direct constructors 39
4.2.1 Performance Expectancy (PE) 39

	4.2.2	Effort Expectancy (EE)	40
	4.2.3	Social influence (SI)	40
	4.2.4	Facilitating Conditions (FC)	41
	4.2.5	Behavioural Intention (BI)	41
	4.2.6	Perceived Risk Of Identification (PRI)	42
	4.2.7	Perceived Risk Of Authentication (PRA)	42
	4.2.8	Perceived Risk of authorisation (PRAU)	43
4.3	Pilot Study Results		43
	4.3.1	Respondent Profile	44
4.4	Chapter Summary		49
CHAPTER 5	**RESULTS AND DISCUSSION**		**51**
5.1	Data screening		52
5.2	Respondent Profile		54
5.3	PLS-SEM analysis		58
5.4	Estimation of the Proposed Model		60
	5.4.1	Measurement model assessment	60
	5.4.2	Discriminate Validity	65
	5.4.3	Fornell Larcker criterion	65
	5.4.4	Cross-loading Criterion	67
	5.4.5	Heterotrait-Monotrait Ratio(HTMT)	67
5.5	ANALYSIS OF THE STRUCTURAL MODEL		69
	5.5.1	Collinearity Statistics(VIF)	69
	5.5.2	Path coefficient	71
	5.5.3	Coefficient of determination(R2)	71
	5.5.4	Effect Size(f^2)	72
	5.5.5	Prediction relevanc (Q^2)	73
5.6	Hypotheses testing		75
5.7	Chapter Summary		76
CHAPTER 6	**CONCLUSION AND RECOMMENDATIONS**		**77**
6.1	Introduction		77

6.2	Discussion		78
	6.2.1	Performance Expectancy	78
	6.2.2	Effort Expectancy	78
	6.2.3	Social Influence	79
	6.2.4	Perceived Risk of authentication	79
	6.2.5	Perceived Risk of Identification	80
	6.2.6	Perceived Risk of authorisation	80
	6.2.7	Facilitating Condition	80
	6.2.8	RQ1	81
	6.2.9	RQ2	82
6.3	Security Enhancement/Best practices		82
6.4	Research Contribution		84
6.5	Practical Contribution		84
6.6	Research Limitations		84
6.7	Conclusion		85

REFERENCES **87**

LIST OF TABLES

TABLE NO.	TITLE	PAGE
Table 2.1	Prior TAM models theories and their construct	11
Table 3.1	Survey Questionnaires P1	30
Table 3.2	Survey Questionnaires P2	31
Table 3.3	Content and Face validity experts profile	33
Table 3.4	Content and Face validity experts comment	34
Table 5.1	Missing Data SPSS statistics	52
Table 5.2	Missing Data Nominal Variable	53
Table 5.3	Percentage and Frequencies of the respondents' Gender	54
Table 5.4	Percentage and Frequencies of the respondents' age group	54
Table 5.5	Percentage and Frequencies of the respondents' education	55
Table 5.6	Percentage and Frequencies of the respondents' Use of MM	56
Table 5.7	Percentage and Frequencies of the respondents' owning a bank account	56
Table 5.8	Frequency and percentage of respondents' Hesitation of MM	57
Table 5.9	Frequency and percentage of respondents' Security awareness	57
Table 5.10	Indicator Outer loading	61
Table 5.11	1st assessment of construct reliability and validity	62
Table 5.12	Construct Validity and reliability of modified measurement model	63
Table 5.13	Fornell Larcker criterion	65
Table 5.14	Cross loading result	66
Table 5.15	Heterotrait-Monotrait Ratio	67
Table 5.16	Outer And Inner VIF Values	70
Table 5.17	Path coefficient	71
Table 5.18	Coefficient of determination (R^2)	72
Table 5.19	Effect size(f^2)	72
Table 5.20	Construct Cross-validated redundancy(Q^2)	73
Table 5.21	Summary of the results of the Direct Hypothesis	75

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
Figure 1.1	Thesis-organization	6
Figure 2.1	Mobile money structure	7
Figure 2.2	UTAUT	9
Figure 2.3	Theory of Reasoned Action (TRA)	13
Figure 2.4	Social Cognitive theory (SCT)	14
Figure 2.5	Illustration-of-Social-Cognitive-Theory	15
Figure 2.6	Motivational Model (MM)	16
Figure 2.7	Theory of planned behavior (TPB)	17
Figure 2.8	Model of PC Utilization (MPCU)	18
Figure 2.9	Innovation Diffusion Theory (IDT)	19
Figure 2.10	Technology Acceptance model (TAM)	20
Figure 2.11	Unified theory of acceptance and use of technology (UTAUT)	21
Figure 3.1	Research Design	27
Figure 3.2	Pilot study reliability statistics	32
Figure 3.3	KMO and Bartlett Test	33
Figure 4.1	The proposed Conceptual Model	39
Figure 4.2	Gender	45
Figure 4.3	Age	45
Figure 4.4	Educational Level	46
Figure 4.5	Work Experience	47
Figure 4.6	Employment Status	47
Figure 4.7	Hesitation	48
Figure 4.8	Security Hesitation	48
Figure 5.1	PLS-SEM evaluation stages Adapted-From- (Sarstedt *et al.*, 2014)	59
Figure 5.2	Measurement model results	64
Figure 5.3	Structural model results	68
Figure 5.4	Hypotheses Beta Coefficients	74

LIST OF ABBREVIATIONS

BI	-	Behavioural Intention
EE	-	Effort Expectancy
FC	-	Facilitating Conditions
IDT	-	Innovation Diffusion Theory
MNO	-	Mobile Network Operators
MHF	-	Mobile hesitation Factors
MM	-	Mobile Money
MPCU	-	Model of PC Utilization
PE	-	Performance Expectancy
PRI	-	Perceived Risk Of Identification
PRA	-	Perceived Risk Of Authentication
PRAU	-	Perceived Risk Of Authorisation
SI	-	Social Influence
SCT	-	Social Cognitive theory
TRA	-	Theory of Reasoned Action
TPB	-	Theory of planned behavior
TAM	-	Technology Acceptance Model
TAC	-	Technology Acceptance
TAD	-	Technology Adoption
UTM	-	Universiti Teknologi Malaysia
UTAUT	-	Unified theory of acceptance and use of technology
2FA	-	Two-factor authentication

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
Appendix A	Cover Letter	93
Appendix B	Survey Questionnaire	95

CHAPTER 1

INTRODUCTION

The rapid growth and spread of Mobile Money(MM) transfer and its adoption in most sub-Saharan African countries, including Somalia and Kenya, is not surprising as reported in the (GSMA, 2019) study. Most East African conventional banking systems have been plagued by many infrastructure issues with most of its adult population without access to formal financial resources. MM is a story of progress in promoting transparency and financial inclusion in developing and emerging countries. According to (Hamdan, 2019), telecommunications companies provide MM services in more than 90 countries, serving more than 866 million registered financial accounts and managing $13 billion in transactions every day. The most common services used being instant digital cash transfers.

Mobile payment systems have reached millions in developing and emerging markets with non-banked individuals and businesses relying heavily on MM, MM system encourages financial inclusion, reduces transaction costs and allows efficient use of money transfers.The platform is used to meet the demand for rapidly accessible and low-cost financial services in developing and emerging markets. However, MM is often linked to various security implications and threats due to their poor authentication system. The (World Bank Group, 2018), identified several challenges mobile money system in Somalia faces, such as lack of CBS monitoring of mobile money services, Lack of proper KYC verification procedures, and Lack of customer protection. Therefore, to address the aforementioned issues, this study aims to examine the effect security hesitation has on the attitude use of MM. This study's outcome would help MNOs understand what may lead to higher customer usage of MM-related services.

1.1 Problem Background

Mobile Network Operators (MNO's) provide similar network technology USSD; GSM mobile phones use the Unstructured Supplementary Service Data (USSD) system to communicate with MNO's application servers. As we discussed earlier, East African conventional banking systems have been plagued by several infrastructure problems with a large part of its adult population without access to formal financial services. Mobile telecommunications companies in Somalia have responded to this demand by providing electronic mobile money that has changed the country's financial services system. The current problem of MM is the lack of use in the services that MNO's offers to its registered users. Previous studies (Echchabi, 2012; Ali and Dhaha, 2014; Ahmed and Ali, 2017), had mainly focused on investigating the factors that influence MM adoption and how people accept and adopt the MM system. Relatively little attention has been paid to the security hesitation that users face after accepting MM.

While reviewing the literature, Academic efforts in technology adoption models have contributed to a number of models. The most prominent model has been TAM, Technology Acceptance Model (TAM) has formed the basis for many IS studies."TAM is an information systems theory that models how users come to accept and use technology" (Davis, 1989). The model identifies two beliefs that affect users' attitude to use new technology, particularly perceived usefulness(PU) and perceived ease of use (PEOU). TAM and other models such as UTAUT have been established to predict users' initial system acceptance. However, these models cannot fully explain the customer's hesitation to use MM services due to the lack of explanatory power. This study extends the unified theory of acceptance and use of technology (UTAUT) and integrates with Mobile hesitation factors (MHF) to achieve the current research goals and expand on previous theoretical bases. UTAUT constructs positively influence the attitude to use MM while security hesitation negatively influences the use of MM. Research questions for this thesis are can the extended UTAUT model, which includes perceived risk of identification, perceived risk of authentication and perceived risk of authorisation, better predict customer hesitation in using MM on a full-scale?

1.2 Problem Statement

Mobile money contributes to promoting financial inclusion and provides access to financial services for those currently unbanked. In general, there are three types of MM services: MM Transfer, MM Payment, and MM Financial services. In Somalia, several MNOs have implemented and deployed these services. However, they are yet to gain a continuous usage of these services from the customer. as world bank reports in their study (Kelly, 2017), An alarming majority of Somalis have negative views of mobile money as they perceive it as unreliable and unsafe. The purpose of this study is to investigate the effect security hesitation has on the customers' attitude to use MM services in Somalia.

1.3 Aims and Objectives of the Project

The purpose of this study is to investigate the security hesitation of MM services in Somalia. The security hesitation is integrated with the unified theory of acceptance and use of technology (UTAUT) to explain the different factors influencing the adoption and acceptance of MM. With an understanding of the above, this research aims to establish the following.

i) To examine the effect security hesitation has on the attitude use of MM.

ii) To assess the effect of UTAUT constructs on attitude to use MM.

iii) To recommend security enhancement to remove MM security hesitation.

1.4 Research Questions

This research will help provide answers to the following three questions:

i) What is the possible association between UTAUT constructs in determining the behavioral intention for the adoption of MM in Somalia?

ii) How MHF affect the behavioral intention for the adoption of MM in Somalia?

iii) What are the security enhancement/best practices to remove MM security hesitation?

1.5 Scope of the Study

The scope of the study is to analyze mobile hesitancy factors using a unified theory of acceptance and use of technology (UTAUT). In the sense of MM hesitation in Somalia. The scope of this research can be summarised as follows:

i) This study would be conducted in Somaliland in the northern part, given that all major companies located in the northern part, such as Telesom, Somtel, and Golis.

ii) The main goal of this research is to investigate the security hesitation of MM in Somalia. The investigation for the security hesitation is limited to Somalia's geographical area and is therefore considered representative of areas that share only the same cultural characteristics.

iii) In addition, this study is also limited to assessing only the four key constructs of the direct UTAUT constructs, Leaving the Moderators unassessed. However, the Moderators of the UTAUT Model will be briefly discussed in Chapter 2.

1.6 Significance of the Study

This research attempts to make theoretical and practical contributions to knowledge surrounding Mobile money acceptance, mobile hesitation factors (MHF) in the already established ideas of the unified theory of acceptance and use of technology (UTAUT) and they are as follows:

i) This study contributes to the empirical studies of unified theories of acceptance and use of technology (UTAUT).

ii) This study examines and assesses the effect security hesitation, and UTAUT constructs have on attitude use of MM.

REFERENCES

Ahmed, I. and Ali, A. (2017). Determinants of Continuance Intention to Use Mobile Money Transfer: An Integrated Model. *Journal of Internet Banking and Commerce*. 22(S7), 1–24. Retrievable at `http://www.icommercecentral.com`.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*. 50, 179–211.

Ajzen, I. (2012). The theory of planned behavior. *Handbook of Theories of Social Psychology: Volume 1*. (January 2012), 438–459. doi:10.4135/9781446249215.n22.

Al-Saedi, K., Al-Emran, M., Ramayah, T. and Abusham, E. (2020). Developing a general extended UTAUT model for M-payment adoption. *Technology in Society*. 62. ISSN 0160791X. doi:10.1016/j.techsoc.2020.101293.

Ali, A. Y. S. and Dhaha, I. S. Y. (2014). Factors influencing mobile money transfer adoption among Somali. *International Journal of Business, Economics, and Law*. 4(1), 180–188.

Ali, G., Dida, M. A. and Sam, A. E. (2020). Two-factor authentication scheme for mobile money: A review of threat models and countermeasures. *Future Internet*. 12(10), 1–27. ISSN 19995903. doi:10.3390/fi12100160.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Prentice-Hall series in social learning theory. Englewood Cliffs, NJ, US: Prentice-Hall, Inc. ISBN 0-13-815614-X (Hardcover).

Bist, R. B. (2015). Research Procedure: An Introduction. *Journal of NELTA Surkhet*. 4, 34–40. ISSN 2392-4209. doi:10.3126/jns.v4i0.12858.

Bock, G. W. and Kim, Y. G. (2002). Breaking the Myths of Rewards: An Exploratory Study of Attitudes about Knowledge Sharing. *Information Resources Management Journal (IRMJ)*. 15(2), 14–21. ISSN 15337979. doi:10.4018/irmj.2002040102.

Chen, L. D. (2008). A model of consumer acceptance of mobile payment. *International Journal of Mobile Communications*. 6(1), 32–52. ISSN 1470949X. doi:10.1504/IJMC.2008.015997.

Chin, W. W. (1998). The partial least squares approach for structural equation modeling. *Modern methods for business research*. (April), 295–336.

Chin, W. W. (2010). *Handbook of Partial Least Squares*. ISBN 9783540328278. doi:10.1007/978-3-540-32827-8.

Cohen, J. (2013). *Statistical Power Analysis for the Behavioral Sciences*. ISBN 0805802835. doi:10.4324/9780203771587.

Compeau, D. and Higgins, C. (1995). Development of a Measure and Initial Test. *Management Information Systems Research Center, University of Minesota*. 19(2), 189–211.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly: Management Information Systems*. 13(3), 319–339. ISSN 02767783. doi:10.2307/249008.

Echchabi, A. (2012). www.econstor.eu.

Flammer, A. (2001). Self-Efficacy "Question asking" View project "Time-use" View project. *International Encyclopedia of the Social & Behavioral Sciences*. (April). doi:10.1016/B0-08-043076-7/01726-5.

Fornell, C. and Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*. 18(1), 39–50. ISSN 00222437. doi:10.2307/3151312. Retrievable at `http://www.jstor.org/stable/3151312`.

Geisser, B. Y. S. (1974). A predictive approach to the random effect model. 2, 101–107.

GSMA (2019). State of the Industry Report on Mobile Money. *Gsma*, 1–75. doi:10.1002/9781118290743.wbiedcs023. Retrievable at `http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/03/GSMA{_}State-of-the-Industry-Report-on-Mobile-Money{_}2016.pdf`.

Hair, J. F., Sarstedt, M., Ringle, C. M. and Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*. 40(3), 414–433. ISSN 00920703. doi:10.1007/s11747-011-0261-6.

Hair Jr, J., Hult, G., Ringle, C. and Sarstedt, M. (2016). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) - Joseph F. Hair, Jr., G. Tomas M. Hult, Christian Ringle, Marko Sarstedt*. ISBN 9781483377445.

Hamdan, J. (2019). *The Impact of Mobile Money in Developing Countries*. DIW Roundup: Politik im Fokus 131. DIW Berlin, German Institute for Economic Research. Retrievable at https://ideas.repec.org/p/diw/diwrup/131en.html.

Hassan, Z. A., Schattner, P. and Mazza, D. (2006). Doing A Pilot Study: Why Is It Essential? *Malaysian family physician : the official journal of the Academy of Family Physicians of Malaysia*. 1(2-3), 70–3. ISSN 1985-207X. Retrievable at http://www.ncbi.nlm.nih.gov/pubmed/27570591{%}0Ahttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC4453116.

Henseler, J., Ringle, C. M. and Sarstedt, M. (2014). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*. 43(1), 115–135. ISSN 00920703. doi:10.1007/s11747-014-0403-8.

Hill, R. J., Fishbein, M. and Ajzen, I. (1977). Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. *Contemporary Sociology*. 6(2), 244. ISSN 00943061. doi:10.2307/2065853.

Kaiser H (1974). Analysis of factorial simplicity. *Psychometrika*. 39(1), 31–36. ISSN 0033-3123.

Kelly, T. (2017). Mobile Money in Somalia Household Survey and Market Analysis. (April). Retrievable at https://www.somaliampf.net/files/Mobile_Money_in_Somalia.pdf.

Lancaster, G. A., Dodd, S. and Williamson, P. R. (2004). Design and analysis of pilot studies: Recommendations for good practice. *Journal of Evaluation in Clinical Practice*. 10(2), 307–312. ISSN 13561294. doi:10.1111/j..2002.384.doc.x.

Lu, Y., Yang, S., Chau, P. Y. K. and Cao, Y. (2011). Dynamics between the trust transfer process and intention to use mobile payment services: A cross-environment perspective. *Inf. Manag.* 48, 393–403.

Ma, Z. and Chen, G. (2018). Bayesian methods for dealing with missing data problems. *Journal of the Korean Statistical Society*. 47(3), 297 – 313. ISSN 1226-3192. doi:https://doi.org/10.1016/j.jkss.2018.03.002. Retrievable at http://www.sciencedirect.com/science/article/pii/S1226319218300176.

McGregor, S. L. T. and Murnane, J. A. (2010). Paradigm, methodology and method: intellectual integrity in consumer scholarship. *International Journal of Consumer Studies*. 34(4), 419–427. ISSN 1470-6423. doi:10.1111/j.1470-6431.2010.00883.x. Retrievable at https://doi.org/10.1111/j.1470-6431.2010.00883.x.

Merhi, M., Hone, K. and Tarhini, A. (2019). A cross-cultural study of the intention to use mobile banking between Lebanese and British consumers: Extending UTAUT2 with security, privacy and trust. *Technology in Society*. 59(January). ISSN 0160791X. doi:10.1016/j.techsoc.2019.101151.

Moore, G. C. and Benbasat, I. (1991). *Moore and Benbasat.pdf*.

Mugambe, P. (2017). UTAUT Model in Explaining the Adoption of Mobile Money Usage by MSMEs' Customers in Uganda. *Advances in Economics and Business*. 5(3), 129–136. ISSN 2331-5059. doi:10.13189/aeb.2017.050302.

Nicolaou, A. I. and Masoner, M. M. (2013). Sample size requirements in structural equation models under standard conditions. *International Journal of Accounting Information Systems*. 14(4), 256–274. ISSN 14670895. doi:10.1016/j.accinf.2013.11.001. Retrievable at http://dx.doi.org/10.1016/j.accinf.2013.11.001.

Oliveira, T., Faria, M., Thomas, M. A. and Popovič, A. (2014). Extending the understanding of mobile banking adoption: When UTAUT meets TTF and ITM. *International Journal of Information Management*. 34(5), 689–703. ISSN 02684012. doi:10.1016/j.ijinfomgt.2014.06.004.

Rogers, E. (1995). *Diffusion of innovations*. Free Press. ISBN 9780029266717. Retrievable at https://books.google.com.my/books?id=LpkPAQAAMAAJ.

Sarstedt, M., Ringle, C. M., Smith, D., Reams, R. and Hair, J. F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of Family Business Strategy*. 5(1), 105–115. ISSN 18778585. doi:10.1016/j.jfbs.2014.01.002. Retrievable at http://dx.doi.org/10.1016/j.jfbs.2014.01.002.

Schafer, J. L. (1999). Multiple imputation: A primer. *Statistical Methods in Medical Research*. 8(1), 3–15. ISSN 09622802. doi:10.1191/096228099671525676.

Schäfer, T. and Schwarz, M. A. (2019). The meaningfulness of effect sizes in psychological research: Differences between sub-disciplines and the impact of potential biases. *Frontiers in Psychology*. 10(APR), 1–13. ISSN 16641078. doi: 10.3389/fpsyg.2019.00813.

Schierz, P. G., Schilke, O. and Wirtz, B. W. (2010). Understanding consumer acceptance of mobile payment services: An empirical analysis. *Electronic Commerce Research and Applications*. 9(3), 209–216. ISSN 15674223. doi:10.1016/j.elerap.2009.07.005. Retrievable at `http://dx.doi.org/10.1016/j.elerap.2009.07.005`.

Sekaran, U. and Bougie, R. (2009). Research Methods for Business: A Skill Building Approach (5th Edition). *International Journal of Information Technology and Management - IJITM*.

Shaikh, A. A. and Karjaluoto, H. (2015). Mobile banking adoption: A literature review. *Telematics and Informatics*. 32(1), 129–142. ISSN 07365853. doi:10.1016/j.tele.2014.05.003. Retrievable at `http://dx.doi.org/10.1016/j.tele.2014.05.003`.

Showkat, N. and Parveen, H. (2017). Quantitative Methods: Survey. (pp. 1–9).

Slade, E., Williams, M., Dwivedi, Y. and Piercy, N. (2015). Exploring consumer adoption of proximity mobile payments. *Journal of Strategic Marketing*. 23(3), 209–223. ISSN 14664488. doi:10.1080/0965254X.2014.914075.

Taylor, S. and Todd, P. (1995). Assessing IT Usage: The Role of Prior Experience. *MIS Quarterly*. 19(4), 561–570. ISSN 02767783. doi:10.2307/249633. Retrievable at `http://www.jstor.org/stable/249633`.

Thompson, R. L., Higgins, C. A. and Howell, J. M. (1991). Personal Computing: Toward a Conceptual Model of Utilization. *MIS Quarterly*. 15(1), 125–143. ISSN 02767783. doi:10.2307/249443. Retrievable at `http://www.jstor.org/stable/249443`.

Vallerand, R. J. (1997). Toward A Hierarchical Model of Intrinsic and Extrinsic Motivation. *Advances in Experimental Social Psychology*. 29(C), 271–360. ISSN 00652601. doi:10.1016/S0065-2601(08)60019-2.

Venkatesh, V., Smith, R. H., Morris, M. G., Davis, G. B., Davis, F. D. and Walton, S. M. (2003). *USER ACCEPTANCE OF INFORMATION TECHNOLOGY: TOWARD A UNIFIED VIEW 1*. Technical Report 3.

World Bank Group (2018). Somalia Economic Update 2018: Rapid Growth in Mobile Money: Stability or Vulnerability? (3). Retrievable at http://documents.worldbank.org/curated/en/975231536256355812/Rapid-Growth-in-Mobile-Money-Stability-or-Vulnerability.

Wu, J. H. and Wang, S. C. (2005). What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. *Information and Management*. 42(5), 719–729. ISSN 03787206. doi:10.1016/j.im.2004.07.001.

Yang, L., Rahman, A. and Connie, G. (2019). *Factor Influencing Trust in Internet Shopping*.

Yu, C. S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the utaut model. *Journal of Electronic Commerce Research*. 13(2), 105–121. ISSN 19389027.