

An Empirical Study of Customers' Adoption of Mobile Money Transfer Services in Somaliland

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Abstract-This paper investigates factors influencing customers' adoption of Mobile Money Transfer Services in Somaliland by applying and extending the Technology Acceptance Model (TAM) model. We proposed and tested statistical hypotheses based on the data collected from 204 respondents who are customers that use the "Zaad" Mobile Money Transfer Services operated by Telsom Telecommunication Company in Somaliland. By testing the influence of Perceived Ease of Use, Perceived Usefulness and Perceived Trust (all moderated by gender) on the Behavioral Intention to adopt the "Zaad service", the results of the study further confirms that all the aforementioned factors are important determinants of Intention to Use while no significant difference was found between the genders. Finally, implications and a brief conclusion is presented.

Keywords-Adoption Mobile Money Transfer Service in Somaliland; Factors influencing the acceptance of MMTS; Gender and MMTS in Somaliland, Technology Adoption.

I. INTRODUCTION

The development of technology in the world, especially wireless communication is increasing the expectations of the people to improve their daily life. One of the most interesting developments in telecommunication and banking sector is Mobile Money Transfer Service. Mobile Money is a form of electronic money where the real money is converted into E-money and put into the mobile in a form of digits to make the transfer easy among the users. A user can transfer an amount of money to other E-money users within the same service. This service makes purchasing easier, especially since the customers are using their mobile phone as a wallet that will help them reduce the weight of carrying a wallet and cash. Furthermore, mobile phones are now in the hands of everyone and that will give a promising future at the same time for the Mobile Money Transfer Service.

In Somaliland, the service was first launched by the private Telecommunication Company known as Telesom. The Company has rapid growth and has access to network in all over the country. Taking advantage of their Network they introduced "Mobile Money Transfer service" to the society for the first time in 2009 which is known as "Zaad Service", allowing customers to use their mobile phone to do financial transactions [1]. An example of such a service includes; deposit money, save, transfer, pay bills, purchase goods and services, and use it as Top-Up E-voucher. The service quickly becomes popular in the

community and gained a lot of customers in short time, and now more than 40% of it is customers use the Mobile Money Transfer Service. Telesom ZAAD service is acknowledged as one of the most successful Mobile Money Transfer Service in the world [2]. Though, Telesom being the only company which provide the service in the whole country, the main factors driving the adoption of the service among customers are still unclear.

While several researchers have carried out investigations on what promotes Mobile Money Transfer Services in the world and agreed among themselves on the usefulness of the service [3, 4, 5]. There has been dearth of study focusing on whether those factors found to be significant in developed worlds are also relevant in third world countries such as Somaliland. Hence, there is a need for research on Mobile Money Transfer Service particularly the "Zaad service" which has gained prominence in the country. Thus, this study applies the TAM model to examine the factors that influence the adoption of Mobile Money Transfer Service and the gender differences among Telesom customers in Somaliland.

II. BACKGROUND OF THE STUDY AND HYPOTHESES

Technology acceptance Model (TAM) was developed to provide an explanation on why people use and adopt Information Technology, and also to explain the user's acceptance of the new technology [6]. The model proposes that user's behavioral intention to determine the actual use of the system, and users' attitude towards using the system influence the user's behavioral intention [7]. Going by the prominence of the model in investigation technology adoption, the conceptual model of this study is based on TAM [8]with perceive trust added as an extra factor. The model describes direct relationships between the independent variables: Perceived ease of use (PEOU), Perceived Usefulness, Perceived Trust (PT), and the dependent variable; the Behavioral Intention to adopt Mobile Money Transfer Service (see Figure 1). The model attempts to empirically investigate the factors affecting the customer's intention to adopt and use the Mobile Money Transfer Service.

A. Perceived Ease of Use (PEOU)

Perceived Ease of Use is explained to be the degree to which a person believes that using a particular system will be free of effort [8]. In the context of Mobile Money

Transfer Service Perceived Ease of Use will be defined as; the system must be easy to access with a good interface design where the customer can easily perform a payment using minimal number of steps to perform the payment transaction, transfer a currency or check the balance. Previous studies have concluded that PEOU is a key determinant to consumer behavioral intentions [8]. Kuwornu and Tobbin [5] studied the factors that influence Ghanaian consumers' acceptance and use of Mobile Money Transfer Service using key constructs from the TAM and Diffusion of Innovation (DoI) theory. The study concluded that Perceived Ease of Use has a positive impact on customer intention to use the Mobile Money Transfer Service. A similar study was conducted in Nigeria [9] examining the factors that affect Nigerian consumers' adoption of Mobile Money Transfer Service. The results show that Perceived Ease of Use has a positive impact on Nigerian customers. Thus, the researcher proposed the following hypothesis:

H1: *Perceived Ease of Use has a direct positive influence on customer's intention to adopt Mobile Money Transfer Service.*

B. Perceived Usefulness (PU)

Perceived usefulness (PU) has been described to be the degree that a person believes in using a particular system will improve his or her performance in work [10]. According to Chen [3] Perceived Usefulness can be described in the context of mobile Money Transfer as the degree to which the consumer believes that the Mobile Money Transfer Service will enhance his transaction successfully with the required quality. When this belief increases, the consumer's intention to use the services will also increase. Luarn and Lin [11] argue that people use Mobile Money Transfer Service because they find it useful. Earlier studies have shown that there is a positive relationship between perceived usefulness and the intention of the customers to use the Mobile Money Transfer Service. Stalfors and Rasmus [4] examined the factors affecting consumer's adoption towards Mobile Money Transfer Service, the results have shown that Perceived Usefulness is the main determinants for consumers' acceptance of the system. A similar study conducted by Kuwornu and Tobbin [5] has found that Perceived Usefulness has a positive impact on customer intention to use the Mobile Money Transfer Service. Hence, the following hypothesis is proposed:

H2: *Perceived Usefulness has a direct positive influence on consumers Intention to use and adopt Mobile Money Transfer Service.*

C. Perceived Trust (PT)

Trust is defined as a user's certainty level that a particular service will be available with the least possible hindrance [12]. Also, Perceived Trust in the context of Mobile Money Transfer Service means trusting the system, where the customers believe that conducting a transaction through mobile phone is more secure than

traditional payment approach. A Study has shown that trust in mobile commerce can be separated into two categories in mobile technology and trust in mobile vendors [13]. The users trust in the system can be increased by providing reliable network, with improved security system to support the transactions [14]. Dahlberg et al [15], proposed the Trust enhanced TAM. The study investigated whether the theoretical basis can provide an explanation for the customers' acceptance of new information technology services. Hence, the following hypotheses have been proposed:

H3: *Perceived Trust has a direct positive influence on consumer's intention to use and adopt Mobile Money Transfer Service.*

D. Moderator Variable of Gender

Studies have suggested fewer women adopt new technology compared to men [16, 17]. Earlier study such as [16] studied the use of computers and concluded that females have low confidence in their own ability to work with computers, even though they showed strong beliefs in equal gender ability and competence in the use of computers. According to the findings by [17] males were more willing to adopt new technologies than females. In another study that investigated the perception of undergraduate business students use of instant messaging (IM) and found that women value perceptions of ease of use, and visibility more than men, while men value perceptions of relative advantage, result demonstrability and perceived critical mass more than women [18]. Considering the fact that the population under study has very few women participating in the public activities and a relatively low level of education compared to men, it becomes imperative as well to explore the effects of the gender on the influence of the independent variables of the study. Consequently, the following hypotheses are proposed:

H4: Perceived Ease of Use will influence intention to use the Mobile Money Transfer service more strongly for women than for men.

H5: Perceived usefulness will influence intention to use the Mobile Money Transfer service more strongly for men than for women.

H6: Perceived Trust will influence intention to use the Mobile Money Transfer service more strongly for men than for women.

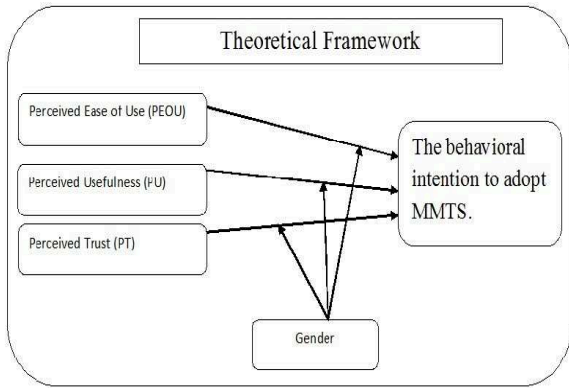


Figure 1: Research Framework

III. METHODOLOGY

A. Research Population

The population of this study involves Somaliland citizens who use mobile phone. Accordingly, Telesom customers who own an account and use Mobile Money Transfer Service were the target participants of this survey. The study focuses on customers who use the service and stay in the country at the time of the survey.

B. Sampling Procedure

The study uses simple random sampling technique to select a sample from the population. In simple random sampling procedure samples are selected by random process, so that every Telesom Customers in the country have the same probability of being selected as a participant in the survey. The survey was administered online, and it was requested from the respondents to fill and submit the completed questionnaire to the researcher within a stipulated period of time.

C. Research Instrument

The first part of the questionnaire contains participants' demographic information, including gender, age, education level, city and the usage of the service. The part of the questionnaire includes the conceptual variables which were measured using five-points Likert scales, ranging from (1) "strongly disagree" to (5) "strongly agree". In operationalizing the constructs included in the investigated research model, research items were adopted from different sources. PEOU has five items adapted from [8] PU has five items adapted from [8], perceived Trust has five items adapted from [19]. Based on the 204 responses that were received from the online survey, validation tests were carried out on the data and the research hypotheses were tested with multiple regression analysis. T-test was used to test the moderating effects of gender on the influence of independent variables on the dependent variable.

IV. DATA ANALYSIS

As reported in table 1 below, the customers' usage of the service was 193(94.6%) (have used the service) while 11(4.3%) customers answered with difficulty using the service. Similarly, the customers ownership of an account

were 201(98.5%) (have an account) and 3(1.5%) do not have an account. Regarding the experience of using the service, it can be seen that 139(68.1%) have been using the service for 3-4 years, as opposed to 15(7.4%) who started using the service less than six months. Furthermore, 12(5.9%) were using the service for 7 to 12 months while 38(18.6%) had 1 to 2 years of experience with the service. In terms of the frequency use of the service, it is reported that 115(56.4%) uses the service one to four times daily and 47(23%) use it five to eight times daily. Moreover, 19(9.3%) uses the service one to five times weekly whereas 23(11.3%) customers do transactions six to ten times weekly.

On the other hand, the challenges that are sometimes encountered by the customers, 151(74%) reported about network connectivity problem, while 17(8.3%) reported Compatibility Problem, also 15(7.4%) mention Privacy Problem and 21(10.3%) customers have all the three problems together. In contrast to the some problems experienced by the users, the customers have high satisfactions with the service where 86(42.2%) customers are fully satisfied with the service and 76(37.3%) are partially satisfied. Furthermore, 22(10.8%) customers are least satisfied and only 20(9.8%) are not satisfied with the service.

TABLE I. RESPONDENT'S USAGE OF THE MOBILE MONEY TRANSFER SERVICE

Construct	Items	Frequency	Percent
Usage	Yes	193	94.6
	No	11	5.4
Ownership	Yes	201	98.5
	No	3	1.5
Experience	Less than 6 Months	15	7.4
	7-12 Months	12	5.9
	1-2 Years	38	18.6
	3-4	139	68.1
Frequency	1-4 Daily	115	56.4
	5-8 Daily	47	23.0
	1-5 Weekly	19	9.3
	6-10 Weekly	23	11.3
Challenges	Network Problem (Connectivity)	151	74.0
	Compatibility Problem	17	8.3
	Privacy Problem	15	7.4
	All Above	21	10.3
Satisfaction	Fully	86	42.2
	Partially	76	37.3
	Least Satisfied	22	10.8
	Not Satisfied	20	9.8

In order to examine the validity of the factors, exploratory factor analysis (EFA) was used. The output of the test proves that the factors have met the requirements in with Kaiser-Meyer-Olkin's (KMO) of measure sample adequate (MSA) and Bartlett's Test of Sphericity are greater than 0.5 and 0.000 respectively. Therefore, the result is ascertained to be qualified for further research [20]. Also other indicators such as communalities and anti-image which also prove the validity of an instrument

are also eligible and greater than the minimum recommended value of 0.5.

The factors PEOU, PU, PT, and BI were explored with EFA through Principle Component Analysis (PCA) with Varimax rotation to extract the underlying factors of behavioral intention to adopt Mobile Money Transfer Service, then the results were analyzed. The results show that most of the items are correlated with more than 0.5, and with Kaiser-Meyer-Olkin's Measure of sample adequacies of values 0.887, 0.875, 0.760 and 0.793 for PEOU, PU, PT and BI respectively.

TABLE II. RESULTS OF FACTOR EXTRACTION AND FACTOR LOADING

	F1 (.887)	F2 (.875)	F3 (.760)	F4 (.793)
PEOU_1	.751			
PEOU_2	.761			
PEOU_3	.731			
PEOU_4	.734			
PEOU_5	.762			
PU_1		.726		
PU_2		.531		
PU_3		.639		
PU_4		.677		
PU_5		.738		
PT_1			.705	
PT_2			.679	
PT_3			.758	
PT_4			.537	
PT_5			.903	
BI_1				.685
BI_2				.629
BI_3				.726
BI_4				.411

The bivariate relationship among the variables was also examined; PEOU, PU, PT, and BI using the Pearson moment correlation technique. As shown in table 3, the highest correlation coefficient among any two variables at 0.854. According to Pallant [20], a strong value above 0.9 indicates strong correlation which weakens the regression model. Thus, with value less than 0.9, it is assumed that the existence of multicollinearity is lacking among the variables of the model.

TABLE III. PEARSON'S CORRELATIONS ANALYSIS OF THE VARIABLES

	PE OU	P U	P T	P I
PE OU	1			
PU	.854	1		
PT	.589	0**	1	
BI	.806	8**	.637	1

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

For further confirmation, Variance Inflation Factor was also employed to confirm that multicollinearity does not exist among constructs. As shown in table 4 all the tolerance indicators are higher than 0.1 with VIF values lower than 10. According to [20] if the value of tolerance indicator is less than 0.10 and VIF value is above 10, then there is a concern of multicollinearity existence. But for this study, it is confirmed that multicollinearity is lacking.

In testing the proposed hypotheses between the dependent and independent variables, multiple regression analysis (MRA) was engaged. The independent variables are: PEOU, PU, and PT while the dependent variable is BI. With the $R^2 = 0.743$, it shows that the model can predict 74.3 percent of the changes in BI to use and adopt Mobile Money Transfer Service. All proposed hypotheses between the independent variables and the dependent were found to be significant. The results show that in determining Behavioural Intention towards using Mobile Money Transfer Service among the respondents, PU contributes the most ($\beta=0.482$), followed by PEOU ($\beta=0.312$) and lastly PT contributes ($\beta=0.149$), with ($F=141.131$).

Contrary to our belief that there will be significant difference between men and woman's perceptions, the testing on the moderating role of gender revealed that gender did not play significant role on the factors influencing the behavioral intention to use and adopt of Mobile Money Transfer Services in Somaliland.

TABLE IV. REGRESSION ANALYSIS RESULTS FOR THE CONSTRUCTS

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error				Tolerance	VIF
(Constant)	1.231	.689		1.787	.075		
PEOU	.235	.052	.312	4.496	.000	.268	3.728
PU	.382	.058	.482	6.548	.000	.238	4.200
PT	.152	.056	.149	2.709	.007	.429	2.331
R square	0.743						

Adj R Squ	0.738							
Sig.F	0.000							
F-Value	141.131							

V. DISCUSSION AND CONCLUSION

This study which hypothesizes significant influences of each of perceived Ease of Use, perceived Usefulness and Perceived Trust on Behavioral Intention found all the three hypotheses supported. Akin to what some earlier TAM studies have found, ease of use and usefulness have become two main dominant factors that is likely to represent the general perception of technology users across the globe. Despite the limit on terms of exposure of the population under study to technology gadgets, this study further confirms that perceived ease of use and usefulness are some of the basic considerations users of technology innovations do have at the back of their mind before trying out the innovations. Similar results in other places were concluded by [9, 5, 11].

Perceived Trust which is originally not part of TAM has also gained prominence when it comes to online transactions. Consumers want to ensure that their use of technology for monetary transfer does not lead to them being swindled of their hard earned money. Therefore, trust in the mobile money transfer service provider becomes a crucial factor that can make or mar the acceptance of the service in Somaliland. Though, because of lacking of functional banking systems due to collapse of banking systems as a result of war. It is still very important for Telesom as a company to continue to ensure that customers trust is maintained as this study reveals it is a factor considered important by the consumers. A similar result was found by [22] and this emphasis that Trust is a serious factor when it comes to monetary transactions.

On contrary our expectations that gender will play significant roles in mediating between the variables were not supported. This outcome confirms that in terms of intention to adopt mobile money transfer services, there is no difference between men and woman with respect to their perception about ease of use, usefulness and trust. To conclude, the study extends our understanding about innovation adoption in a third world country like Somaliland.

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