Factors Affecting the Adoption of Mobile Banking in Commercial Bank of Ethiopia

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Abstract

The purpose of this study is to identify factors influencing the adoption and usage of mobile banking as the tool for help banks understand and improve the service in order to gather the expected benefits and can add on to the existing literature concerning mobile banking in the Ethiopian context. From the literature, six determinant factors are identifies. Each variable is measured using 5-point Likert-scale. Using primary data collection method, questionnaires were distributed to target respondents of customers of Commercial bank of Ethiopia for mobile banking users, This study is based on The Unified Theory of Acceptance and Use of Technology (UTAUT) model specifies the causal relationships between Performance expectancy, Perceived risk, Perceived cost, Effort expectancy, Trust, Mobile banking service quality and Behavioral intention items. The data were analyzed using AMOS version 23 and SPSS version 20. The findings of this study revealed that Performance expectancy, Perceived risk, perceived cost, Effort expectancy and Trust, were the factors affecting users having intention to adopt mobile banking. Meanwhile, the Mobile banking service quality was found to be insignificant in this study. Furthermore, this study also manages to present demographic variables effects toward behavioral intention to adopt mobile banking, and found that gender is non-significant factor for mobile banking adoption. Age and occupation is found as significant factor for adoption of mobile banking but educational qualification was not a significant factor for adoption of mobile banking in Ethiopian mobile banking user context.

Keywords: *Mobile banking, UTAUT, Performance expectancy, perceived risk, Perceived cost, Effort expectancy, Trust, Mobile banking service quality and Behavioral*

1. Introduction

Rapid technological development in the world today, which includes introduction of mobile phones, especially 3G smart phones and advancement of wireless telecommunications, have led to creation of potential business opportunities that can be exploited (Barnes and Corbitt, 2003). The electronic technology is playing a major role for the world in a numerous variety of business activities. Rapid development of information technology has also affected the banking industry world widely in different form. Banks seek always to achieve competitive advantage to be first in market; so they keep looking for new technology which can improve the bank services. For this mater "A clear and emerging new channel in the space of banking and payments is mobile." (Vanessa, 2012, abstract).

In fact mobile banking is in an infant stage for Ethiopian bank customers, but the need for research is essential in this stage, because previous studies which are done in mobile banking and factor affecting the adoption of mobile banking usage have result different finding. For example Roselyne, 2015, of his findings indicates that there is no significant relationship between perceived ease of use and adoption of Mobile banking technology. In other view Chian-Son, 2012, reveals the perceived financial cost and perceived credibility are two crucial factors influencing people

intention to adopt mobile banking. Furthermore Hanudin et al, 2013, found that the intention to use mobile banking was influenced by the extent of security and privacy associated within the context of mobile banking. Tornatzky and Klein (Tornatzky & Klein 1982) analyzed the adoption, finding that compatibility, relative advantage, and complexity had the most significant relationships with adoption across a broad range of innovation types. (Shallone & Simon,2013) of their findings perceived usefulness, perceived ease of use, relative advantages, personal innovativeness and social norms have significant effect on user's attitude thus influence the intention toward mobile banking, whilst perceived risks and costs deterred the adoption of the service. Another study reveals that the Security factor plays the most significant factor on the intention to adopt m-bank services, and the Facilitating Conditions (FC) has powerful effects in the actual use of m-banking services (Feras and Mohammad, 2013). For these different findings research in mobile banking is questionable and need deep and further study.

2. Statement of the Problem

Researches have been done concerning factor affecting the adoption of mobile banking overseas using different earlier models, TAM and TRA models. But still few researches have been done and published using UTAUT, the modified model, concerning adoption of mobile banking in Ethiopia. Besides in Ethiopia, since mobile banking is new phenomenon, studies in this sector still remain untouched.

The first bank to deploy mobile banking service in Ethiopia is Commercial Bank of Ethiopia (CBE) one of the biggest governmental bank in Ethiopia. CBE have spent huge amounts in establishing mobile banking systems, but the adoption and usage rate of mobile banking is still lower than expected and remains insignificant compared to the entire banking transactions. For instance the bank has only managed to recruit 303,288 customers into using this service out of over 9.5 million accounts-holders as of December 30, 2014. This amounts account to 3% of all CBE customers. Furthermore with the same period active mobile banking users from the total is 73,990 i.e. 24.4% total subscribers. LMTS (local money transfer) transaction number accounts 5,145 with a value of Birr 19.2 million and Fund Transfer transaction 30,285 with a value of Birr 100.5 million (CBE corporate performance, half year report, 2014/2015). The bank had hoped that it would be able to capture most, if not all of this mobile phone subscriber into its M-Banking platform which is available to both account and non-account holders. It's true that mobile banking is in infant stage since it was started in 2013 as pilot test for Ethiopian society but it is still important for the banking industry to understand the factors that affect the technology adoption decision of mobile banking services. CBE has implemented Mobile banking technology in order to provide convenient and affordable banking service for its customers. CBE have been slow grappling with the slow adoption rate of mobile banking when compared to total customers who already have a cell phone as stated above. In addition, there is and there will be concern that CBE effort may not bring much result if the factors affecting adoption of mobile banking technology are not established. The problem that this research investigates is what influences the adoption of mobile banking.

3. Research Questions

- What are the main factors which influence the adoption of mobile banking in CBE?
- Is there any relationship between demographic factors and adoption of mobile banking?
- Dose perceived risk by clients has influence in adoption of mobile banking?
- Dose performance expectancy has influence in adoption of mobile banking?
- Dose trust for the system can influence in adoption of mobile banking?
- Dose service quality of mobile banking has an effect on adoption of mobile banking?

4. Objectives of the study
4.1 General Objective

This study focus on the adoption of mobile banking services by customers of commercial bank of Ethiopia the general objective of the study is to identify factors influencing the adoption and usage of mobile banking.

4.1.1 Specific objectives
5. Literature review
5.1 The Unified Theory of Acceptance and Use of Technology (UTAUT) Model

Venkatesh et al. (2003) proposed and tested a unified information technology acceptance and use research model, called the Unified Theory of Acceptance and Use of Technology (UTAUT). The model integrates significant elements across eight prominent user acceptance models and formulates a unique measure with core determinants of user behavioral intention and usage. In this model the original UTAUT aims to explain user intentions to use an IS and subsequent usage behavior. Furthermore UTAUT model suggests that there are a set of factors that influence the intention of the individual user acceptance (Feras, Mohammad, 2012). Venkatesh 2003, pp 446, in their research article theorized that, four constructs play a significant role as direct determinants of user acceptance and usage behavior: Performance expectancy, Effort expectancy, Social influence, and Facilitating conditions. Gender, age, experience, and voluntariness of use are said to mediate the impact of the four key constructs on usage intention and behavior. Venkatesh et al. (2003)

Research Model proposed by Venkatesh et al, 2003 illustrated below in figure 1.
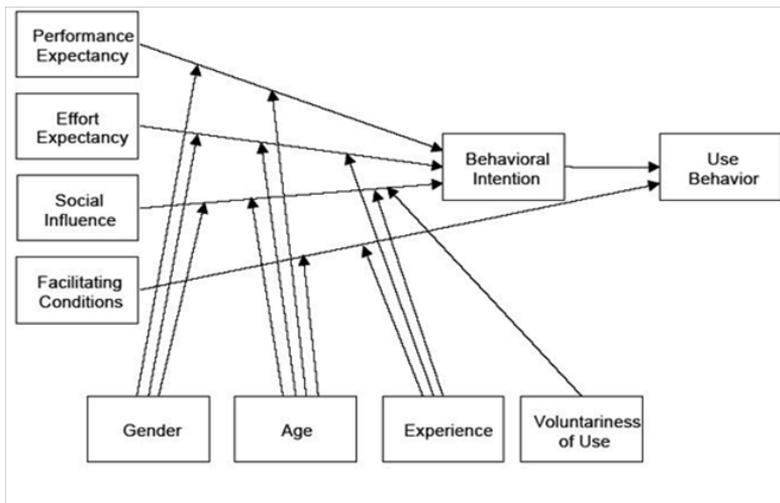
5.1.1 Performance Expectancy (PE)

Performance expectancy (PE) is defined as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance". Venkatesh et al, 2003. PE Is the strongest predictor of intention and remains significant at all points of measurement in both voluntary and mandatory settings however from a theoretical point of view, there is reason to expect that the relationship between performance expectancy and intention will be moderated by gender and age. Perceived usefulness, relative advantage, outcome expectation, job fit, and extrinsic motivation are the constructs of performance expectancy (PE) from different models TAM, Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT), Model of PC Utilization (MPCU), and Motivational Model (MM) respectively. Venkatesh et al, 2003. Researchers have demonstrated a positive relationship between performance expectancy and behavioral intention (Venkatesh et al., 2003). Hence, adapting performance expectancy to the context of mobile learning suggests that individuals will find mobile learning useful due to convenient access to information without the restriction on physical locations and time.

5.1.2 Effort Expectancy

The concept of Effort expectancy is developed from perceived ease of use, complexity, and ease of use from existing models which are TAM, MPCU, and IDT respectively. Effort expectancy found to be significant in the early time periods, but became insignificant over time (Venkatesh et al., 2003). As individuals became more familiar with the technology, the effort needed to use the technology declined. Previous research supported that the effort necessary to learn and use a new technology affected its acceptance and use (Gefen & Straud, 2000). In other word the easier a system is to use, the more likely it will be accepted and used. Sungwoo, 2009. To the extent that promoted effort expectancy leads to improved performance, previous studies indicated that effort expectancy had a direct effect on performance expectancy and intention to use mobile learning (Carlsson et al., 2006).

5.1.3 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. Social influence has an impact on individual behavior through three mechanisms: compliance, internalization, and identification. Venkatesh and Davis, 2000. Previous models showed that gender moderated this relationship as the effect was stronger for females than males. Sungwoo, 2009. However, current results showed that gender failed to moderate this relationship when testing the proposed model. Experience also was not a significant moderator of this relationship, which fails to support the UTAUT findings in which non-users showed a stronger effect than users (Venkatesh et al., 2003).

5.1.4 Facilitating Conditions

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 Venkatesh et al., 2003. This definition captures concepts embodied by three different constructs: perceived behavioral control from (TAM), facilitating conditions from (MPCU), and compatibility from (IDT).

5.1.4 Trust in Mobile Banking

In fact trust is not included in Venkatesh et.al… model but Trust is a variable that has attracted attention of many scholars playing mysterious role in the adoption of mobile payments (Misra & Wickamasinghe 2004). Trust is a fundamental component for establishing and maintaining successful relationships between customers and businesses (Garbarino & Johnson, 1999). It can be understood as "the belief that vendors will perform some activity in accordance with customer's expectations" (Gefen & Straub 2004; Pavlou & Gefen 2004). Basically trust in mobile payment system can be formed by maintaining anonymity, security and most importantly reliability of the service model (Egger, 2001). According to Gefen et al, (2003), it is trust variable that plays crucial role in facilitating adoption of e-commerce adoption. Gefen was the scholar used trust widely to explore behavioral intention or adoption of technologies. When it comes to mobile payments, Pousttchi (2003) arrives at a conclusion after his survey revealed that over 96% of the respondents he surveyed wanted confidentiality of data they exchange with the service provider otherwise trust was very difficult to develop among people.

5.1.5 Perceived Risk

According to Kabir (2013), Perceived risk may be seen from various perspectives such as privacy risk, financial risk, system risk and physical security risk. As defined by Lee et al (2009), these three risks can be described as follows; Privacy risk: is defined as a potential loss due to fraud or a hacker interfering with the security of a mobile banking user (disclosure of personal and financial information). Financial risk is defined as the potential for monetary loss. System risk refers to deficiencies or malfunctions of mobile banking system. Lastly, physical security risk refers to any exposure to attacks and threats to the user of mobile banking that may result to physical bodily harm or injury and loss of money.

5.1.6 Service Quality

Service quality refers to reliability, content quality, personalization. Daft and Lengel (1986) suggested that accuracy, reliability, and quality of information exchanged across a medium were critical to the effectiveness. In the context of mobile, the content refers to information, features, or functions that are offered via mobile banking services. Such content should be constructed logically to help user find information and incorporate features such as accuracy, timeliness, relevance, and flexible presentation (Huizingh, 2000). A reliable mobile system should ensure the effectiveness of mobile banking, and therefore service quality is included in the study.

5.1.7 Perceived cost

The degree to which an individual views that utilizing mobile banking will incur cost s defend as perceive cost (luarb & lin 2005). These costs could typically include the cost of the mobile device, network charges, and transaction charges for bank costs as well as costs for data sent via the network infrastructure. The factor that had the least impact on mobile banking adoption in comparison to the other variables which includes perceived usefulness, perceived risk and compatibility, was perceived cost (wu and wang, 2005).

5.1.7 Moderator variables

The original UTATU model proposed by Venkatesh et al.. Uses four moderators as determinants of intention and behavior with four core determinants, the moderators are gender, age, experience, and voluntariness of use.

5.1.8 Gender

Previous research showed that gender differences have shown to exist in technology acceptance (Venkatesh & Davis, 2000; Wolin & Korganmkar, 2003; Gefen & Straudb, 1997). Wolin and Korganmkar (2003) found that males and females differ significantly in several dimensions with males exhibiting more positive beliefs and attitudes about E-commerce than females. In the UTAUT model, Venketash et al. (2003) proposed that gender would moderate the relationship between performance expectancy, effort expectancy, and social influence on intention to utilize the technology. Venkatesh et al. (2003) reported that men are more likely to have higher performance expectancies than females. They suggested that such differences stem from gender roles and socialization processes. Effort expectancy on intention was also moderated by gender. Previous studies have found a stronger proportion of perceived usefulness of mobile services among men than among women [Nysveen et al. 2005]. The reason is men appear more task-oriented than women and electronic banking services are typically motivated by goal achievement [Cruz et al. 2010]. Additionally, many empirical studies have revealed the statistical difference between female and male respondents in the mobile service/banking setting.

5.1.9 Age

Numerous studies have discussed the effects of demographics on new technology adoption. However, compared to traditional innovation diffusion studies [Rogers 2003] that reveal earlier adopters of technological innovations as typically younger

in age, having higher incomes, better educated, and having higher social status and occupation, research findings in the context of electronic banking are not consistent. Similar to gender, age is theorized to play a moderating role in the UTAUT model. In looking at gender and age effects, it is interesting to note that gender differences can be misleading without reference to age, Levy (1988). Venketash et al. (2003) proposed that the influence of performance expectancy will be moderated by both gender and age. Furthermore Age is confirmed as integral features of UTAUT. Venketash et al. (2003)

5.1.10 Experience

Several studies showed that prior similar experience, such as computer or internet use, strongly influence intention to use and usage behavior of a specific system (Venkatesh et al, 2003; Wu, Tao, & Yang, 2007). Venkatehs et al. (2003) suggested that an increase in experience would decrease the influence of effort expectancy and social influence on behavior intention to use. Kim and Malhotra (2005) confirm Venkatesh et al. (2003) by showing that when user experience increase, effort expectance and social influence decrease. People who have more experience using similar system are more relying on instrumental basis rather than social basis because experience users of mobile devices or wireless internet are more skillful and easy to use M-commerce. Wang and Yang's (2005)

5.1.11 Voluntariness of use

Voluntariness is the level to which an individual can choose to use a system; image is the extent to which individuals believe the use of a system will increase their social status within a group or how well others perceive them; (Venkatesh and Davis, 2000).

5.1.12 Behavioral Intention
Consistent to all models drawing from psychological theories, which argue that individual behavior is predictable and influenced by individual intention, UTAUT contended and proved behavioral intention to have significant influence on technology usage [Venkatesh et al. 2003; Venkatesh & Zhang 2010]. Given that the ultimate goal of businesses (i.e., banks) is to attract consumers to adopt their services, extensive research has examined the relation between behavioral intention and actual use.

5.1.13 Research Gap
Since much of literatures are not found related to mobile banking in Ethiopia, this paper is an endeavor to mitigate the research gap in this regard. Thus on the basis of the above literatures the study aims at identifying the factors affecting the adoption of Mobile Banking in Ethiopia. Therefore, there is need to carry out this research in order to help financial institutions understand the factors affecting the adoption of Mobile Banking service hence then it will make Mobile Banking service into a form acceptable to customers. This will mitigate the research gap in this regard. Secondly, since most research studies are based on TRA and TAM theories, which consist of two constructs; perceived ease of use and perceived usefulness which are not sufficient to explain factors affecting adoption of Mobile Banking there is need to adopt more theories in this study in order to include more variables namely;

perceived risk, trust, quality and other variables. Lastly given that much of existing research relevant to this study are on online banking or internet banking, Mobile commerce and electronic commerce, this research study shed light on adoption of Mobile banking in Ethiopia and on factors influencing it. Hence fill the research gap in this regard.

6 The Proposed Model

The goal of the present study is not to replicate the UTAUT study as in Venkatesh et. al. Instead,this paper aims to ascertain what factors considerably influence people to adopt mobile banking. Therefore, additional constructs selected from mobile banking literature are taken into the research structure, which are addressed as follows. Based on revising different scholarly literature review the following proposed model is adopted. Thus Figure showed the proposed model in which examine the relationship between dependent and independent variable which is adopted from Sungwoo Song, 2010 and a minor modification to fit with objective of the study. The study also aims to now the effect of gender, age, educational qualification and occupation indirectly to behavioral intention to adopt mobile banking.
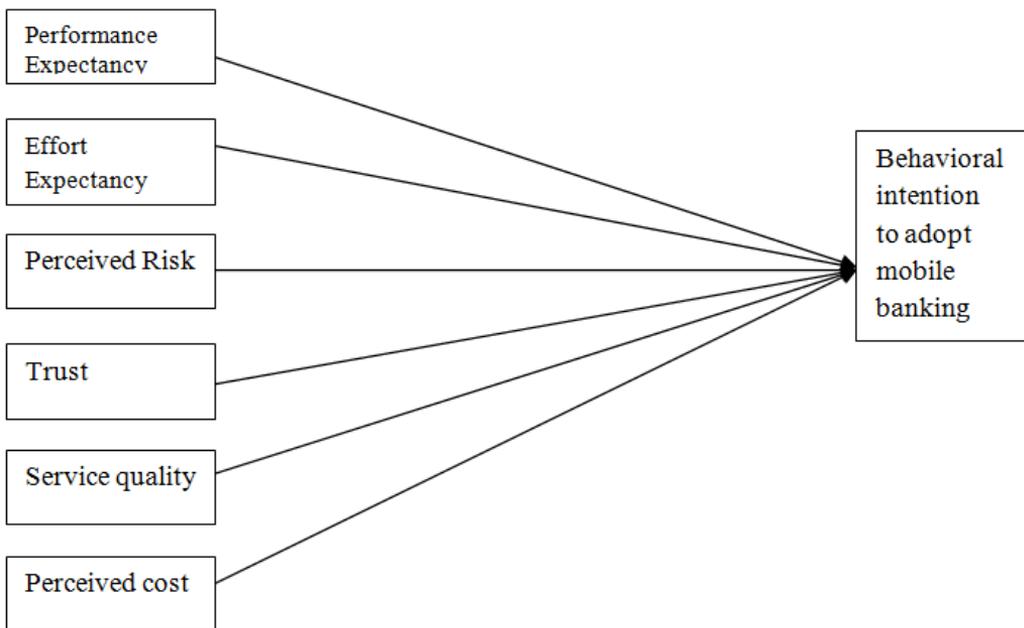
Figure 2: proposed Model

7 Research Design and Methodology
7.1 Research Design

This research employed a quantitative design method. It contained a quantitative component to examine customers' acceptance and use of mobile banking. The quantitative component was derived from the survey data collected from the customers of commercial bank of Ethiopia in four selected branches from different districts. Since this research was quantitative in nature, the quantitative methods were applied to analyze survey data, discover factors affecting the adoption of mobile banking in commercial bank of Ethiopia and relationships between the factors, and compare

similarities and differences across customers groups based on gender, age, education qualification and occupations.

7.2 Population and Sampling Technique

The population of study consisted of 141,536 customers belonging to banks which are classified as registered customers for mobile banking in all Addis Ababa districts, according to CBE half year performance report 2015. Based on the performance report active mobile banking users are 34,230. Furthermore According to the bank active mobile banking users are those customers who are at least use mobile banking service for single time or several times. In contrary registered customers are those customers who did not use mobile banking at once for any type of the service that mobile banking is giving. Hence the respondents are customers of CBE who have mobile phones and registered to use mobile banking but yet to adopt mobile banking service.

Table 1, Registered and active mobile banking users of CBE at Addis Ababa districts

CBE Districts in Addis Ababa	Registered Mobile banking users	Active Mobile banking users
East Addis	29,346.00	8,991.00
West Addis	36,941.00	8,336.00
North Addis	43,348.00	10,263.00
South Addis	31,901.00	6,640.00
Total	141,536.00	34,230.00

Source, CBE half year performance report 2015

Based on the sample size calculator formula using total population 141,536.00 a sample of 383 were believed to be the representative of the total population.

$S = (P (1-P)) / (A2)$

$S = (Z2 + (P (1-P))) / (N))$

Where S = Sample size required;

N = Number of people in the population;

P = preliminary estimate of percentage of people in the population who possess attributes of interest. The conservative estimate and one that is often used is 50%. (0.5 will be used in this formula);

A = Accuracy (or precision) desired, expressed as a decimal (0.05 for 5% is used in this formula);

Z = The number of standard deviations of the sampling distribution (Z units) that corresponds to the desired confidence level, 1.96 for 95% confidence level, 1.6449 for 90% confidence level and 2.5758 for 99%.

7.3 Types of Data and Tools

Structured questionnaires were used, to obtain data from the respondents. The questionnaires consisted of closed-ended questions. To ensure success, the questionnaires were short and simple, with questions moving from easy to more difficult ones (Kothari 2004). The questions captured data in line with the study objectives. A five point likert

scale was used, where 1=strongly Disagree , 2=Disagree, 3 = Neutral 4 = Agree, and 5=strongly Agree was used to measure the respondents' view concerning statements on Performance expectancy, Perceived risk, Perceived cost, Effort expectancy, Trust, Mobile banking service quality and Behavioral intention items.

7.4 Procedure of Data Collection

Convenience sampling method is used in selecting the sample subjects. To draw branches where questionnaires distributed convenience sampling were used, four grade-IV branches were selected from each districts, the branches are Andinet, 4-kilo, Sengatera, and Teklehimanot that make the total branches four, for distributing the questionnaires. Grade-IV is selected because it has wider customers base and diversified populations. Random sampling is not used in this research because the acquisition of lists of bank customers and their contact numbers and addresses from banking institutions is very difficult and time taking. The data collected was based on the questionnaires to bank customers in April and May 2015. The data was collected during working hours (6 days per week) over four weeks. The respondents were randomly selected in the banking halls by asking whether they use mobile banking or not and invited to complete the questionnaires, if the respondents answered that they did not have registered for using mobile banking, they were eliminated. A total of 400 questionnaires were distributed to get the minimum sample size i.e. 383. One hundred (100) questionnaires were distributed to each branch making the total 400. In addition, 383 questionnaires were obtained from the four selected branches in Addis Ababa. The data analyzed, using SPSS version 20 and the most recent AMOS version 23, were from 383 respondents obtained from the survey.

7.5 Methods of Data Analysis
7.5.1 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is a statistical tool/technique which is used to verify the factor structure of a set of observed variables/constructs. It is also used to tests whether a specified set of constructs is influencing responses in a predicted way (Brown, 2006). CFA will allow us to test that there exist a good relationship between observed variables and their underlying latent constructs. Knowledge from the literature, theories, and models has been used to postulate the relationship pattern of factors to be measured by the measuring variables (questions). CFA is used as a pretest after collecting empirical data through pre-test questionnaires, to test whether there is significant relationship between the factors to measure and the constructs (variables/questions) used for the measurement of those factors in questionnaires. It is simply used to evaluate the contribution of each question in measuring a particular factor, and also find how well the questions measure each factor (Hair et al 2006). Results from the confirmatory factor analysis have been used to drop out the constructs with less or no relationship with the factors. With CFA, the researcher must specify both the number of factors that exist within a set of variables and which factor each variable will load highly on before result can be computed. This technique does not assign variables to the factors. Instead, the researcher must be able to make this assignment before any results can be obtained (Hair et al., 2006). In this current study, six independent variables with 25 items and one dependent variable

with three items were tested for their validity in the proposed model. In this research paper Confirmatory factor analysis (CFA) using the latest AMOS version 23 is used, to test the theory of the construct and analyze the model's fit.

7.5.2 AMOS

AMOS is a powerful and graphical, easy-to-use structural equation modeling (SEM) software. It creates much realistic models than if standard multivariate statistics or multiple regression models. It is used to estimate, assess, and then present a model in an intuitive path diagram to show relationships among variables. It is very useful for testing the relationships between variables, which is the prime objective of this study. AMOS is widely used for getting confirmative and interpretive results, which can be generalized more because of its requirement for a large number of observations (sample size). The results of SEM include two competent: the measurement model and the structural model. The measurement model gives the relationship between latent variables and observed variables. The structural model studies path strength and the direction of the relationships the latent variable. For example, in this study we can see figure (5) and it shows a CFA that test the measurement model. Each construct is indicated by six indictors items, thus six latent constructs are measured by 25 measured indictor variables.

7.5.3 Correlation, Regression And ANOVA Tests

Correlation is a statistical tool, used to find the direction and strength of relationship between variables/factors. Correlation provided us the type & direction of interrelationship and intensity of relationship among our factors. And in this study ANOVA test is computed the reason for doing an ANOVA is to see if there is any difference between groups on some variable. The values for correlations and regression are provided by both AMOS and SPSS.

8. Result and Discussion
8.1. Frequency Distribution of Survey Response
Sample Size and Respondent Profile

The sample sizes as discuss in chapter 3 a total of 400 questionnaires were prepared to potential respondents to fill the structured questions. Of the 400 potential respondents, a total of 383 questioners were got on hand which is the minimum of the sample size. Of the 400 respondents, 17 of them either failed to complete the entire survey or not return the questionnaires. In the end, a total of 383 respondents answered the entire survey. The overall respondent rate for survey was approximately 96%. Among the survey respondent, all of the respondents reported that they registered to use Mobile banking.
Respondent profiles

Table 2, Frequency of Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	225	58.7	58.7	58.7
	FEMALE	158	41.3	41.3	100.0
	Total	383	100.0	100.0	

Most respondents were males (58.7%), while 41.3 % were female

Table 3, frequency of AGE CATAGORY

Age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 TO 30	288	75.2	75.2	75.2
	31 TO 40	91	23.8	23.8	99.0
	41 TO 50	4	1.0	1.0	100.0
	Total	383	100.0	100.0	

The average respondent was 20 to 30 years old, which is; about 75 % of the respondents were from 20 years old to 30 years old. Moreover about 23% of the respondent was from 31 years old to 40 years old the rest which is about 1% were 41 years old to 50 years old.

Table 4, frequency of OCCUPATION

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	EMPLOYED	349	91.1	91.1	91.1
	NOT WORKING	9	2.3	2.3	93.5
	SELF EM-PLOYED	25	6.5	6.5	100.0
	Total	383	100.0	100.0	

Furthermore respondent were asked about their educational background and about 92.7% of the respondent are university student, diploma or degree holder. Moreover about 7 % of respondent were either some high school completed or secondary school students.

Table 5, frequency of EDUCATIONAL QUALIFICATIONS

Educational Qualifications		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	UNIVERCITY/DE-GREE/DIPLOMA	355	92.7	92.7	92.7
	SOME HIGH SCHOOL	26	6.8	6.8	99.5
	SECONDARY SCHOOL COMPLETE	2	.5	.5	100.0
	Total	383	100.0	100.0	

Responded also were asked about their occupational background and from the total of 383 respondent the greater portion goes to employed which accounts 91.1% of all respondent self employed not working were 9% and 25% respectively.

Respondents were also asked about their Awareness of mobile banking services about 71% the responded strongly agree knowing mobile banking service the rest 39% are either agree or neutral about knowledge of mobile banking services.

Table 6. Frequency of mobile phone experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	STRONGLY DIS-AGREE	8	2.1	2.1	2.1
	DISAGREE	36	9.4	9.4	11.5
	NUTRAL	45	11.7	11.7	23.2
	AGREE	99	25.8	25.8	49.1
	STRONGLY AGREE	195	50.9	50.9	100.0
	Total	383	100.0	100.0	

The question aims to know whether the mobile banking users are aware of their mobile phone and among 383. 195 or 50% of the respondents are strongly agreed that they know well their mobile phone. Furthermore 25.8 % of the respondent are agree that they know how to operate their mobile phone. 11.7% of the respondent are neutral about their knowledge regarding their own mobile banking, else, respondent are disagree or strongly disagree about mobile phone experience.

8.1.1. The Measurement Model

A confirmatory factor analysis (CFA) using AMOS 23 was conducted to test the measurement model. It is necessary to test that the measurement model has a satisfactory of validity and reliability before for a significant relationship in the structural model. The psychometric properties of the measurement model in terms of reliability, were evaluated Composite reliability (CR) was used to measure the reliability of a construct in the measurement model. CR offers a more retrospective approach of overall reliability and estimates consistency of the construct itself including the stability and equivalence of construct (Hair, Black, 2010). A value of .70 or greater is deemed to be indicative of good scale reliability. Table (14) shows the results of the calculated composite's reliability to support construct reliability. The reading of composite reliability of the latent variables is above 0.70. Therefore, all latent variables have good reliability.

8.1.2. Multicollinearity Test

A test of Multicollinearity was conducted to determine the correlation of the independent variables. Multicollinearity refers to the extent to which an independent variable can be explained by other independent variables in the analysis and if too high this can have harmful effect on regression. Multicollinearity occurs when two or more predictors in the model are correlated and provide redundant information about the response. It is a situation where the variables are too highly correlated. The correlations between constructs were checked for Multicollinearity and the results

showed that the correlations between all constructs were below 0.90, which suggests that the constructs were redundant (Kline, 2005) and that Multicollinearity was not an issue. Since Multicollinearity can be handled in two ways: the first option is to combine variables in the same factor and the other option is to try to eliminate the effect of Multicollinearity.

8.1.3. AMOS Out Put

The theoretical model has been designed in AMOS, by making performance expectancy, effort expectancy, risk expectancy, cost and trust expectancy factors as independent variables and behavioral intention as dependent variables. After drawing the expected relationships and providing input values, the following figure has been obtained as result. The values with each arrow drown from left to right show the factor loading for each items. Furthermore the arrow which links independent variables with other independent variables shows the covariance between variables. Figure1. The measurement model shows how the variables are drawn in AMOS
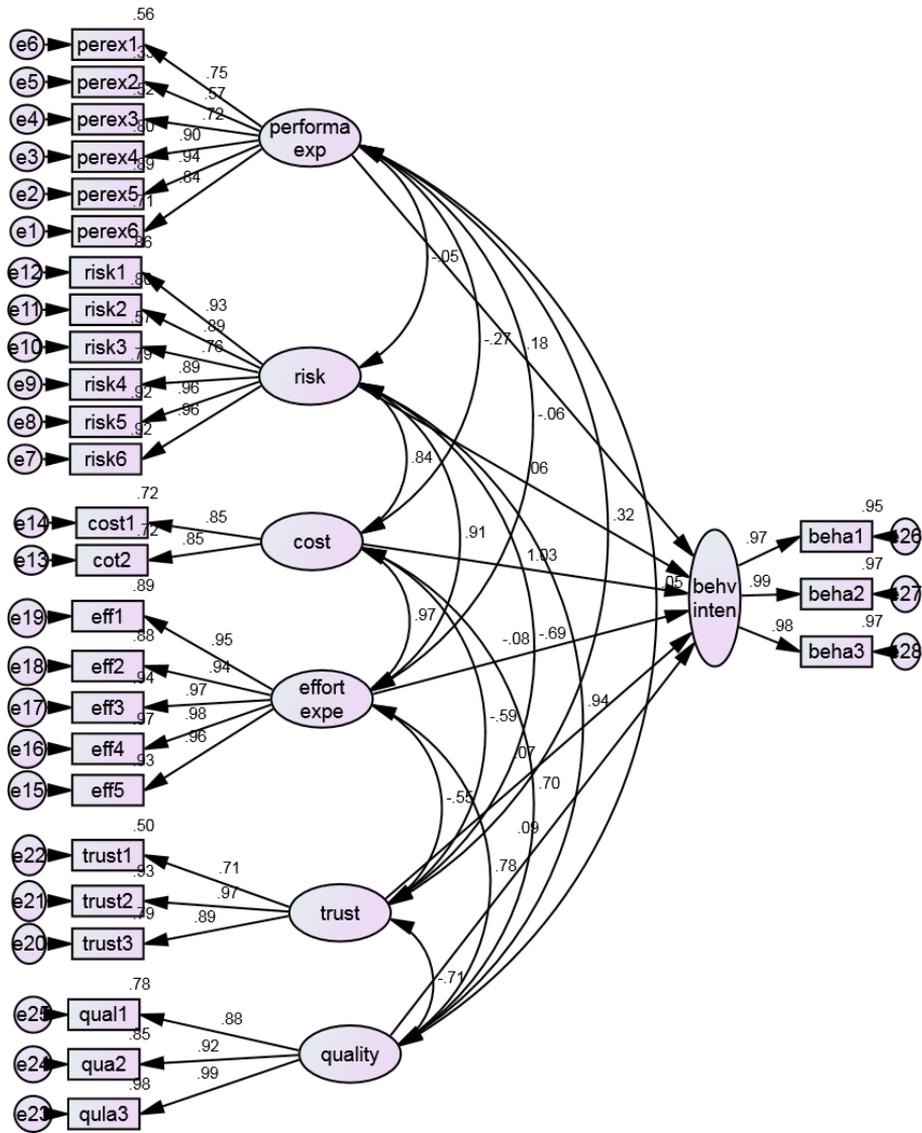
8.1.4. Goodness of Fit Indices

All confirmatory factor analysis (CFA) of constructs produced relatively good fit as indicated by the goodness of fit indices such Goodness index GFI is more than 0.90 and RMSEA value is less than 0.08. Furthermore, the test of structural model was performed using SEM in order to examine the conceptual framework by performing a simultaneous. Table (15) depicts the Goodness-of-Fit for the model was met. Chisquare\df= 389.714; CFI= 0.970, GFI= 0.910, NFI= 0.963, P=0.000, RMSEA= 0.071 and. The overall values provided evidence of a good model fit. As a result, all fitness indexes namely NFI, IFI, CFI are above than 0.90 which indicate that the model employed in the study a good fit to the data.

Table 7: Goodness Of Fit For Structural Model

fit indices	Accepted Value	model value
Absolute Fit Measures		
Chi-square		389.714
Df(Degree of Freedom)		82
Probability		0.000
GFI(Goodness of Fit Index)	> 0.90	0.910
RMSEA(Root Mean Square Error of Approximation)	< 0.08	0.071
RMR		0.047
Incremental Fit Measures		
NFI (Normed Fit Idex)	> 0.90	0.963
CFI (Comparative Fit Index)	> 0.90	0.970
RFI (Relative Fit Index)	> 0.90	0.945
IFI (Incremental Fit Index)	> 0.90	0.970
parsimon fit measures		
AGFI (Adjusted Goodness of Fit Index)	> 0.80	0.824
PCFI (parsimony Comparative of Fit Index)	> 0.50	0.663
PNFI (parsimony Normed Fit Index)	> 0.50	0.658

Figure 2: The Structural Equation modeling result (Standardized path coefficients)
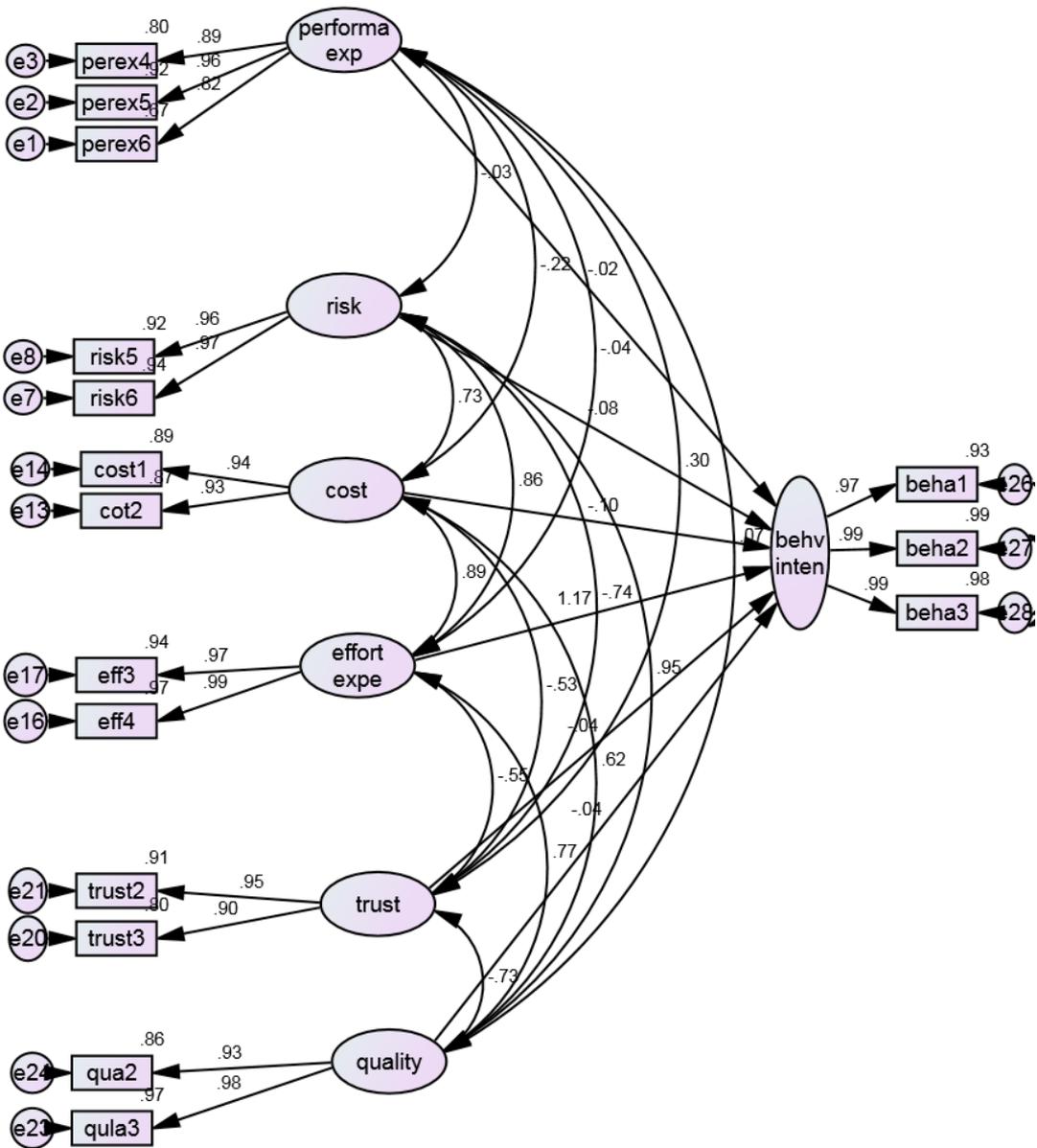
8.1.5. Correlation Between Constructs

To find the inter-relationship between the factors, correlation has been derived from AMOS. The following table shows the correlation of all the factors, representing the direction and strength of inter-relationship between these factors. Correlation matrix is shown in Table 8.

Table 8, Correlation Matrix (N=383)

	Behavioral Intention	Service Quality	Trust	Effort	Cost	Risk	Perform-expectancy
Behavioral Intention	1						
Service Quality	0.761	1					
Trust	-0.539	-0.708	1				
Effort	0.788	0.782	-0.55	1			
Cost	0.880	0.633	-0.531	0.881	1		
Risk	0.879	0.843	-0.686	0.898	0.76	1	
Perform- expectancy	-0.071	0.048	0.323	-0.064	-0.236	-0.048	1

Performance expectancy has been found as positively correlated with service quality and trust while negatively correlated with perceived cost, perceived risk, effort expectancy and behavioral intention.

Perceived risk is found as positively correlated with service quality effort and cost whereas negatively correlated with trust and performance expectancy.

Perceived cost is found as positively correlated with perceived risk, effort expectancy, service quality and behavioral intention while negatively correlated with performance expectancy and trust.

8.1.6. Regression Weights

Table 9: Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P
behv_inten	<---	performa_exp	.518	.014	1.298	.022
behv_inten	<---	risk	-.065	.045	-1.441	.042
behv_inten	<---	cost	-.128	.036	-3.550	***
behv_inten	<---	effort_expe	1.158	.041	28.315	***
behv_inten	<---	trust	.035	.016	2.134	.033
behv_inten	<---	quality	-.025	.029	-.882	.378

Note
behv_inten = Behavioral Intention,
performa_exp = Performance Expectancy,
effort_expe = Effort Expectancy
Estimate= β (beta)
S.E. =Standard Error

C.R. = Critical Ratio

P= (sig) when *** p<.000

The results show that performance expectancy has positive effect on behavioral intention to adopt mobile banking (β=.518, C.R. =1.29 and P=0.022) in fact P value is significant at 0.022 which is less comparing to significant level <.000 but as a rule of tamp if P value is less than 0.05 it is significant.

Risk has negative effect on behavioral intention to use mobile banking (β=.-065, C.R. =-1.441 and P=0.042) the analysis for risk show that perceived risk will decrease behavioral intention to use mobile banking. In other word, when the risk of mobile banking increases behavioral intention to adopt mobile banking will decreases. In fact the P value of perceived risk is lower comparing to acceptable P value which is <.005 but it has the most negative value of β from all independent variables.

Perceived cost similar effect with risk i.e. it has negative effect on behavioral intention to adopt mobile banking (β=.-128, C.R. =-3.550 and significant at P value <.0001) show that Perceived cost will decrease behavioral intention to use mobile banking. In other word, when the cost of using mobile banking increases behavioral intention to adopt mobile banking will decreases.

Effort Expectancy has the biggest positive value of beta β=1.159 from all independent variables and significant at P value <.0001. Which indicate by the fact that when bank customers are familiar and have expertise with mobile services, they perceive ease associated with the use of mobile banking,

Trust is significantly and positive influence on mobile banking adoption because of β=0.035 and P=.033 and C.R. =2.134, it shows that when trust for the service increases adoption of mobile banking also will increases.

Lastly service quality has negative effect on behavioral intention to use mobile banking since β=-0.025 but it is not significant because P=.378 which is greater than the acceptable value i.e. P<.05. In other word the independent variable for the analysis cannot explain the dependent value.

8.1.7. Group Analysis

To investigate differences on mobile learning acceptance, this research compared different customer groups across the variable of behavior intention, using the independent samples t-test to compare population means of two different groups and analysis of variance test (ANOVA) to compare population means of multiple groups. Significance level (p-value) was set to 0.05. In both tests, homogeneity of variance was evaluated using Levene statistics to detect a difference in variance and taken into consideration of group comparisons when the analysis was done.

Independent samples t-tests were conducted it was to determine if there was a significant difference on behavior intention between female and male user of mobile banking on their behavioral intention to use mobile banking;

As in Table 19, Levene statistics of tests indicate variance homogeneity at significant levels of 0.683 (p >0.05), respectively. Thus, the two-tail significance for equal vari-

ances estimates was used to determine whether the difference existed between two groups of mobile banking user's i.e. for male and female. As presented in Table 18 and 19, the results for tests suggested that there is no significant difference between the mobile banking users groups. Table 19 gives the mean test result of two gender-oriented independent-sample T tests for mobile banking adoption. In the homogeneity test of variance, p=0.683 (greater than the significance level p=0.05), meaning that the variance is homogeneous. In the two-sided test, p=0.217 (greater than the significance level p=0.05), meaning that the test on gender revealed a non significant difference between females and males on intention to adopt mobile banking.

Table 10: Group statistics of behavior intention by gender

GENDER		N	Mean	Std. Deviation	Std. Error Mean
beha1	MALE	225	3.9867	.91846	.06123
	FEMALE	158	4.1013	.79159	.06298

Table 11: T-test of gender vs. behavior intention and Levene's test for equality of variances

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
beha1	Equal variances assumed	.167	.683	-1.271	381	.204	-.11460	.09014	-.29183	.06263

217

8.1.8. ANOVA Testes

Three ANOVA tests were conducted to compare intention of behavior to adopt mobile banking across mobile banking users group. Four ANOVA tests were computed to determine if there was a significant difference on mobile banking user's behavior intention to adopt mobile banking based on their age, Educational qualifications, and occupational background.

ANOVA Tests for Age

Table 12: Test Of Homogeneity Of Variances Age Category

Levene Statistic	df1	df2	Sig.
3.339	2	380	.037

Table 13: ANOVA Test Of Age Vs Behavioral Intention To Adopt Mobile Banking

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.925	2	1.962	2.773	.064
Within Groups	268.864	380	.708		
Total	272.789	382			

For the age variable, the F test in the one-way analysis of variance is adopted, as shown in Table 12 and 13. In the homogeneity test of variance for age qualification, p=0.037 (less than the significance level p=0.05), meaning that the variance is not homogeneous. In the significance test of difference, p is lower than the significance level, indicating that people at different ages have different willingness to adopt mobile banking.

8.1.9. ANOVA Tests for Educational Qualifications

Table 14: Test Of Homogeneity Of Variances For Educational Qualifications

Levene Statistic	df1	df2	Sig.
1.113	2	380	.330

Table 15: ANOVA test of educational qualifications Vs behavioral intention to adopt mobile banking

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.915	2	2.458	3.486	.032
Within Groups	267.873	380	.705		
Total	272.789	382			

For the educational qualifications variable also, the F test in the one-way analysis of variance is adopted, as shown in Table 14 and 15. In the homogeneity test of variance for educational qualification, p=0.33 (greater than the significance level p=0.05), meaning that the variance is homogeneous. In the significance test of dif-

ference, p is lower than the significance level P=.032, indicating that people at different educational qualifications have similar willingness to adopt mobile banking.

8.1.10. ANOVA Tests for Occupation

Table 16: Test Of Homogeneity Of Variances For Occupation

Levene Statistic	df1	df2	Sig.
3.693	2	380	.026

Table 17: ANOVA test of occupation Vs behavioral intention to adopt mobile banking

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	8.831	2	4.416	6.357	.002
Within Groups	263.957	380	.695		
Total	272.789	382			

For the occupation variable, the F test in the one-way analysis of variance is adopted, as shown in Table 16 and 17. In the homogeneity test of variance for educational qualification, p=0.026 (less than the significance level p=0.05), meaning that the variance is not homogeneous. In the significance test of difference, p is lower than the significance level P=0.002, indicating that people at different occupation have different willingness to adopt mobile banking. This is may be because of the nature of the business or occupation that the users hold.

8.2. Discussion

This study is concerned with an investigation of factors that could affect mobile banking adoption on customers of commercial bank of Ethiopia. These factors include Performance expectancy, Perceived risk, Perceived cost, Effort expectancy, Trust, Mobile banking service quality and Behavioral intention items and the finding are discussed as follows.

The construct, Performance Expectancy, had a strong impact on the model i.e Venkatesh et al. 2003 UTAUT model. Customers with high performance expectancy had high intention to adopt mobile banking. This study is congruent with Venkatesh et al. (2003), in which Performance expectancy was found to have significant influence on the behavioral intention to adopt mobile banking. Thus, this result could imply those customers who expect to gain benefits from using mobile banking are more likely to have intention to adopt mobile banking which provides benefit to them in transacting, sending, money through their mobile phone. These outcomes are consistent with previous studies of Cheong and Park (2005), Chiu et al. (2005), Wang et al. (2003), and Venkatesh and Morris (2000). Hence, when mobile banking is shown to be useful, bank customers' intention to adopt it will be greater.

Researches confirmed that risk has significant influence on intention to adopt mo-

bile banking in negative way. Several mobile banking adoption studies have supported that people refuse or are unwilling to use mobile banking mainly because of perceived risk [Brown et al. 2003; Riquelme & Rios 2010; Natarjan et al. 2010; Dasgupta et al. 2011]; Cruz et al. [2010]; The study by Brown et al. 2003 main findings tell us risk has negative effect on adoption on mobile banking. Cruz et al. [2010] also confirmed that risk has negative effect on adoption of mobile banking. This study finding is consistent with those studies mentioned above. Meaning when customers believe that using mobile banking is riskier they intend no to adopt or use mobile banking in this study context.

Perceived cost, as the extent to which a person believes that adopting mobile banking will cost money. In this study cost play a significant negative role in adoption of mobile banking. Given that perceived cost is important factor in affecting people intention to use mobile banking, the study performed a drill-down analysis and found that the cost for using services via mobile phones was perceived a critical factor in hindering people to use mobile banking. This may be either the person doesn't know how much it cost him for transacting or it really cost a lot for using mobile banking at all. This finding is consistent with Yang [2009], Cruz et al. [2010].

The construct, effort expectancy also has significant influence in individual intention to adopt mobile banking in this study. When people try to use some information system to improve their performance, they have to learn how to operate a machine or sophisticated software. In this kind of case, effort expectancy or ease of use undoubtedly has significant influence on user's intention to adopt mobile banking in this study context. Thus, the greater the ease of use, the more likely mobile banking is useful, thus influencing decisions to adopt it as a means of financial transactions. Both Nassuora (2012) and Jairak et al. (2009) find that effort expectancy predicts behavioral intention; therefore this study is consistent with at list for these two studies.

Hoffman et al. (1999) showed that lack of trust prevented customers from transacting using mobile phone or on line. In addition, Gefen et al., (2003) showed that trust was a major driver of customers' intention to use. These implies as trust for the service increases intention to adopt also increases.

In this study, the only non significant variable is Service quality of mobile banking. In fact from previous research service quality were positively related to behavior intention, meaning as the quality for the service increases behavior intention should increases. For example Yu Huang (2014) finding tells us that there is positive relationship between service quality of mobile banking and adoption of mobile banking.

Finally the demographic factor which includes gender, age, educational qualification and occupation were tested using t test and ANOVA. The t test for gender show interesting finding, no significant difference between male and female in this study. But previous research showed that gender differences have shown to exist in technology acceptance (Venkatesh & Davis, 2000; Wolin & Korganmkar, 2003; Gefen & Straudb, 1997). Wolin and Korganmkar (2003) found that males and females differ significantly in several dimensions with males exhibiting more positive beliefs and attitudes about E-commerce in this context mobile banking than females.

9. Conclusion

This paper developed a theoretical model of user adoption on mobile banking services based on The Unified Theory of Acceptance and Use of Technology (UTAUT), and attempted to explore the influencing factors which play a role in user's adoption of mobile banking. By collecting questionnaire survey data, the study proceeded statistical analysis and Structural Equation Modeling analysis with SPSS and AMOS, and tested the theoretical model and further made a discussion on the results of data analysis. This study is concerned with an investigation of factors that could affect mobile banking adoption on commercial bank of Ethiopia customers. These factors include Performance expectancy, Perceived risk, Perceived cost, Effort expectancy, Trust, Mobile banking service quality and Behavioral intention items. Effort expectancy is found to have a positive and direct influence on internet banking adoption. A large coefficient, $\beta = 1.158$ as compared to other all factors.

Furthermore, Performance expectancy and trust were found to have positive and significant influence on mobile banking adoption β beta= 0.018; 0.035 respectively. However, perceived risk and perceived cost has negative and significant influence on mobile banking adoption a beta value of -.065 and -.128. Service quality is the only not significant predictor which influences the mobile banking adoption in this study, due to the fact that nature of population itself which were only users of mobile banking might influence the result of the study. Furthermore group analyses were tested using Independent samples t-tests and ANOVA to measure the relationship between demographic factors and adoption of mobile banking. Gender is non-significant demographic factor for behavioral intention to adopt mobile banking in this study. Despite gender, age is found as significant factor for behavioral intention to adopt mobile banking; it indicates people at different ages have different willingness to adopt mobile banking. However the study revealed educational qualifications have similar result with gender, educational a qualification is a non significant factor for behavioral intention to adopt mobile banking. At last occupation factor has significant relation with behavioral intention to adopt mobile banking, meaning people that have different occupation have different willingness to adopt mobile banking.

10. Recommendation

As suggested in chapter one in the significance of the study section the primary stakeholder that would be interested in the finding of the study are policy makers and banks in Ethiopia who have already or planning to introduce mobile banking for their customers. The identification and confirmation of factor affecting the adoption of mobile banking provides banks with information on what is expected and what is required to make these channel more utilized among their customer base. The factors for example performance expectancy and effort expectancy should be marketed aggressively.

Hence, policy makers should concern on regulation about security issues, the manner in which mobile banking are implemented, identifying users, protecting users and how much money can be transacted, should be a major area the regulation should address.

In performance expectancy officials should give aggressive awareness of mobile banking service usefulness, i.e. convenience, time saving and productivity. The research has also potential implications for system designers. They should emphasize performance expectancy and effort expectancy in the architects of mobile banking while ensuring reliable content and high quality service, since no matter how easy a system is to use, the system will not be used if it is not deemed useful in banking activity.

In addition concerning effort expectancy the mobile banking menu should be easier to navigate and should be easily understandable hence in this regard software developer should create user friendly app or software.

The perceived risk factor emphasizes what the banks need to focus on by addressing security risks for mobile banking. Informing customers that transacting via mobile banking is secure. For example the bank can educate or tell how the service is secured while customers comes for registration or educating how the service works should be bundled in marketing and advertising campaigns.

Perceived cost these costs could typically include the cost of the mobile device, network charges, and transaction charges for bank costs as well as costs for data sent via the network infrastructure. A reduction in the cost of mobile banking transactions can motivate consumers to use the service, therefore banks have to strive to provide cost effective service. For example banks could introduce price bands Customers, who process large volumes of transactions through mobile, should receive a discount on transaction charges. So it can be as a good marketing strategy to attract customers to use mobile banking.

Referring Mobile banking service quality it's mainly about reliability and content quality. Visually appealing features, such as graphic, appropriate colors and fonts, and good page layout in addition system consistency could be given priority concerning service quality. And mainly system familiarity for mobile banking must be reduced since it may irritate users of mobile banking. This may be solved by collaborating with service providers i.e. with Ethio telecom and developing internal IT specialists' i.e. E payment specialists.

To sum up with the identified factors provides beneficial information to banks to ensure that if they want to increase adoption of mobile banking in their operation, they would be aware of what is required to make this happen. Essentially the factors indentified provide the bank with an opportunity to increase their sales and increase profits by addressing the factors via innovative marketing and educational promotions to tell customers what mobile banking is, how it works, what the benefits are and highlight the security aspects and advantages.

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