DETERMINANTS OF BANK CUSTOMER'S INTENTION TO ADOPT ELECTRONIC FINANCE TECHNOLOGIES IN ETHIOPIA: AN INTEGRATION OF TAM WITH FINANCIAL RISK, FINANCIAL TRUST, AND AWARENESS

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Abstract

 Banking industries in developing countries like Ethiopia in Africa highly committed to invest huge capital for introducing new e-finance technologies and training their professional employees. However, the adoption feedback from their customer's side is still passive and challenged by many factors. This study was aimed to investigate

factors that determine bank customer's intention to adopt electronic financial technologies in Ethiopia. The original TAM model was used that constructed with perceived financial trust, perceived financial risk, subjective norm and awareness as exogenous factors that predict bank customer's intention to adopt the technologies. Self-administered questioner was used for data collected from 412 bank customers and the exploratory factor analysis (EFA) and CFA confirmed data was internally consistent enough to measure each factor. The finding of the study shows perceived ease of use, perceived usefulness, perceived financial trust, subjective norm and awareness about new electronic finance technology positively predicts bank customer's intention to adopt it.

Keyword: **Banking Technology; Electronic Financial Services; Financial Trust; Perceived Financial Risk; Adoption; Customer Awareness; Ethiopia**

INTRODUCTION

 In the world about 1.7 billion people were unbanked and not holder of bank account as it was reported by Global Findex in 2017. It was believed that the use of advanced technologies in the financial sector like mobile banking would improve the inclusion of rural unbanked community. Business organizations realized technology channels as a good opportunity for addressing their customers and internally smoothing operations efficiently. As many authors agrees that the expansion of internet service improves the operation of every industry that accepted technology including the banking sector [1]. In the early 2000s even it was extremely forecasted that the expansion of internet might be destroy the traditional services of some organizations particularly the banking industry. This become confirmed that many organizations especially in the service rendering sector dramatically shifted from traditional way of delivering to electronic services and invests huge capital on technologies. The banking industry is one of the highly sensitive for technological changes and in many countries over the world banks are delivering electronic financial services. However, the adoption of e-banking technologies for e-

finance services in developing countries like Ethiopia reveals still at overture level that paving a way of shifting from bricks and mortar service to electronically [2]. As in a study [3] reported that even some African countries like Eritrea not yet adopted electronic banking technology.

Many studies were conducted research to study factors that influence technology users perception to accept new technologies particularly in the area of banking services [4]. Beside to bankers unenthusiastic to introduce new technologies, bank customer's intention to adopt it was influenced by many factors. Researchers were reported some of the key factors like the experience of trusting cash based payment rather than convinced by electronic payment, the concern of trust and security [5,6], lack of awareness [7,8], self-efficacy and ease of use [9]. A study [10] stated in his study that the adoption of banking technologies in Africa suffering from security, lack of awareness and accessibility problem. Similarly in a study [11] identified Nigerian e-banking financial service faced insecurity, lacks sufficient infrastructure like telecommunication and power supply. Generally, the African e-finance technology adoption trend is mainly constrained by poor infrastructure of technologies, illiteracy and technophobia, limited awareness about the benefit of e-finance, perception of unsecured of using technology for financial transaction, low penetration of internet service or high charge [12,13]. Hence, the aim of this study was to investigate factors that determine bank customer's intention to adopt e-finance technologies in Ethiopia [14,15].

LITERATURE REVIEW

Theory of Reasoned Action (TRA) was developed [16] which was mainly emphasized on the rationality of users to adopt new technologies. According to this theory, the behavior of an individual to perform something is determined by individuals intention either to perform or not to perform but the individual's intention in turn is influenced by his or her attitude about the object in question and subjective. The authors were defined attitude as "a person's favorable or unfavorable evaluation of object" [16]. Whereas subjective norm was defined as "the person's perception that most people who are important to him think he should or should not perform the behavior in question".

Therefore, the subjective norm of an individual is determined by his expectation to comply with referent group perception. Figure 1 depicts the diagrammatic presentation of the theory.
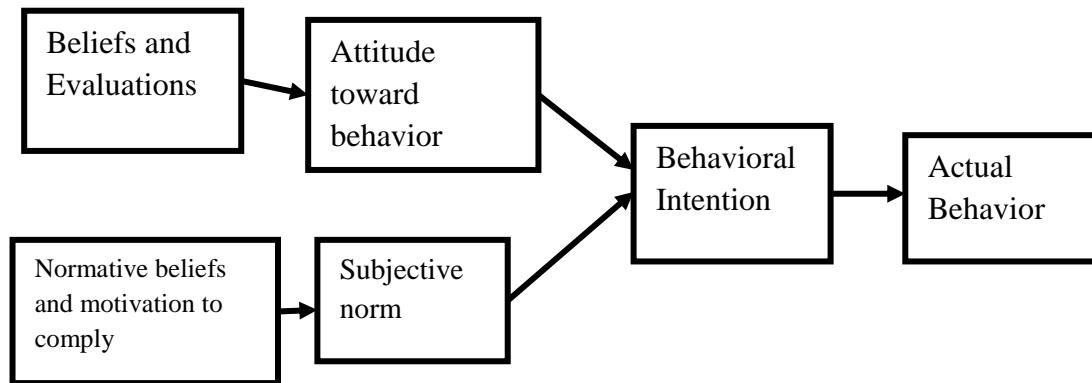

Figure 1: Theory of Reasoned Action (TRA).

Many empirical studies were proved theory of reasoned action (TRA) as it can successfully measure factors that influence the actual behavior of an individual [17]. However, this theory was criticized for not clearly defining belief that affects an individual's attitude to behave an action [18,19] and others were crtisized for it not stated the distinction between subjective norm and attitude but a study [20] not accepted the critisim. Similalry, it was also criticised as it was failed to predict the result of individual behavor. A study [21] has also stated that the model of TRA failed to clarifiy the diffrence beteween goal intention and behavioral intention. To overcome the limitation of TRA, authors developed an other theory named theory of planed behavior (TPB) [22], which was added a percieved behavioral control as additional factor that influence intention. However, it was also critizied by scholars [23,24].

Technology Acceptance Model (TAM) was later developed in study [19], which was consisted two well-known variables named "perceived ease of use" and "perceived usefulness" but primarily was based on theory of reasoned action (TRA) [25]. According to this theory, an information technology system user's actual behavior influenced by his/her intention either to accept or not to accept. But the user's intention primarily

affected by both perceived ease of use and perceived usefulness. The later was defined as the users perception of technology that if he use, it would make him more effective and perceived ease of use was defined as the belief of users for the technology is not difficult to manage it [19]. Therefore, if a technology user perceives that a given technology is useful for performing task as well as easily manageable; he or she would positively motivate to accept it. The technology acceptance model (TAM) was confirmed by many authors empirically as it can be strongly explain the intention of an individual either to accept or not to accept technology (Figure 2) [19,26].
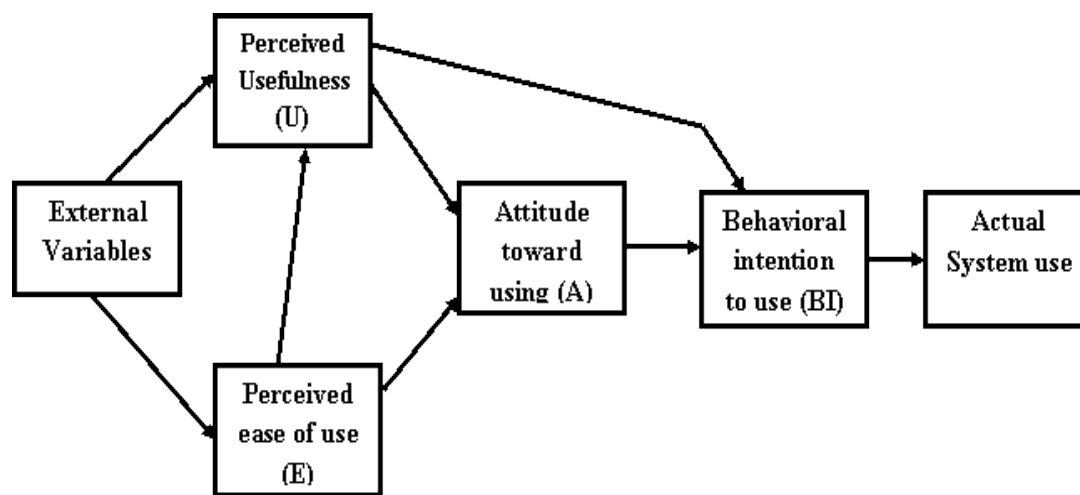

Figure 2: Technology Acceptance Model**.**

Technology acceptance model (TAM) was also criticized for its failure for clearly stating external factors [27], the model was not considered the effect of social factors (subjective norm) but many authors confessed that subjective norm was an important factor that influence users intention [28]. Others were criticized the model for its limitation to include important variables for adopting information technology like customer awareness, perceived risk and perceived trust whereas these variables were reported significantly influencing users intention [29,30]. Nevertheless its limitations, many authors preferred technology acceptance model for studying factors determine technology adoption. Similarly, the model was authenticated in banking technology adoption researches too [26].

HYPOTHESES DEVELOPMENT

The conceptual model (Figure 3) was primarily based on TAM model [19,31] and included three additional variables, which believed important in developing country context namely; perceived financial risk, financial trust [32] and awareness [29]. The predicting effect of each factor and its hypothesis was discussed below.
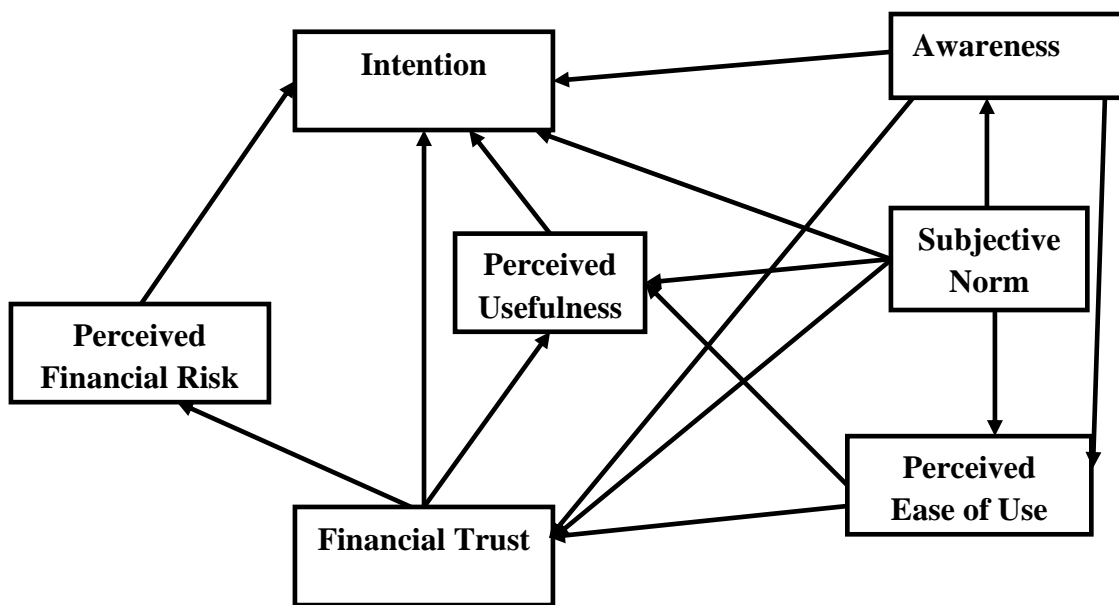

Figure 3: Conceptual Model.

H1: Perceived ease of use would have a positive direct effect on customer's intention to adopt e-finance technology.

H2: Perceived ease of use would positively affect perceived usefulness and financial trust.

H3: Perceived usefulness would have a positive direct effect on customer's intention to adopt e-finance technology.

H4: Financial Trust would positively influence perceived usefulness.

H5: Financial Trust would positively influence customer's intention to adopt electronic financial technology.

H6: Financial Trust would have a negatively direct effect on perceived financial risk.

H7: Financial Risk would negatively influence customer's intention to adopt electronic financial technology.

H8: Customer awareness would positively influence perceived ease of use and intention.

H9: Customer awareness would positively influence perceived ease of use and financial trust.

H10: Subjective norm would positively affect customer awareness and intention.

H11: Subjective norm would positively influence perceived ease of use to adopt e-financial technology.

H12: Subjective norm would positively affect financial trust to adopt e-financial technology.

METHODOLOGY OF THE STUDY

This study was aimed to investigate factors that determine electronic financial technology adoption intention among bank customers in Ethiopia. Five-point Likert scale questionnaires were developed based on previous studies and strong theoretical concepts. Accordingly, for the issue of measurement validity for each variable proposed in the model, items were adapted from previous studies with rewording to contextualize in terms of electronic financial services. Measures for Perceived ease of use (PEU) and perceived usefulness (PU) was primarily adapted from [29,31], perceived financial risk (PFR) was built on [33], perceived financial trust (FTrs) was adapted from [29], intention to adopt (Int) was based on [31,32] whereas items for variable subjective norm (SN) was constructed from [31] and items for customer awareness (AWR) was adapted from [33]. Although, all measuremnet items were constructed based on previous empirical studies, in the context of banking technology adoption and electronic financial services particularly in the consideration of bank customers in Ethiopia, questionaire were examined by senior researchers in univeristy and transalated to Amahric using back trnsalation technque as it was suggested by authors [34].

Self-administered questionnaire were distributed to 500 bank customers in five technologically leading banks in the country. Among these, 412 (82.4%) responded fully completed useful questionnaire and used for analysis in this study. The demographic characteristics of respondents revealed (Table 1) that 274(66.5%) were male while the age category of respondents shows that the majority 297 (72.1%) were under age of 18-29. This study was a confirmatory study in nature and hypotheses were tested using SEM analysis by help of AMOS 18. However, exploratory test was conducted for validating data using SPSS 20 especially for reliability test, discriminant and convergent validity [35-38].

Table 1: Characteristic of Respondents**.**

Gender	N=412	%	Education	N=412	%
Male	274	66.5%	Elementary	12	2.9
Female	138	33.5%	High School	52	12.6
Age			College Diploma	66	16.0
18-29	297	72.1	First Degree	245	59.5
30-40	88	21.4	Second Degree	33	8.0
41-55	23	5.6	PhD and Above	4	1.0
Above 55	4	1.0	**Occupation**		
Bank Experience			Student	143	34.7
Below 2 years	104	25.2	Gov`t Employee	119	28.9
3-6 years	207	50.2	Private Employee	107	26.0
7-10 years	74	18.0	Business owner	31	7.5
11-15 years	17	4.1	Unemployed	7	1.7
Above 15 years	10	2.4			

MEASUREMENT MODEL ASSESSMENT

The measurement model was tested for model fitness that meets the goodness criteria using confirmatory factor analysis (CFA). The final measurement model was retrieved

after modifying a proposed measurement model through deleting some weak loading factors according to a study [37] and co-varied as per modification indices (MI) indication as it was suggested [36]. Accordingly, the final model fitness criteria value for NCI was between 1 and 3 (NCI=1.994), CFI=0.941, TLI=0.912, which strongly meets the conventional cut point and RMSEA=0.049 that is acceptable value which is below 0.5 [39,40]. Similarly, the measurement model was checked for convergent and discriminant validity issue. Accordingly, it was confirmed that the construct reliability was greater than 0.7 and the average variance extracted (AVE) of each construct was above 0.5 [35]. In the same manner the diagonal correlation result among constructs were above the AVE value of the model as it was depicted in Table 2.

Table 2: Reliability and Discriminant Validity.

Construct	CR	AVE	PEU	PFR	FTR	PU	SN	AWR	INT
PEU	0.740	0.512	0.698						
PFR	0.814	0.527	0.025	0.726					
FTR	0.814	0.523	0.463	-0.039	0.723				
PU	0.773	0.534	0.667	0.106	0.496	0.731			
SN	0.850	0.587	0.296	0.073	0.545	0.413	0.766		
AWR	0.839	0.568	0.522	0.110	0.531	0.430	0.397	0.753	
INT	0.822	0.607	0.387	-0.011	0.483	0.464	0.428	0.481	0.779

HYPOTHESIS TESTING AND RESULT DISCUSSION

The proposed SEM construct was tested for fitting the model goodness criteria using maximum likelihood (ML) estimation. The latent constructs of proposed model shows, except subjective norm other factors; perceived financial trust (FTR), perceived ease of use (PEU), perceived financial risk (PFR), perceived usefulness (PU), awareness (AWR) and Intention (Int) were endogenous variables. Meanwhile, these factors also

facets as mediating variables between exogenous variable and intention. The final SEM was generated after some minor modifications it met the model goodness cut point (GFI=0.977, AGFI=0.869, CFI=0.975, RMSEA=0.127 and TLI=0.896) as it was suggested by different scholars [39,41].

As it was presented in Table 3 for significance level and beta coefficient, perceived ease of use was hypothesized that it would have a positive direct effect on customer's intention to adopt e-finance technology and perceived usefulness. It was found statistically significant (B=0.143, p<0.05, B=0.655, p<0.001) for H1 and H2 respectively and both were validated. Similarly, it has a positive direct effect on financial trust (B=0.245, P=0.051). This result was consistent with previous studies which were reported that perceived ease of use was positively influences customers intention to adopt technologies and perceived usefulness [1,42].

Table 3: Standardized Regression Weights (ML estimation).

Paths			ß	S.E.	C.R.	P
AWR	<---	SN	0.455	0.034	10.355	***
PEU	<---	SN	0.105	0.030	2.407	0.016**
PEU	<---	AWR	0.562	0.039	12.875	***
FTR	<---	AWR	0.276	0.047	6.333	***
FTR	<---	PEU	0.245	0.051	5.907	***
FTR	<---	SN	0.408	0.031	11.041	***
PU	<---	FTR	0.104	0.029	2.498	.012**
PU	<---	SN	0.180	0.022	4.865	***
PFR	<---	FTR	-0.040	0.054	-0.820	0.412
PU	<---	PEU	0.655	0.030	18.736	***
INT	<---	PFR	-0.069	0.027	-1.899	0.058**
INT	<---	PEU	0.143	0.064	2.296	0.022**
INT	<---	PU	0.145	0.073	2.361	0.018**
INT	<---	SN	0.169	0.033	3.546	***

INT	<---	AWR	0.246	0.046	4.895	***
INT	<---	FTR	0.136	0.046	2.477	0.013**

** P<0.05, *** P<0.000,

Source: primary data (AMOS output).

Therefore, in this study it was confirmed that if customers perceived that banking technology is easy to get financial services they would intended positively to accept the technology. More importantly as it was reported in TAM [28,43] there was strong relationship between perceived ease of use and perceived usefulness.

Perceived usefulness was also statistically supported (B=0.145, p<0.05) that it positively influences customer's intention to adopt e-finance technology, thus validating H3. Perceived financial trust (B=0.104, p=0.012) was a significant predictor of perceived usefulness and similarly on customer's intention (B=0.136, p<0.05), thus validated H4 and H5. However, perceived financial trust was found non-significant but negatively related with perceived financial risk. It was expected that perceived risk and perceived trust would negatively related to each other [6,44]. Perceived financial risk was proposed it would negatively influence customer's intention to adopt electronic financial services. This hypothesis (INT <--- PFR) was supported by data slightly (B=-0.069, p <=0.058 at 95% confidence level), which liberally validating H7. However, there was a weak statistical relationship; perceived financial risk had a negative effect on customer's intention to adopt electronic financial technology [6]. Customer awareness (B=0.246, p<0.001) was significantly predicted bank customer's intention to adopt electronic financial services. Similarly, it was confirmed that awareness about the banking technology and electronic financial services positively influences customers to perceive it is easy to use and trust (B=0.562, P<0.001, B=0.28, P<0.001). Therefore, both hypotheses were accepted (H8, H9) and concluded that awareness about new banking technologies positively affects bank customers to perceive it is easy to use and financially trust it to adopt.

Subjective norm was hypothesized that it would positively predict customer awareness and intention. The hypothesis was supported and confirmed that subjective norm positively affects awareness and intention of customer to adopt e-finance technology (B=0.455, p<0.001, B=0.169, p<0.001) respectively, thus validating H10. The social influence, subjective norm important factor that was reported by previous researchers as it predicts users intention to adopt electronic commerce [45] and electronic finance technologies. Subjective norm (B=0.105, p<0.05) (B=0.408, p<0.001) was also positively predicted perceived ease of use and perceived financial trust respectively, thus validating H11 and H12. Therefore, it was confirmed that if customers were positively influenced by their referent group, they would perceive that the new banking technology is easy to use and as well financially trustful for using financial transaction.

CONCLUSION AND RECOMMENDATION

Both the TAM predictors of perceived ease of use and perceived usefulness were found statistically significant and the result was consistent with previous studies [1,42]. However, perceived ease of use less predicts customer's intention as it was reported by TAM developers [19,43]. But, the empirical evidence confirmed there was statistically strong relationship between both factors (B=0.65). Similarly, perceived financial trust (FTR) and perceived financial risk (PFR) were two important factors, which get attention in electronic transaction since the emergence of internet online services [46,47]. While for introducing new technologies, user's may afraid to openly using the technology due to fear of financial loss and privacy risks. In this particular study it was confirmed that perceived financial trust has a positive direct effect on customer's intention to adopt electronic finance technology while financial risk predicts negatively. The result reported consistent finding with previous empirical studies [6,48]. As it was confirmed from data if bank customers were trusted the new banking technology, they would not afraid of losing of their money and financial information [49-51]. However, users have to perceive the new banking technology is easy to use for trusting it.

Subjective norm was an important factor that was positively predicted bank customer's intention to adopt electronic finance technology. Similarly, it was also found that subjective norm has positive direct effect on customer awareness, perceived ease of use and perceived financial trust. The other important variable included in this study was customer awareness, which was found positively predicted customers intention to adopt electronic banking technology and electronic financial services. Previous researchers were also reported customer awareness positively influences user's intention to adopt technologies like electronic banking [7,29]. Therefore, if customer awareness increased about the new electronic technology, it would in turn positively motivate them to perceive it is easy to use and increase their trust to technology.

Therefore, in countries like Ethiopia, where there is strong social interaction, subjective norm significantly important factor to increase customer awareness, which is may be due to positive word of mouth and as the result it motivate users to accept new electronic banking technologies.

Generally, the two TAM variables; perceived ease of use and perceived usefulness were important factors that was confirmed in this study that it would positively predicts the bank customer's intention to adopt e-finance technologies. This may imply bank mangers demanded to introduce easily manageable technologies for electronic financial services and as well as creating awareness about the benefit of technology. Since Ethiopia is one of the less developed countries, educating the rural community and working on minimizing computer illiteracy would result the society to perceive the technology is easy to use. Meanwhile, bankers should develop multi-lingual easily manageable applications. Therefore, funding financial technology entrepreneurs would significantly alleviate the complexity issue of the technologies. Similarly, perceived financial risk was found as negatively influencing factor of bank customer's intention to adopt new e-finance technologies while perceived financial trust predicting positively. So, designing reliable trust worthy system is also another assignment of bank management. The news of cybercrime across the world adversely affects the decision of poor economic society not to accept newly introduced e-finance technologies. The absence of clear legal framework regarding the use of e-commerce and e-payment

system increases the security concern of users. Ethiopia is currently at the virtue of launching East African E-commerce center and this might be pave a way for increasing e-finance technology users and as well as enforces to ratify legal frameworks.

The adoption and diffusion of e-commerce platform would lead bank customers to adopt the e-finance technology promptly. Therefore, bankers and the government should encourage online retail business and support the diffusion of e-commerce business for effective use of e-finance technologies. The integration of banking services through e-finance channels like card banking, mobile banking, internet banking and other services with e-payment system of public institutions and regular business transaction would shift the cash dependent business to digital system. As the result this would enhance the financial inclusion of the rural community and even would play a prominent role in increasing Gov`t tax collection system. More importantly, it would improve user's satisfaction due to its convenience and it would enhance the saving habit of the society. Therefore, public institutions and other private businesses should integrate their organizational services with e-payment system of banks and should adopt digital technologies like e-procurement, e-governance and other online payment systems through phone, computers or internet platforms.

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