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DETERMINANTS OF MOBILE BANKING TECHNOLOGY ADOPTION OF COMMERCIAL BANKS IN ETHIOPIA**ZEMENU AYNADIS****LECTURER****DEPARTMENT OF MARKETING
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MEKELLE****ABSTRACT**

Nowadays, mobile banking technology is one of most important technologies in the banking sector. As a result many banks all over the world are adopting it and taking advantage of the technology. Ethiopia, on the other hand didn't adopt the technology yet. Therefore, this research is conducted to identify the determinants of mobile technology adoption of commercial banks in Ethiopia. Thus, the sampling technique used is complete enumeration whereby all commercial banks are considered. However among the seventeen actively operating banks, two banks could not be accessed. Hence the Information Technology managers and presidents of fifteen commercial banks are considered. Data has been collected from the target respondents using questionnaire and interview and analyzed using descriptive analysis. Accordingly technological and non-technological factors are identified. Technological factors are factors that are directly related with the attributes of the technology to be adopted. Such technological factors that are found to determine commercial banks mobile banking technology adoption in Ethiopia includes relative advantage, compatibility, simplicity, observability and trialability. In addition non-technological factors also determine mobile technology adoption of the Ethiopian commercial banks. They are external in nature; in that they are not directly related with the technology itself. These non-technological factors are economical capability, political issue, societal issues as well as organizational readiness. From the interview with the presidents of the banks, we have also found that the main problems that block banks from adopting mobile banking technology yet is the lateness of National Bank of Ethiopia to enact a law regarding mobile banking technology adoption. Moreover, the intention of commercial banks is determined. The banks expressed that they have intention to adopt mobile banking technology.

KEYWORDS

Mobile Banking, Technology Adoption, Commercial Banks of Ethiopia.

1. RATIONALE

Following the fast growth and development in Ethiopia, the demand for the banking service increased where by the current banks cannot accommodate the demand of the banking service. It is not unusual to look a lengthy waiting queue in commercial banks of Ethiopia. In addition to the complaint of urban customers about the service quality, there are significant numbers of potential customers living in small cities and rural towns who have no access to banking service. When such people need to get banking service, they are expected to move for hours to the larger cities where banks have opened their branches. Most of these small cities and some rural towns have access to telecommunication network and use mobile phone for exchange of information, which leaves an opportunity for banks to use mobile-related technology to address such customers. In this regard, modern technologies like mobile banking technology could have been considered as an alternative to address the above mentioned potential customers, who have no option to get financial service from banks except crossing kilometres to the nearby city.

It is true that the adoption of modern information technologies benefit banks. The researchers Okonoye and his colleagues (Okunoye *et al.*, 2007) assured that application of Information Technology in banks makes them efficient in their activities. As a result modern technologies (particularly information technologies) are getting increasing acceptance in developing countries (Ghaziri, 1998).

Mobile banking technology is one of the technologies which is very important for developing countries to provide banking service in a cost effective manner. It is a technology that could help banks to increase the existing service quality as well as to expand the service to unbanked areas. But when we see the context of Ethiopia, adoption of information technologies (particularly mobile banking technology) is very low. The reason behind has not yet discovered. Theoretically different factors are attributed to the delay of banks to adopt mobile banking technology. Thus, the actual factors that hinder Ethiopian commercial banks to adopt mobile banking technology need to be investigated. Therefore, this research is concerned with identification of the determinants of mobile banking technology adoptions of Ethiopian commercial banks.

2. LITERATURE**2.1. MOBILE PHONES AND MOBILE BANKING TECHNOLOGY**

The term "mobile banking" refers to the use of mobile phones as a channel of offering banking services which includes traditional services such as funds transfer, as well as new services such as online and electronic payments. Hence, mobile banking is defined as doing bank transactions via mobile phone (Mcknight and Chervany, 2001).

Mobile Banking can also be defined as a service provided by the bank that enables users to receive information on their accounts and make monetary payments and transfers to third parties based on orders sent via mobile phone. Transactions can be made to legal or natural persons who have a valid Mobile Payment Reception. The Mobile Bank allows its customers to receive information on account balances of the customer, transactions on the customer's accounts, currency exchange rates and so on (Shammot and Al-Shaikh, 2008).

Mobile banking technology is an application of mobile computing which provides customers with the support needed to be able to banked anywhere, anytime using a mobile handheld device and a mobile service such as text messaging (SMS). Mobile banking removes space and time limitations from banking activities such as checking account balances, or transferring money from one account to another (Shi Yu, 2009).

Collins *et al.*, (2009) in his survey found that financial services are very important for the poor; but not available as much as they should have been addressed. According to him the poor is in far access to formal financial institutions; hence, they are forced to use informal financial institutions which are inflexible and unreliable. About 2.6 billion people in the world do not have access to formal financial services, and yet one billion of them have a mobile phone. Consequently, branchless banking systems should take advantage of increasingly ever-present real-time mobile communications networks to bring banking services into everyday retail stores, thereby alleviating the lack of banking infrastructure in the communities where poor people live and work (Dermish *et al.*, 2012).

2.2. MOBILE BANKING TECHNOLOGY AND BANKS

As a result of industrial revolution and globalization, commercial transactions have been rapidly increased. As a result mobile banking becomes one of the newest approaches to the provision of financial services through wireless network, and gaining increasing acceptance within the banking sector which has been made possible by the widespread adoption of mobile phones even in developing countries (Amila *et al.*, 2008).

More than three billion mobile phones are currently in operation worldwide and fully 70% of the total population of developing countries fall within the coverage of existing cellular networks. Africa is, in this regard, the fastest growing mobile market in the world. The continent's subscriber base grew by 66% in 2005 to 135 million users, compared to growth of just 11% in Western Europe during the same period. Mobile phones work easily, they require minimum investment and training and they can perform a variety of functions. This is a good opportunity to adopt mobile banking technology to expand banking services. Mobile banking technologies are particularly valuable in rural areas where no bank branches exist and where other traditional banking channels, such as ATMs, fixed line telephones and the internet are unavailable. According to the researcher, mobile banking technology in developed economies is just another channel among many others which are competing for consumer acceptance and investor commitment. Most of the population are already happy with the standard banking services, which means there's only a limited need in these markets for mobile banking technology.

But, in Africa and other developing countries mobile banking technology is the most cost effective means of delivering financial services and simplest and economic way of providing access to remittances. In Africa and other developing economies, where "necessity" is the mother of invention, mobile banking can fulfil fundamental needs very quickly, helping to advance technologies and providing major transformational change. For this reason, mobile banking technology will have strategic advantage through its strategic probability of expansion to rural area than other technologies for the fact that a mobile banking technology does not require many infrastructures except availability of mobile network and the rural people can get such service through their mobile phone. Therefore, this provides a long term opportunity for banks to expand the service to rural area so that the technology will be adopted all over the concerned developing nation (Kopicki and Miller, 2008).

2.3. MOBILE BANKING TECHNOLOGY IN TODAY'S BANKING SECTOR

Nowadays the banking industry is changing rapidly. Development of international economic and competitive markets also has affected the banks. Technology is a major force in this environment that led to breaking the geographical, legal and industrial barriers and has created new products and services. In recent years, with growth and development of information technology, all aspects of human life have been radically transformed (Liao and Cheung, 2002). Mobile banking services have fundamentally changed the ways and methods of doing daily activities by bank customers; and banks have also used it not only as a new way to increase customer satisfaction, but also as a model strategy to reduce costs and increase profitability (Lin and Lu, 2001). Meanwhile, mobile banking is one of the main branches of the mobile commerce that has critical and influential role on other areas of the business. Mobile banking is a one payment method that, if applied in an appropriate manner, can greatly reduce the banking costs (Davis *et al.*, 1989).

To survive in the competitive market of modern banking sector, banks need to pay attention to optimal management of necessary costs in using various technologies, and use the best methods to create minimum cost. Use of mobile banking technology reduces the banking costs to a great extent. Besides, it increasingly provides customer satisfaction through easy access to financial transactions at any time and place with the lowest possible tool (just a mobile phone) instead of waiting for hours in banks' offices to get the required service (Fishbein and Ajzen, 1975).

2.4. ADVANTAGES OF MOBILE BANKING

There are number of reasons that persuaded banks to be in favour of mobile banking technology. The technologies are set to become a crucial part of the total banking services experience for the banks. Also, they have the potential to bring down costs for the bank itself.

According to Michael Ardovino (2007), a major benefit of Mobile banking is banking the "unbanked" who generally can't afford the cost of formal banking services delivered at big cities that require customers to travel hundreds of miles to get the service.

Similarly as the definition of mobile banking technology generally implies, mobile banking is used to provide banking services using mobile phones. The customers can then check their balance on the phone and authorize the required amounts for payment. The customers can also request for additional information. They can automatically view deposits and withdrawals as they occur and also pre-schedule payments to be made or cheques to be issued. Similarly, one could also request for services like stop cheque or issue of a cheque book over one's mobile phone. (Hamza *et al.*, 2011).

More over Marwan *et al.*, (2008) listed out the main advantages of mobile banking technology as low administrative costs, transmission of data at any time, concern with personal contact, increases bank productivity, provides database at any time, monitoring & following reports related to work, easy device to use, enables bank dealing individually according to customers' needs, provides free of charges services, easy procedures to obtain from bank, problems can be solved in timely manner, high degree of comfort ability, accounts are confidential and e-security.

Because of its importance, mobile banking services is continuing to grow so that economic experts forecast that by 2013, 300 billion transactions worth more than 860 billion dollars will be done through mobile banking (Pavlou, 2003). This is an indication of the possibility of mobile banking technology to expand to vast number of customers. However, knowing how such customers and banks that are expected to adopt the technology perceive the technology is a crucial issue. One of Information Technology an adoption concern, particularly in the field of mobile banking technology, is the intention of the technology adopters to the technology to be adopted (Gefen, 2003). The following section gives a clue on factors affecting technology adoption.

2.5. FACTORS AFFECTING TECHNOLOGY ADOPTION

There are different factors affecting banks intention to adopt a new technology. These factors contribute to the level of expansion of the technology all over the world. Such factors that are reviewed from different empirical studies are categorized in to two to suit them with the Ethiopian context. These are technological factors and non-technological factors.

2.5.1. TECHNOLOGICAL FACTORS

All nations in the world may not innovate similar technologies at a point of time. Different technologies are innovated in different countries at different time. Thanks to globalization, if one technology innovated in a nation is found to be important to the other part of the world; it will be made diffused using various mechanisms. The attitude of the adopters to the technologies is a critical component in encouraging or discouraging diffusion of such technology. As a result dealing with the attitude of such adopters towards the technology to be applied or already adopted technology is quite important. The successfulness of diffusion of innovation is determined by different factors that influence the attitude of such adopters.

As cited by Zemenu (Zemenu¹, 2012), according to Rogers Diffusion of Innovation (DOI) theory, (Rogers, 2003) the successful diffusion of new technologies is determined by five factors namely relative advantage, ease of use (simplicity), compatibility, trialability and observability. Adopter nations (particularly technologically poor countries) used to enjoy and are enjoying from the new technologies by adopting such innovated technologies from the innovators.

Diffusion of Innovation Theory (DOI) helps to know the perception of customers (adopters of the technology) towards the new technology to be adopted. Since there is no bank formally started mobile banking service, the banks themselves are adopters. Hence in this paper the five factors of DOI, which are named as technological factors in this paper, are attributed to banks and used to determine banks' intention through their presidents and IT managers (as presidents and IT managers are the ultimate decision makers to adopt or not to adopt the technology). These factors are:

- ♣ **Relative advantage** – that is the degree to which an innovation is supposed to be better than the idea it supersedes. The degree of relative advantage may be measured in economic terms, in social-prestige factors, convenience, and satisfaction are also often important components. It does not matter so much whether an innovation has a great deal of "objective" advantage. What does matter is whether a potential adopter perceives the innovation as advantageous. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be.
- ♣ **Compatibility** – is the degree to which an innovation is believed to be consistent with the existing values, past experiences, and needs of potential adopters. An idea that is not compatible with the prevalent values and norms of a social system will not be adopted as rapidly as an innovation that is compatible. The adoption of an incompatible innovation often requires the prior adoption of a new value system. The greater the compatibility, the faster is the rate of technology adoption.
- ♣ **Simplicity** – that is the degree to which an innovation is supposed to be simple to understand and use. Some innovations are readily understood by most members of a social system; others are more complicated and will be adopted more slowly. In general, new ideas that are simpler to understand will be adopted more rapidly than innovations that require the adopter to develop new skills and understandings.
- ♣ **Trialability** – that is the degree to which an innovation supposed to be experimented on a trial basis before it really convince large majority of the adopters. If the innovation is not tested, it is likely that the innovation will not succeed as expected. If an innovation can be broken down into parts and tried small portions at a time, the innovation has a greater chance for adoption; because an innovation that is trialable represents less uncertainty to the individual who is considering it for adoption.
- ♣ **Observability** – that is the degree to which the results of an innovation are supposed to be visible to others. The easier for individuals to see the results of an innovation, the more convincing the innovation to be adopted; for the fact that such visibility stimulates peer discussion of a new idea, as friends and neighbours of an adopter ask him or her for innovation-evaluation information about it.

In general, innovations that are perceived by receivers as having greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly than other innovations. And these are not the only qualities that affect adoption rates, but past research indicated that they are the most important characteristics of innovations in explaining rate of adoption.

2.5.2. NON-TECHNOLOGICAL FACTORS

The five attributes of Roger's diffusion of innovation theory are concerned only with the attributes of the technology itself. And for this fact they are categorized under technological factors. However, the technological attributes alone are not the elements that determine the adoption of a certain technology. Therefore, other non-technological factors should also be considered. Rogers (2003) also said that the five attributes of the new technologies that are explained in the diffusion of innovation theory are not the only factors affecting technology adoption.

As a result, in this research, Rogers's diffusion of innovation theory is modified in such a way that it can incorporate non technological factors. That is the non-technological factors (particularly from adopter point of view) are tried to be considered for the fact that the adopters situation have an effect on the adoption of the technology.

- ♣ **Organizational Readiness:** organizational readiness is concerned with management commitment, organizational culture, and organizational structure, employees' knowledge and technical skill and related issues of the organization.
- ♣ **Economical Capability:** this variable is seen independent of organizational readiness for the fact that it is very fundamental in adoption of technology. It deals with the issues related to the economical environment of the technology to be adopted that can affect the organization tremendously. Contextually Economic capability refers to the Economical maturity of the organization to adopt the technology. It refers to view of the technology from economical benefit and loss perspective
- ♣ **Social issue:** social issue is Banks' perception of societal attitude towards mobile banking technology. It focuses on people's attitudes and beliefs (as viewed by the banks) and is closely linked to the demand and supply of the organization. It is the banks' perception of customers' attitude towards the technology to be adopted.
- ♣ **Political issue:** deal with policies and actions created by government bodies which affect the way in which organizations carry out daily activities. Legislation may hamper an organization in several ways thus it needs to be closely examined. Other issues to be examined under the political frame are tax regimes and fiscal policy.

1.5. RESEARCH OBJECTIVES

- ♣ Determining the intention of banks towards mobile banking technologies.
- ♣ Identifying technological factors affecting the mobile banking technology adoption of Ethiopian commercial banks.
- ♣ Identifying non-technological factors affecting mobile banking technology adoption of commercial banks of Ethiopia.

2. METHODOLOGY

2.1. POPULATION, SAMPLING TECHNIQUE AND SAMPLE SIZE

The target populations of this study are all public and private commercial banks operating in Ethiopia. The national bank and development banks of Ethiopia are not considered in that the service in commercial banks and in national or developmental banks has difference and might lead to inappropriate finding. Furthermore, the need of development banks and national banks to mobile banking technology is not series issue compared to commercial banks.

The sampling technique used is complete enumeration where all selected banks' IT managers and presidents are part of the study. There are seventeen commercial banks in Ethiopia when this research is conducted. Among these banks Berhan International Bank and Zemen Bank didn't provide response to the questionnaire. Consequently the sample size holds fifteen concerned banks' managers (i.e. fifteen IT managers and another fifteen presidents from fifteen commercial banks). Banks have an IT manager per bank who is concerned with management of IT related activities.

2.2. DATA TYPE, SOURCE AND DATA COLLECTION TECHNIQUES:

Only primary data is used in this study. The data is collected from the IT managers as well as presidents of the banks. Questionnaires was developed and distributed to collect primary data from the IT managers and presidents of the banks. The questions include closed ended questions. Furthermore, semi-structured interview is used to collect further information from the presidents.

¹ **Remark:** In his previous research, Zemenu had shown that United Bank S.C. and Dashen Bank S.C. have adopted mobile banking technology. This was because of inflated information gathered from the branch offices. According to data collected from the head offices of commercial banks while conducting this research, it is discovered that the banks didn't formally adopt mobile banking technology yet. Therefore, readers of the previous research need to take this new finding in to consideration for the above mentioned banks didn't adopt mobile banking technology in 2011.

2.3. DATA PROCESSING AND ANALYSIS

First, the data collected through questionnaire is edited and coded. The questions are developed in the form of five rating likert scale that ranges from 1, which represents strongly disagree, to 5 that represents strongly agree. Hence we have used simple descriptive analysis using percentage of frequencies provided to each of the scales. Moreover, simple correlation is used to know the correlation between intention of banks with technological and non-technological factors.

2.4. PERIOD OF THE STUDY: the study was conducted from March 2012 to December 2012.

3. FINDINGS

3.1. INTENTION OF BANKS TOWARDS ADOPTION OF MOBILE BANKING TECHNOLOGY

A questionnaire that has binary response was distributed to all the target banks' IT managers and presidents. All IT managers and banks' presidents of sample banks respond that the bank at which they are managing have intention to adopt mobile banking technology. Hence we can say that the Ethiopian commercial banks have understood the use of mobile banking technology and, hence, have intention to adopt the technology.

3.2. FACTORS AFFECTING MOBILE BANKING TECHNOLOGY ADOPTION

Researchers found different variables that contribute to the technology adoption in their studies. Such empirical studies are used as reference to know what variables affect mobile banking technology adoption. Therefore, in this regard, the researchers have used such variables as bench mark to assure whether such variables determine adoption of mobile banking technology of Ethiopian commercial banks.

3.2.1. TECHNOLOGICAL FACTORS AFFECTING MOBILE BANKING TECHNOLOGY

Technological factors are factors that are directly related to the attributes of the technology to be adopted. These factors explain the characteristics of the technology based on the variables that are to be measured from point of view of adopters. Different questions are asked to know the IT managers and presidents' perception towards each of the variables. The questions were constructed based on five rating likert scale that ranges from strongly agree (SAGR) to strongly disagree (SDIS). The following table shows the banks' IT managers and Presidents perception regarding technological variables, which will determine the banks' perception towards the variables. The abbreviations AGR, NTR and DIS are abbreviations of agree, neutral and disagree respectively.

TABLE 1: BANKS' PRESIDENTS' AND IT MANAGERS' PERCEPTION OF TECHNOLOGICAL FACTORS

Variables	SAGR	percent	AGR	percent	NTR	percent	DIS	percent	SDIS	percent	Total	percent
	Relative Advantage	11	36.67%	18	60.00%	1	3.33%	-	-	-	-	30
Compatibility	13	43.33%	14	46.67%	3	10.00%	-	-	-	-	30	100%
Simplicity	0	0.00%	20	66.67%	10	33.33%	-	-	-	-	30	100%
Observability	13	43.33%	15	50.00%	2	6.67%	-	-	-	-	30	100%
Trialability	3	10.00%	20	66.67%	7	23.33%	-	-	-	-	30	100%

Source: primary data (2012)

The above table shows respondents response towards the technological factors. Relative advantage is the a variable that is used to represent banks' IT managers/presidents perception on relative advantage of mobile banking technology compared to the traditional banking service delivery system. Accordingly 36.7% of the banks IT managers and presidents have strongly agreed that mobile banking technology has a relative advantage and the rest 60% have also agreed that the technology has, in fact, relative advantage. Only 3.33% of respondents are indifferent regarding the mobile banking technology's relative advantage. So, we can say that most respondents have high perception that mobile banking technology has relative advantage compared to the traditional banking service system.

Regarding the compatibility of mobile banking technology, 43.33% of respondents have strongly agreed that the technology has no difficulty of compatibility with culture, local language, living styles and other values of the community. 46.67% of respondents also agreed with compatibility of mobile banking technology. On the other hand 10% of them are indifferent about compatibility of the technology. Hence we can say that 90% of the total respondents perceived that mobile banking technology is compatible.

Simplicity of the technology is the other concern of technology adoption. In this case, although 66.67% of the total respondents said that they agree on simplicity of the technology, they seem to doubt on its simplicity; because, no participant has responded 'strongly agreed' on simplicity of the technology and the rest 33.33% of total respondents are indifferent regarding simplicity of mobile banking technology. IT managers and presidents of banks said that the literacy level of customers may make the usage more complex than expected and as a result may pull the adoption of the technology down.

The other variable that contributes to the adoption of mobile banking technology is observability. Theoretically, the more observable the technology while being used by others, the more rate of diffusion will be. The finding of this research agrees with what is theorized. Because most of the respondents have positive response regarding observability of the technology in that 43.33% and 50.00% of respondents have respond strongly agree and agree respectively. Only 6.67% didn't show agreement regarding this variable. This shows that most of respondents perceive that observability positively affect adoption of mobile banking technology.

The last variable is trialability of mobile banking technology. In this regard most of the respondents (66.67%) replied agree for the trialability of mobile banking technology; and a significant number of respondent (23.33%) are didn't agree about the trialability of the technology. Only 10% replied strongly agreed. But still most of the respondents have agreed that mobile banking technology can be used in trial basis.

3.2.2. NON-TECHNOLOGICAL FACTORS AFFECTING MOBILE BANKING TECHNOLOGY

Non-technological factors are factors that are not directly related with the technology to be adopted. The following table explains the responses to the under listed variables affecting mobile banking technology adoption.

TABLE 2: IT MANAGERS' AND PRESIDENTS' PERCEPTION OF NON-TECHNOLOGICAL FACTORS

Variables	SAGR	percent	AGR	percent	NTR	percent	DIS	percent	Total	percent
	Organizational Readiness	11	36.67%	14	46.67%	5	16.66%	0	0.00%	30
Economic Capability	1	3.33%	24	80.00%	5	16.67%	0	0.00%	30	100%
Political issue	4	13.33%	9	30.00%	16	53.33%	1	3.33%	30	100%
Societal issue	0	0.00%	18	60.00%	12	40.00%	0	0.00%	30	100%

Source: primary data (2012)

The first variable among the non-technological factors is organizational Readiness. Organizational readiness is expressed via competent knowledge and skills of employees, top management commitment & support, organizational culture, organizational structure and so on. In Ethiopian context the banks expressed that their bank is ready to adopt mobile banking technology 36.67% and 46.67% of the respondents replied strongly agree and agree respectively, indicating that the banks are ready to accustomed themselves the mobile banking technology. There is no respondent disagreed in the issue.

Similar to organizational readiness, there is no bank disagreed regarding the economic capability of banks to adopt mobile banking technology. A total of 83% of respondents expressed their agreement in that economic capabilities of banks do not block them from adopting the new mobile banking technology. The other variable is the political issue, which is concerned with the regulatory systems of the central bank of the nation. In this regard most of respondents (53.33%) are indifferent to agree or disagree; implying there might be some problems that hesitate the respondents to agree on the issue. There are of course, 43.33% of respondent who expressed their agreement. 3.33% of respondents expressed that they claim political issue is a bottle neck to adopt such technology in that the national bank of Ethiopia didn't enact a law allow adoption of mobile banking technology. Regarding societal issue, although most of the respondents (60%) expressed their agreement in that the society can easily accept the technology, a significant percentage (40%) of respondent expressed their doubt in this issue. Identification of respondent gap has been tried to be solved using interview questions with the presidents of banks to be discussed below.

3.3. CORRELATION BETWEEN THE VARIABLES AND INTENTION OF BANKS TO ADOPT MOBILE BANKING TECHNOLOGY

Generally speaking, the explained technological and non-technological factors have no negative impact in Ethiopian banks to adopt mobile banking technology. The main representative of banks regarding the technology adoption replied their perception in that mobile banking technology has relative advantage; it is compatible, simple, observable and can be tried without incurring significant cost. Moreover, they assured the bank at which they are managing has no management, commitment or economic problem. But they are a few in doubts about the social issue and more on political issue. However, the general response shows that the variables do negatively affect them to adopt the technology. This shows that banks have intention to adopt mobile banking technology. Such relationship between adoption intention of banks and the variables is shown under the following correlation matrix.

TABLE 3: CORRELATION BETWEEN INTENTION AND TECHNOLOGICAL AND NON-TECHNOLOGICAL FACTORS AFFECTING MOBILE BANKING TECHNOLOGY ADOPTION

	intention	rel_adv	compatib	simplicity	observ	trial	politica	social	organiz	economic
intention	1.0000									
rel_adv	0.4309	1.0000								
compatib	0.4023	0.6287	1.0000							
simplicity	0.5148	0.5472	0.4576	1.0000						
observ	0.4364	0.4229	0.5065	0.4423	1.0000					
trial	0.4660	0.2435	0.2757	0.4893	0.5525	1.0000				
politica	0.2476	0.4449	0.3465	0.3085	0.4515	0.0716	1.0000			
social	0.2689	0.2515	0.1231	0.1336	0.2179	0.1359	0.0322	1.0000		
organiz	0.5401	0.4063	0.4357	0.4528	0.5169	0.3886	0.5142	0.1589	1.0000	
economic	0.5549	0.5442	0.4889	0.6415	0.7109	0.4289	0.7169	0.1514	0.7870	1.0000

Source: primary data (2012)

The association shows there is positive relationship among all the variables and intention. Although this association (correlation) doesn't directly indicate the cause-effect-relationship between intention and the technological and non-technological factors, we can say it is probable that this association is causation. Because the theory assures that there is cause-and-effect relationship between intention of adoption and the factors.

3.4. ANALYSIS OF THE INTERVIEW QUESTIONS

Interview questions have been designed to the presidents of the commercial banks. Although we have distributed questionnaire to Information Technology managers and the presidents themselves, we conducted interview so as to address some questions that need further detail. Most of the presidents provided us identical information and we presented the interview analysis of some of the presidents as under.

COMMERCIAL BANKS OF ETHIOPIA

According to the interview with the president of commercial bank of Ethiopia, the bank has adopted CORE banking system, a system that interconnects all of its branches through telecommunication networking. Regarding adoption of mobile banking technology, he expressed that the bank has plan to introduce such technology, but not implemented yet because of lack of rule and regulation from the national bank of Ethiopia. According to the interview, the manager also added his expectation that customers are ready to accept new technologies adopted given that the technologies provide benefit to the customers by saving their cost and time, for instance. He also addressed that the employees are ready to adopt any new technology in the bank; because, the implementation of the technology will ease their work and bring additional knowledge to them.

CONSTRUCTION AND BUSINESS BANK S.C.

The president of the Construction and Business Bank S.C., regarding their intention to adopt mobile banking technology, answered that they have intention and plan to adopt mobile banking technology even though the priority the bank is opening other branches to areas where it didn't yet address. Describing that the bank is networking its branches through the CORE banking system, the manager said that the bank is waiting for the enactment of regulation by national bank of Ethiopia on this new technology. The president also described his confidence regarding the demand of such time and cost saving technology, and supposed that in this era of Information Technology, customers will undoubtedly be ready to use the technology. The president added his intellectual comment saying mobile banking technology is useful for all stakeholders in that it simplifies the way banking service is delivered.

COOPERATIVE BANK OF OROMIA S.C.

Cooperative Bank of Oromia, through its president, expressed that it has already adopted CORE banking system but not mobile banking technology yet. The president said that although the bank didn't plan to adopt mobile banking technology ever before, it believes that mobile banking technology will result in good advantage for the bank itself as well as for the customers. He said that customers' illiteracy might be one problem of adopting mobile banking technology. Regarding the bank's customers' readiness to adopt mobile banking technology, the president said we expect that our customers are ready to adopt mobile banking technology. This is proved through the CORE banking system, that customers have easily adopted it, we introduced before. However, there might be problem of adoption in rural Ethiopia, which will be time taking for the technology to be adopted. He also confidentially described that employees are ready to adopt any technology as long as it benefit our bank. The president generalized his idea by his comprehensive comment regarding benefits of mobile banking technology. He said the technology can be advantageous in terms of economy, time, safety and provision of faster service.

BUNA INTERNATIONAL BANK S.C.

Buna international bank has implemented CORE-banking system and it has planned to adopt mobile banking technology. The president of the bank said that this will be true if and only if the national bank of Ethiopia enacted the law that regulates this new technology. The president has explained that he had gone to India for experience sharing on how to adopt mobile banking technology; and hence the bank is only waiting for the enactment of the law by national bank of Ethiopia and as a result it is ready to implement the technology as soon as it enacted a the law. According to his personal view, customers' illiteracy is not the primary problem hindering commercial banks to adopt mobile banking technology. Although it is difficult to know the demand of the technology by customers now, you can predict what it will be from the benefit that the technology can provide. The technology is very time saving and cost saving technology that can benefit customers as well as banks. And for this fact there will be high demand of the technology and enough potential customers to use the technology.

WEGAGEN BANK S.C.

The president of Wegagen bank described that, Wegagen bank is waiting for the enactment of law by national bank of Ethiopia. He added that national bank of Ethiopia has discussed with the commercial banks of Ethiopia including Wegagen bank regarding the indispensability of mobile banking technology. But it has not yet enacted a regulation. Hence we are waiting for it". Even though national bank of Ethiopia enacted the law, the bank expressed its threat concerning the network problem in Ethiopia. Regarding his opinion regarding 'how customers might respond to the technology', the president said that since customers are

new for the technology, they might not have good attitude in the beginning. But it is not as such heavy issue for the fact that they will acquaint themselves with self service technology saving their time and money. The president added that the bank's employees are fast and willing to adopt new technologies; because, the technology will ease their working load by changing the service style.

ANBESSA INTERNATIONAL BANK S.C.

An Anbessa international bank also has similar response with other banks' responses. The president of Anbessa International Bank S.C. said that "though our bank has not introduced CORE-banking system in this time, it has planned to adopt in the near future". For the question asked regarding future plan of the bank in mobile banking technology adoption, the president answered that the bank has planned to adopt mobile banking technology, however, he said, the plan is not yet implemented because national bank of Ethiopia has not enacted the law so far. Although different discussions have been conducted with a number of presidents of different banks, national bank of Ethiopia has not enacted the law; hence we are with our plan waiting for the enactment of the law for the implementation.

The president added that the bank has planned to create awareness to its customers before the commencement of the new technology. So customers will not face any problem in adopting the technology; and customers' freshness to the technology will not a primary concern to block the bank from implementing the technology. Hence we expect that our customers will easily accustom to the technology for the fact that the technology will help them to get safety and convenience via the service. From the benefit that the technology can provide and its simplicity, we can assume that there will be high expected demand of the technology.

ADDIS INTERNATIONAL BANK S.C.

We have also interviewed the president of Addis International Bank S.C. As to the response of the president, Addis International Bank S.C. has networked its branches via the modern CORE banking system. Mobile banking technology is in plan to be adopted but waiting for the enactment of law by the National Bank of Ethiopia. He also said that since mobile banking technology is easy to learn, there will not be rejection of the technology by our customers. We even expect high demand of the mobile banking technology for the technology eases the way that customers can get banking service. The technology will enable our customer to get the service while they are actually at their work place or at home. This will shoot the demand more than we expect. On the other hand the bank has described that the telecommunication network is a critical issue once after the mobile technology is adopted for the fact that the technology is fully dependent on telecommunication network.

3.5. SUMMARY OF INTERVIEW ANALYSIS

The main reason that presidents are interviewed is to get detail information regarding why they didn't adopt the technology yet. Most presidents have one thing in common in that they replied that they are too late to adopt the technology not because of organizational factors but because of the lateness of national bank of Ethiopia to enact rule and regulation regarding mobile banking technology adoption. They blamed National Bank of Ethiopia for lagging to enact law and make them lag to adopt the technology. Some managers have indicated that telecommunication problem might be a threat that could challenge sustainability of the technology after it is adopted. Regarding their expectation to their customers' acceptance of the technology, they have respond that their customers (and of course, their employees) are ready to join new technologies for the fact that such technologies provide them with special benefit. Many of interviewed banks explained that they have assured the technology responsiveness of their customer while implementing CORE banking system. They added that they will create awareness to their customers about the technology so that the customers can easily and quickly join it.

4. CONCLUSION AND RECOMMEDATION

4.1. CONCLUSIONS

The study is conducted based on the main objective of determining factors affecting mobile banking technology. More over the research planned to identify the technological and non-technological factors affecting mobile banking technology adoption. The research used IT managers and presidents of banks as target population. Hence, questionnaire was provided to the target respondents to determine the banks intention as well as factors affecting the technology adoption. Interview was also carried out to get detailed information from presidents. From the analysis we draw the following conclusions.

- All banks have intention to adopt mobile banking technology.
- Relative advantage, compatibility, simplicity, observability and trialability are found to be technological factors affecting mobile banking technology adoption. We can say that most of the banks' IT managers and presidents agreed in that mobile banking technology has relative advantage. They also perceived it to be simple to operate and compatible with the culture, local language as well as the beliefs and values of the community. They also agreed in that mobile banking technology can be used in trial basis so that if it is found uncomfortable in any way, can be ignored without incurring significant cost. In addition they also perceived that mobile banking technology is observable that contributes to the quick diffusion of the technology from one adopter to the potential one.
- Political issue, economical capability, societal issue, and organizational readiness to adopt the technology are found to be non-technological factors that affect mobile banking technology.
- Political issue and societal issue get less attention by respondents compared to the other non-technological and technological factors. As we explored from the interview, presidents seriously blame National bank of Ethiopia for its lateness in enacting a law that formally permit them to use mobile banking technology. Moreover, there are banks who express telecommunication infrastructure as threat in the technology adoption. This might be the case where response of respondents in political issue is perceived to have less contribution to the technology adoption.
- Regarding the social issue, the banks explained that customers are technology responsive and they will develop different mechanisms that help to address their ultimate customers to create awareness.
- The correlation between intention and other technological and non-technological factors is all positive. However the correlation of intention and social issue as well as intention and political issue are week compared to the other variables.

4.2. RECOMMENDATIONS

The research team prefer to recommend on issues that can facilitate implementation of mobile banking technology for the fact that its implementation is very essential in the development of a country by saving time and cost of customers, banks themselves as well as employees.

- According to findings, we found that the main problem that commercial banks didn't implement mobile banking technology is the lateness of enactment of law by National Bank of Ethiopia. Hence, we strongly recommend the national bank of Ethiopia to enact a law that allow commercial banks to adopt mobile banking technology.
- Commercial banks have intention to adopt mobile banking technology and they know that it is useful for themselves, for their customers as well as employees. Hence, the banks should not only wait enactment of law by the central bank; they should also facilitate and push the central bank to fasten the enactment.
- To ease adoption of the technology by customers, the banks should promote the technology before implementation until the central bank enacts the law. This will reduce the confusion which would be created by customers as banks adopt the technology.

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