

# Factors Affecting Technology Adoption in The Mobile Banking Sector in Kenya

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## Abstract

Banking has grown to be a technology-savvy industry with the development of mobile technologies. With this development, the number of smartphone users globally is steadily increasing and the number is estimated to grow to over 3 billion by 2022. Many people have gradually adopted mobile technology, and smartphones are the most common category of mobile devices in both emerging economies and developed countries. The objective of the present study is to examine the effects of UTAUT model factors in predicting the intention of bank customers to adopt mobile banking services in Kenya. The study adopted a mixed-method approach which involved both quantitative and qualitative research designs. The sample of the study consisted of 240 respondents drawn from three leading commercial banks in Kenya. The questionnaire method was used to collect data which was analyzed using Partial Least Squares-Structural Equation Modeling analysis techniques. The findings of the study indicated that Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Culture had a significant and positive effect on the adoption of mobile banking services. The study contributed to examining the adoption intention behavior of mobile banking apps among bank customers in Kenya since the context of mobile apps is relatively new to these customers. The main theoretical implication of the study was the application of the UTAUT in explaining the adoption of digital mobile banking services and applications in the banking sector in a developing country like Kenya.

**Keywords:** UTAUT Model, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Culture, Mobile Banking Services, Kenya

## Introduction

The technology holds great promise of future simplification and automation. Self-service technology continues to grow across a wide variety of retail markets. Many businesses use self-service technologies as a delivery channel to improve sales and enhance the overall customer experience (Demirkan & Spohrer, 2014: 862). With self-service technology, customers do not have to wait for employees to assist them. Nowadays, electronic technology is playing a major role in the world of business, especially in banking activities.

The technology holds great promise of future simplification and automation. Self-service technology continues to grow across a wide variety of retail markets. Poushter (2016: 28), in research on the use of smartphones across emerging economies, found that smartphone

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ownership varied with gender, education, and age. About 53 percent of adults in the selected emerging economies reported using smartphones, with a high percentage of users in Lebanon and the lowest in India.

The advantages of consumers using mobile banking apps are very clear, and they include ease of access, convenience, and security for the customers. Apart from benefiting consumers, mobile banking apps are also beneficial to banks as they lower the expenses by allowing the banks to go paperless, eliminating the need for labor, offering cheaper transactions, and saving on operational costs. According to Safeena, Hundewale, and Kamani (2011: 228), mobile banking uses mobile devices or a personal digital assistant (PDA) to access banking facilities and services provided by monetary institutions. The banking services include operating an account, transactions, payments, credit applications, and other merchandise (Merritt, 2011: 154). It is a strategy adopted by many banks to attain a competitive advantage. Mobile banking technology is a form of electronic banking that utilizes Wireless Application Protocol (WAP) services and Short Message System (SMS) to expedite online transactions performed by their clients (Schwiderski-Grosche, & Knaspe, 2002: 231). Significant reasons that made financial institutions adopt mobile banking services include minimizing transactional costs, attractive customer value, profits from service fees, supporting prospective customers, and increasing the channels of service (Lu et al., 2011: 397)

This study aims to demonstrate the factors affecting technology adoption in the mobile banking sector in Kenya. The Communications Authority of Kenya indicates that there is an exponential growth of the ICT sector in Kenya, with the mobile penetration rate growing to 80.5 percent. Mobile subscriptions have also augmented from 32.2 million to 33.8 million. Yet the adoption rate of mobile banking services is gradual.

Ondiege (2010) asserts that customers face high transaction charges from banks and this is because of the high cost of obtaining expertise to build mobile banking systems. Kamotho (2009) pinpoints that that mobile banking in Kenya started as a platform to access services regarding their accounts, but it evolved to be a channel for financial services outside the premises of banks. A research study by Kimando (2014) asserted that most Kenyans knew about electronic banking services and they could use the services. Most account holders are willing to adopt the services, and the preferable service is paying utility bills.

Millennials are gaining more prominence in digital prowess of a developing breed of nonbanks. Mobile networks including M-Pesa by Safaricom, Airtel money by Airtel, and My Telkom by Telkom also provide financial services with M-Pesa being the leading market brand with 14 million consumers. The market size has about 15 million consumers who transact more than two million Kenya shillings daily. These mobile networks have joined commercial banks, including KCB, Cooperative Bank, Equity Bank, Barclay's Bank, I&M Bank, Standard Chartered Bank, and National Bank of Kenya, to provide financial products to both the banked and unbanked population. The partnership has led to the emergence of new financial products, including Mobi bank by Safaricom and KCB, M-shwari by Safaricom and commercial bank of Africa, Coop-cash by the cooperative bank, Pesa pap of Telkom and Family bank and M-kesho by Safaricom and Equity.

## Research Objectives

The following research objectives guided the study:

- 1) To examine the effects of performance expectancy on the intention of consumers to use mobile banking services in Kenya.
- 2) To examine the effects of effort expectancy on the intention of consumers to use mobile banking services in Kenya.
- 3) To investigate the effects of social influence on the intention of consumers to use mobile banking services in Kenya.
- 4) To examine the effects of facilitating conditions (risk, bank support, and accessibility) on the intention of consumers to use mobile banking services in Kenya.
- 5) To investigate the effects of culture on the intention of consumers to use mobile banking services in Kenya.

## Literature Review and Hypothesis Development

### 1. Performance Expectancy

Based on Venkatesh et al. (2003: 435), Performance Expectancy refers to the extent to which employees believe that Electronic Document Management System (EDMS) use improves productivity, speeds up work, is useful in performing their tasks, and enhances their decision capacity. In research with the UTAUT model, this construct presents a stronger influence on the Intention of use than the other UTAUT constructs (Dwivedi et al., 2011: 124). In mobile banking studies, Bankole, Bankole, and Brown (2011: 14) empirically demonstrated that the greater the perceived relative advantage, the more likely mobile banking would be adopted. Similarly, Luarn and Lin (2005: 882), Riquelme and Rios (2010: 583), Dasgupta et al. (2011: 244) identified perceived usefulness as a crucial factor, while Yang (2009: 143), and Puschel, Mazzon, and Hernandez (2010: 409) concluded that relative advantages significantly influence individuals intention to adopt mobile banking. Although focusing on adopting mobile technology instead of mobile banking, Yu (2012: 108) concluded that performance expectancy significantly influenced people to adopt mobile technologies. Similarly, through using mobile data services instead of mobile banking services, Zhou, Lu, and Wang (2010: 764) employed UTAUT as a research basis to survey 1320 respondents and illustrated that performance expectancy significantly influenced people to use mobile services. Farah et al. (2018: 462) found that performance expectancy is a factor that influences m-banking adoption in Pakistan. Raza, Shah, and Ali (2019: 357) also confirmed the hypothesis in Pakistan. Gupta and Arora (2017: 747) found that performance expectancy is a significant antecedent of the behavior intention of m-payment use in India.

The previous studies are the basis of the first hypothesis:

H1: Performance expectancy significantly affects individual intention to use mobile banking.

### 2. Effort expectancy

Effort Expectancy is related to the extent to which employees believe that EDMS use is easy and effortless. The positive effect of this construct on the intention of use is verified in a significant body of UTAUT research (Dwivedi et al., 2011: 126). Prior empirical studies of mobile banking adoption (Luarn & Lin, 2005: 878; Puschel, Mazzon, & Hernandez, 2010: 389; Sripalawat, Thongmak, & Ngramyarn, 2011: 71) supported perceived ease-of-use as a determinant impacting people to use mobile banking. Grounded in UTAUT, Park, Lee, and Han (2007) and Lu et al. (2009) employed three constructs of performance expectancy, effort

expectancy, and social influence to explore what influences individual intention to accept mobile technology and data service, respectively. Both studies supported that effort expectancy significantly influenced human intention to use mobile technology or service. Kwateng, Atiemo, and Aanppiah (2018) found that effort expectancy did not impact on behavior intention of using m-banking services among young people in Ghana. Farah, Hasni, and Abbas (2018: 1396) and Raza, Shah, and Ali (2019: 357) proved that effort expectancy influenced m-banking adoption in Pakistan. Gupta and Arora (2017: 747) found that effort expectancy is a significant predictor of the behavior intention of m-payment in India.

As a result, rooted in UTAUT, this study hypothesizes:

H2: Effort expectancy significantly affects individual intention to use mobile banking.

### **3. Social Influence**

As defined by Venkatesh et al. (2003: 453), social influence can be considered as the extent to which employees give importance to the opinion of others about their EDMS use. This effect of socially-influential factors is recognized in many UTAUT works (Dwivedi et al., 2011: 123). In these cases, the role of the social influence in the formation of the intention to use new technologies is observed. Venkatesh et al., (2003: 475) defined social influence as the degree to which an individual perceives that important others believe they should use the technology. In a survey of 158 customers from a major bank in Malaysia, Amin et al. (2008: 43) empirically found that individual intention to use mobile banking was significantly affected by the people surrounding them. Singh, Srivastava, and Srivastava (2010: 55) discovered that friends and family members influenced individual decisions to adopt mobile commerce services. Empirical evidence from Puschel et al. (2010: 389), Riquelme and Rios (2010: 587), and Sripalawat, Thongmak, and Ngramyarn (2011:72) indicated that subject norm was a salient influence, while Laukkanen et al. (2016: 2436) and Dasgupta et al. (2011: 6) observed that perceived image was a significant factor for people willing to adopt mobile banking. The above might explain why Singh, Srivastava, and Srivastava (2010: 55) argued that mobile commerce users are not just technology users but also part of the social network. Yaseen and El Qirem (2018: 34) found that social influence significantly influenced the intention to adopt mobile banking. On the other hand, Kwateng, Agyei, and Amanor (2019: 346) found that social influence did not influence the intention to use m-banking among Young people in Ghana.

Raza, Shah, and Ali (2019: 376) found that social influence is not a significant factor of m-banking adoption in Pakistan. Gupta and Arora (2017: 747) found that social influences have a weak or insignificant relationship with the behavioral intention of m-payment use in India. On the other hand, Farah et al. (2018: 1411) found that social influence significantly influenced m-banking adoption in Pakistan. According to Yaseen and El Qirem (2015: 34), if the closest people or influential people indicate that m-banking is helpful, then the customer will tend to follow the technology. Moghavvemi , Salleh, and Standing (2016: 1204) also found that social influence significantly generates intention of the customer to use IT innovation.

Accordingly, the following hypothesis is posited:

H3: Social influence significantly affects individual intention to use mobile banking

### **4. Facilitating Conditions and Individual Intention to Use Mobile Banking**

Facilitating Conditions are the extent to which employees believe that there is technical and organizational support for EDMS use. Some studies have analyzed this variable and found its effect on intention of use to be significant (Dwivedi et al., 2011: 123). The reflection of the effects of user knowledge and skills, access to resources, and existing support on using a technology and information system is consistent with the works of Venkatesh,

Thong, and Xu (2010: 473). Many studies have verified the UTAUT's significant effect of facilitating conditions on use (Dwivedi et al., 2011: 122). Although Kwateng, Agyei, and Amanor (2019: 318) did not find a significant relationship between facilitating conditions and behavior intention of m-banking use among young people in Ghana, Raza, Shah, and Ali (2019: 376) found that facilitating conditions is a significant predictor of m-banking in Pakistan. Farah, Hasni, and Abbas (2018: 1387) found that people are interested in using particular technology because of facilitating conditions. Venkatesh et al. (2003: 436) explained that facilitating conditions included free training, free supports, and guidance provided free by companies to users of the technology or system. Thus facilitating conditions will influence people to use technology systems or applications (intention to use) to promote their activities. Gupta and Arora (2017: 747) found that facilitating conditions significantly predict the behavior intention to use m-payment in India. Sobti (2019: 64) examined UTAUT factors that predict behavior intention to use m-wallets and m-banking among users in India. The study found that facilitating conditions influence mobile payment acceptance in India.

This study, therefore, presents the following hypotheses:

H4: Facilitating conditions will impact the behavior intention of m-banking use.

## **5. Culture**

Consumer behavior is always changing, and many banks ought to meet the needs and want of consumers to drive business growth. Cultural factors such as lifestyle, customs, values, attitudes, politics, and education can affect the adoption of technological services. In 2012, Al-jabir and Sohail researched about the adoption of mobile banking by considering the diffusion of innovation theory. The findings of the research were that banks in Saudi Arabia need to offer m-banking products that are compatible with the requirements of various users, including their beliefs, lifestyle, past experiences so that they can fulfill the expectations of customers. If the banking offers quality support and provides a wide range of services, the clients would perceive m-banking services as useful and adopt them. Therefore, banks need to focus on the behavior of consumers so that they can design a reliable system to meet their needs. These research and several others show that culture is a factor that affects technology adoption in the mobile banking sector and therefore, this variable will be explored to challenge the UTAUT model. Laukkanen (2016: 2435) suggests from the evidence of the literature and empirical studies that a country's national culture is the important factor limiting ICT adoption. The reasons for the variations in the perception and adoption of information technology could be explained by the differences found in the national culture. Many studies have found that culture has a strong contextual influence on whether and how individuals, organizations, and societies employ ICT (Moghavvemi, Salleh, & Standing, 2016: 1203). Therefore culture is suggested as an important factor in explaining ICT usage behavior.

Differences in national cultures have been found to explain some variation in perceptions and adoption of information technologies (Mahfuz, Khanam, & Hu, 2016: 830; Sobti, 2019: 64). Raza, Shah, and Ali (2019: 376) empirically proved that culture is significantly correlated with information system success. Moghavvemi, Salleh, and Standing (2016: 1205) found that culture was not a significant predictor of the behavior intention to use e-learning in Sri Lanka. Yaseen and El Qirem (2018: 36) in a study on Cultural Impacts on Acceptance and Adoption of Information Technology in a Developing Country, found culture had a weak or insignificant relationship with the behavioral intention of adopting technology in Saudi Arabia.

This study, therefore, presents the following hypotheses:

H4. Culture affects the intention of consumers to use mobile banking services in Kenya.

## Methodology

The study adopted a mixed method approach which involved both quantitative and qualitative research designs. The sample of the study consisted of 240 respondents drawn from three leading commercial banks in Kenya. The questionnaire method was used to collect data which was analyzed using Partial Least Squares-Structural Equation Modeling analysis techniques. Qualitative research involves acquiring in-depth responses through interviews to various executives of the three banks under study to confirm the responses of the customers and to provide a deeper comprehension of the phenomenon under study. Qualitative data was sought to confirm whether the bank executives under study agreed with the findings of the study and also to know how banks can use the findings of the study to develop marketing strategies.

### 1. Study Population

The study will concentrate on Kenyan bank consumers. In particular, purposive sampling will be used to select three leading commercial banks including Equity Bank, KCB and Cooperative bank. The study will have a target population of about 120,000 bank customers in Kenya who have active bank accounts in KCB, Cooperative and Equity banks. For Sampling, Israel's (1992) formula will be employed to reach a sample size of customers from the target population of 120,000 bank customers. The formula is as below:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = the preferred size sample

N = size of population

e = precision level (0.05)

Hence:

$$\begin{aligned} n &= \frac{120,000}{1 + 116,800 (0.05)^2} \\ &= 398.67 \\ &= 399 \text{ Bank customers} \end{aligned}$$

## Findings/Results

The parameter estimation procedure of the Partial Least Square (PLS) generates no distributional assumptions. According to the previous study, significance testing and model evaluation by traditional parameter-based techniques are considered to be incongruous (Chin 1998: 298). However, the smart PLS provides the R<sup>2</sup>, which indicates the percentage of a construct's variance in the model for each endogenous construct and signified the strengths of relationships between constructs as the path coefficients. Moreover, facilitate to production of standard errors and t-statistics and can measure the statistical significance of the path coefficients by applying to bootstrap. Below Table 1 shows the R<sup>2</sup> values of the framework, which explain the variance of every construct by the independent variable. As a result of the structural model which explained R<sup>2</sup> value of Performance Expectancy was 0.053, showing that Performance Expectancy explains 5.3% variance of adoption of mobile banking services. Similarly, R<sup>2</sup> value of Effort Expectancy was 0.087, indicating that Effort Expectancy explains only 8.7% variance of the behavior of adopting mobile banking. While R<sup>2</sup> value of Social Influence was 0.044, indicating that Social Influence explains only 4.4%, variance of the adoption of mobile banking services. R<sup>2</sup> value of Facilitating Conditions was 0.303, indicating that Facilitating Conditions explains only 30.3%, variance of the adoption of mobile banking

services. R<sup>2</sup> value of Culture was 0.662, indicating that Facilitating Conditions explains only 66.2%, variance of the adoption of mobile banking services. Finally, the overall model contributed 92.4% of the adoption of mobile banking services with an R<sup>2</sup> value of 0.924.

However, to test hypotheses, this study applied the bootstrapping method with a significance level of 0.05 (p<0.05). Besides that, the impact between independent and dependent variables was measured by path coefficients. Table 1 shows that the first hypothesis is significant because the T-value is 4.624> 1.96 and P-value is 0.018. < 0.05, the second hypothesis is positive and significant because the T -value is 11.380 > 1.96 and P-value is 0.044< 0.05. Likewise, the third hypothesis is significant because the T -value is 2.631> 1.96 and P-value is 0.008 < 0.05. The fourth hypothesis is positive and significant because the T-value is 4.212> 1.96 and P-value is 0.020< 0.05. The fifth hypothesis is significant because the T -value is 11.562>1.96 and P-value is 0.004 < 0.05. All results are summarized in Table 1.

**Table 1** Summary of Structural Model Results

Hypothesis Path		Std. Error	Beta	t value	P-value (2 sided)	Result
H1 PE	BI	0.06	0.425***	4.624	0.018	Accepted
H2 EF	BI	0.07	0.212**	11.380	0.044	Accepted
H3 SE	BI	0.05	0.151*	2.631	0.008	Accepted
H4 FC	BI	0.05	0.131*	4.212	0.020	Accepted
H5 C	BI	0.05	0.171**	11.562	0.004	Accepted

**Source:** Author's Calculation

p < 0.05,0.01,0.001

\*P≤ 0.05

\*\*P≤ 0.01

\*\*\*P≤ 0.001

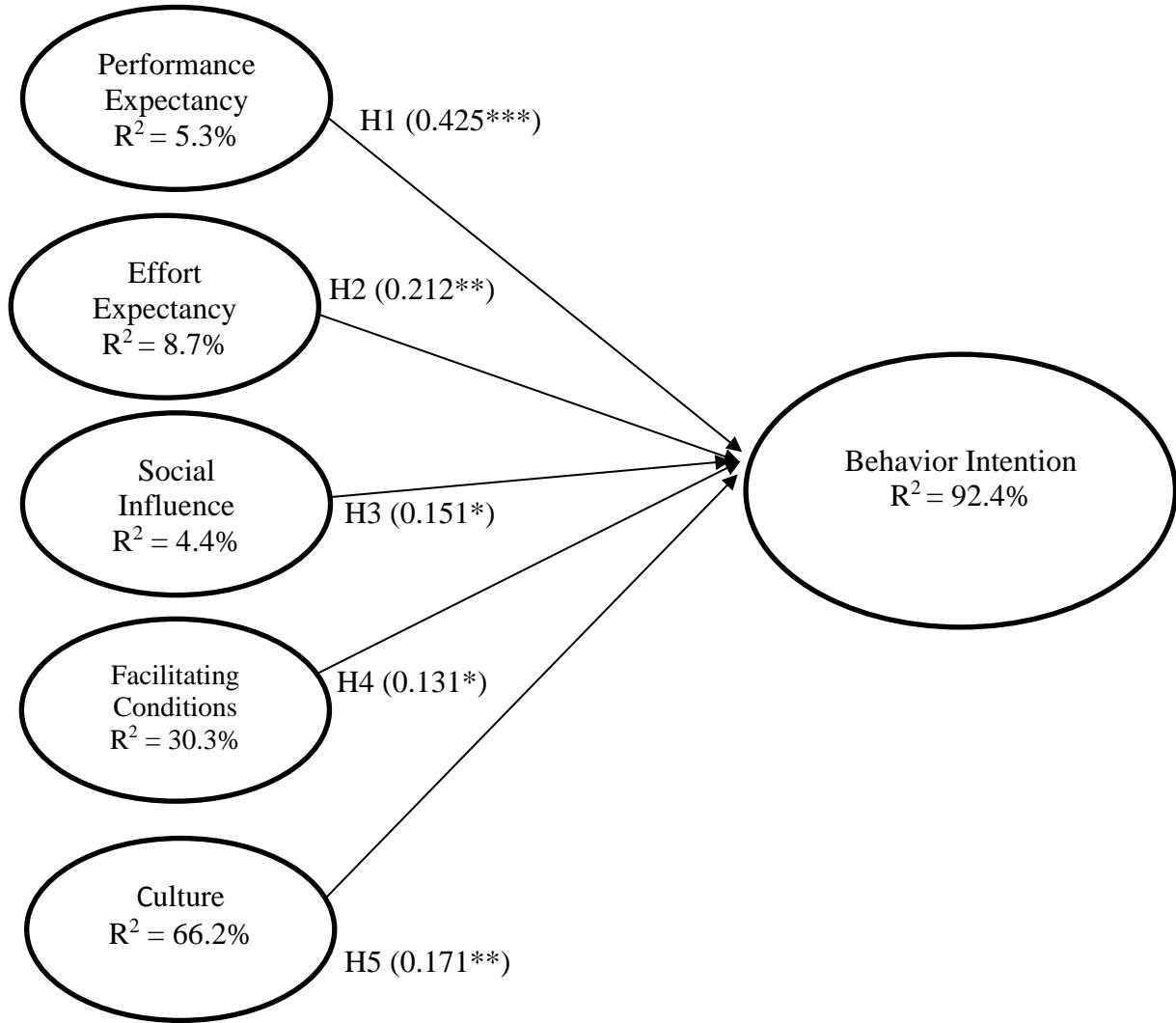
In the present context, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions and Culture has shown a significant and positive effect on adoption of mobile banking services ( $\beta = 0.425$ ,  $t = 4.624$ ;  $\beta = 0.212$ ,  $t = 11.380$ ,  $\beta = 0.151$ ,  $t = 2.631$ ,  $\beta = 0.131$ ,  $t = 4.212$  and  $\beta = 0.171$ ,  $t = 11.562$ ) at 0.001, 0.01, 0.05, 0.05 and 0.01 significance level respectively. Therefore, hypotheses H1, H2, H3, H4, and H5 are supported. The standardized path coefficient value between Performance Expectancy and adoption of mobile banking services was 0.425 (P = 0.018), indicating that Performance Expectancy has a significant direct impact on the adoption of mobile banking services at 0.001 confidence level. Similarly, the standardized path coefficient value between Effort Expectancy and adoption of mobile banking services was 0.212 (P = 0.044), showing that Effort Expectancy significantly affects adoption of mobile banking services at a 0.01 confidence level. Social Influence and adoption of mobile banking services was 0.151 (P = 0.008), showing that Social Influence significantly affects the adoption of mobile banking services at a 0.05 confidence level. Facilitating Conditions and adoption of mobile banking services was 0.131 (P = 0.020), showing that Facilitating Conditions significantly affect adoption of mobile banking services at a 0.05 confidence level. Culture and adoption of mobile banking services was 0.171 (P = 0.004), showing that Culture significantly affects the adoption of mobile banking services at a 0.01 confidence level. Thus, H1, H2, H3, H4, and H5 were supported.

As a result, the proposed conceptual framework was validated by the evaluation of measurement models and assessment of the structural relations. All the above five hypotheses

realized fully experimental support for direct relationships among Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Culture, and behavioral intention Figure 1.

### 1. Results of the Hypothesized Paths

Figure 1 illustrates the PLS structural model in which five hypotheses were tested, namely Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Culture, and behavioral intention. The result for hypothesized paths is shown below.



**Figure 1** Results of Hypotheses Path for Structural Model

**Source:** Author's Calculation

\* Significance at the  $p < 0.10$  (\*  $p < 0.05$ ; \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ ) Level of Confidence (two-tailed)

## Discussion

This study attempted to explore the factors affecting technology adoption in mobile banking in Kenya.

The first hypothesis was significant and therefore accepted. The results show that performance expectancy significantly influenced people to adopt mobile banking services in Kenya. The results have further demonstrated that the greater the perceived relative advantage, the more likely mobile banking services would be adopted in Kenya. The findings concur with the results of Luarn and Lin (2005: 878), Riquelme and Rios (2010: 587), Sripalawat, Thongmak, and Ngramyarn (2011: 72), and Dasgupta, Paul, and Fuloria (2011: 6) who identified perceived usefulness as a crucial factor, while Yang (2009: 140) concluded that relative advantages significantly influenced individual's intention to adopt mobile banking. Although focusing on the adoption of mobile technology instead of mobile banking, Püschel, Mazzon, and Hernandez (2010: 218) concluded that performance expectancy significantly influenced people to adopt mobile technologies. Similarly, through using mobile data services instead of mobile banking services, Zhou, Lu, and Wang (2010: 764) employed UTAUT as a research basis to survey 1320 respondents and illustrated that performance expectancy significantly influenced people to use mobile services. Farah, Hasni, and Abbas (2018: 561) found that performance expectancy is a factor that influences m-banking adoption in Pakistan.

The second hypothesis was significant and therefore accepted. The results show that effort expectancy was significantly related to adoption of mobile banking services in Kenya. The results concur with the findings of Püschel, Mazzon, and Hernandez (2010: 220) and Zhou, Lu, and Wang (2010: 765) who supported that effort expectancy significantly influenced human intention to use mobile technology or service. The results findings are contrary to the results of Kwateng, Agyei, and Amanor (2019: 218), who found that effort expectancy did not impact the behavior intention of using m-banking among young people in Ghana. The results further concur with the results of Farah, Hasni, and Abbas (2018: 564) and Raza, Shah, and Ali (2019: 376), who found that effort expectancy is a factor of m-banking adoption in Pakistan. Similarly, Gupta and Arora (2017: 747) found that effort expectancy is a significant predictor of the behavior intention of m-payment in India.

The third hypothesis was significant and therefore accepted. The results show that social influence was significantly related to the adoption of mobile banking services in Kenya. This means that individual intention to use mobile banking was significantly affected by people surrounding them. Friends and family members influenced the individual decisions to adopt mobile banking services. The results concur with the findings of Püschel, Mazzon, and Hernandez (2010: 220), Riquelme and Rios (2010: 586), and Sripalawat, Thongmak, and Ngramyarn (2011: 73), who indicated social influence was a strong influence on the adoption of mobile banking services. The findings are contrary to the findings of Kwateng, Agyei, and Amanor (2019), who found that social influence was not a factor of intention to use m-banking among young people in Ghana. Raza, Shah, and Ali (2019: 376) also did not find a significant relationship between social influence and adoption of m-banking in Pakistan.

The fourth hypothesis was significant and therefore accepted. The results show facilitating conditions will influence people to use technology systems or applications. People are interested in using particular technology because of facilitating conditions. Venkatesh et al. (2003: 426) indicated that facilitating conditions include free training, free supports, and guidance provided free by companies to users of the technology or system (intention to use) to promote their activities. The findings of this study are contrary to the results of Kwateng, Agyei, and Amanor (2019), who found that facilitating conditions did not influence the behavioral intention of m-banking use among young people in Ghana. The results of this study concurs with the findings of Raza, Shah, and Ali (2019: 376), who found that facilitating

conditions are a significant factor of m-banking in Pakistan. Farah, Hasni, and Abbas (2018: 566) and Gupta and Arora (2017: 733) also found that facilitating conditions significantly predict the behavior intention to use m-payment in India.

The fifth hypothesis was significant and therefore accepted. The results indicate that cultural factors influence the adoption of mobile banking services. The results indicate that cultural factors such as lifestyle, customs, values, attitudes, politics, and education affect the adoption of mobile banking services in Kenya. The study results concur with the findings of Singh, Srivastava, and Srivastava (2010: 55), who found that banks in Saudi Arabia needed to offer m-banking products that are compatible with the requirements of various users, including their beliefs, lifestyle, and past experiences that it can fulfill the expectations of customers. The results of this study further concur with the findings of (Sripalawat, Thongmak, & Ngramyarn, 2011: 55; Tan et al., 2010: 190), who found that differences in national cultures have been found to explain some variation in perceptions and adoption of information. Hussein and Ratnawati (2020: 78) results also proved that culture is significantly correlated with information system success. On the other hand, the results of this study is contrary to the findings of Thowfeek and Jaafar (2013: 3426), who found that culture was not a significant predictor of behavior intention to adopt e-learning in Sri Lanka. Similarly, Baker, Al-Gahtani, and Hubona (2010: 46), in a study on Cultural Impacts on Acceptance and Adoption of Information Technology in a Developing Country found culture had a weak or insignificant predictor of the behavioral intention of adopting technology in Saudi Arabia.

## **1. Theoretical Contributions**

This study contributes to examining the adoption intention behavior of mobile banking apps among bank customers in Kenya since the context of mobile apps is relatively new to these customers. The main theoretical implication is the application of the UTAUT in explaining the adoption of digital mobile banking services and applications in the banking sector in a developing country like Kenya. This study is significant because it integrates the UTAUT with an additional antecedent of culture in a single research model in order to predict and explain the behavioral intention of using mobile banking adoption. This research indicates that the direct relationships (PE, EE, SI, FC, and C) respectively, related to the adoption of mobile banking are all positively and significantly associated. Similarly, the results confirm that PE, EE, SI, FC, and C are the antecedents to the behavioural intention of bank customers to adopt mobile banking apps. As such, the significant relationships enhance the study of the behavioral intention of bank customers in the banking sector in Kenya, which contribute to the UTAUT theory in a different context. The findings of this study are aligned with the results of previous studies (Sripalawat, Thongmak, & Ngramyarn, 2011: 68; Baker, Al-Gahtani, & Hubona , 2010: 42; Tan et al., 2010: 170), which found that performance expectancy, effort expectancy, social influence, facilitating conditions, and culture had a significant positive relationship with adoption of mobile banking services. The reasoning to include culture in this study was to explore whether this variable would affect bank customers' adoption since digital technology is relatively new in developing countries like Kenya. The result shows a positive relationship between culture and behavioral intention exists, which presents the uniqueness of this study in a developing county.

## **2. Managerial Implications**

This study found that Performance Expectancy significantly influenced people to adopt mobile banking services in Kenya regarding Performance Expectancy. When the users find the system to be useful, they are more likely to have a better perception of using the technology. Therefore, practitioners should improve the quality of their mobile banking system based on users' suggestions in order to attract more users and meet their expectations and needs. In order to achieve this, policymakers should provide a user manual that includes detailed

instruction about the benefits of the system, such as services that allow users to perform banking transactions anytime from anywhere in the world. Banks may also fasten their process time of financial services provided in the current mobile banking system to enhance Mobile Banking Apps. Banks might also enrich the financial services provided through mobile banking such as credit card applications, loan applications, and so on to encourage more adoption of mobile banking rather than going to the physical bank to perform those financial services.

The findings demonstrate that the technology characteristics of mobile banking influence the effort expectancy of users. Therefore, the technological aspects of mobile banking services may be further improved, such as service security. Currently, if users need to make a transfer via a mobile banking service, then the transfer can be done with SMS verification, and no second-time logging-in will be required. This may lead to a low sense of security among users. If a second-time logging-in or the re-entry of the password is needed with the SMS verification, the service security and reliability of the service can be greatly enhanced. In this way, the effort expectancy of users will increase. Users are not affected by referent groups but by individuals' necessity in a voluntary context, the study's results indicate that Social influence has a significant positive influence on Behaviour Intention. In this context, it is advised that practitioners should persuade earlier adopters of the system to help in promoting it to other users. This is very crucial in the Kenyan culture, which scores high on uncertainty avoidance, power distance, femininity, and collectivism. Generally speaking, in such environments, consumers may be influenced by positive word-of-mouth from their referent peers. In an attempt to attract more users, banks are also advised to enhance the use of social websites and communities such as Facebook, Twitter, Blogs, and SMS messages through mobile phones and e-mail as well as traditional media such as newspapers, television, and radio. This, in turn, will affect customers' decision to adopt and accept the technology. Banks need to invest more in ICT infrastructure and should also provide all facilities for the customers such as marketing campaigns, setting up customer service centers to increase the users' skills in using computers. By doing so, customers are more likely to derive interest in accepting mobile banking services.

Effort Expectancy has emerged in this research as a significant predictor of customers' intention to use mobile banking services. A possible reason is that difficulty in using the internet and computers is becoming less of a concern for the consumers as they become more user-friendly. As a result, the consumers will mainly use the online systems because of their perceived usefulness rather than ease of use. Therefore, it is advised that software developers should design more user-friendly mobile banking interfaces in order to encourage consumers with fewer computer skills to adopt and use the system.

Interestingly, culture has unexpectedly emerged in this research as a strong significant predictor of customers' intention to use mobile banking services. M-banking is a new phenomenon in Kenya's financial industry; thus, it is imperative to understand customer adoption behavior. Financial institutions in Kenya need to develop strategies that will sustain the interest of consumers to embrace mobile banking services.

### **3. Policy Implications**

The findings of this research provide important implications from both a practical perspective and purpose. The mobile banking apps indeed benefit the banks in Kenya, banking stakeholders such as customers, and mobile app developers. Furthermore, this study aligns with the Kenyan government's agenda in its endeavors to digitize the state's economy. So the findings are of significance to the Kenyan government, policymakers, digital finance providers, and users in developing the overall robust digital financial system and platform in the Kenya's banking sector. Additionally, the current study is relevant and timely since it focuses on digital finance in the banking sector and is identified as one of the priority sectors in the Kenyan digital economy ecosystem.

Since culture is reported to have a significant impact on behavioral intention, digital finance providers and banks should direct their attention to culture in the mobile app in order to boost the adoption rate. It is also believed that the intention to adopt tends to be higher when mobile banking apps are demonstrated to provide more features or functionality to perform daily activities that aid customers' lifestyles. For example, the user-friendliness of the apps would enable customers to find the apps easy to access and understandable. The customers who participated in this study believed that mobile app could help them accomplish their tasks quickly. The mobile banking service/apps should also be compatible with the customers' values and customs, satisfy customers' expectations, and be safe to use. Moreover, digital finance providers and bankers should consider the operation and design of mobile banking apps. Most customers in developing countries like Kenya do not have a high educational level but are willing to learn and follow the trend in an urban area where the smartphone and internet play a key part in their daily life.

Since Effort Expectancy is reported to have a significant impact on behavioral intention, the design of the mobile banking app by mobile application service providers and with input from digital finance providers should enable the mobile banking apps to be relatively easy and understandable from the customers' perspective.

Social influence (SI), as highlighted in this study, is an important antecedent, which coincides with the findings by other researchers (Soroa-Koury & Yang, 2010: 103; Chaouali, Yahia, & Souiden, 2016: 209; Putri, 2018: 167). Given that SI influence is reported to impact behavioral intention significantly, digital finance providers and banks should consider organizing training, talks, or campaigns for the community before implementing and using mobile banking apps. The banks should have advertisements in respected media channels in Kenya to promote the concept of mobile banking apps, including the advantages and risks of adopting digital technologies in the daily lives of the bank customers in Kenya.

Facilitating Conditions influences the behavioral intention of customers towards the adoption of technology, the Kenya's banks should consider speeding up the process of building the necessary infrastructure and platforms in urban areas that will enable most people in the urban areas to acquire mobile phones and register with mobile banking apps.

Accordingly, this study supports the development of appropriate infrastructure by the government that aligns with the objectives set by the government under the Kenyan government digital economy initiative to satisfy the needs of customers to adopt mobile banking apps. One of the objectives is to optimize the utilization of existing and new telecommunication and network infrastructure, in addition to increasing broadband coverage and upgrading its speed and reliability. Notably, the needs of improving the surrounding infrastructure are aligned with "Action 33" as stated in the government's digital strategy to provide affordable and high-speed internet access for the masses through carrier-independent backhaul and backbone data transmission services. The Kenyan government should also continue to monitor the progress of building communication towers in those areas where the government plans to target building 600 telecommunication towers in the county.

#### **4. Limitations and future research**

Like any other research using statistical methods, this study has some limitations that should be considered before interpreting the findings. The first limitation concerns the generalizability of the results since this study was based on a non-probabilistic sampling technique. Additionally, the users were mostly experienced in using the technology, which could cause a selection bias. Therefore, future research could include data from users with different backgrounds and experiences. Second, this research studied one type of mobile

banking technology from one country (Kenya). Future research can study different technologies or be conducted in different countries.

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