

Influence of Technology Usability on Digital Banking Adoption by Customers of Selected Commercial Banks in Nakuru Town, Kenya

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Abstract

The purpose of this research was to find out the influence of technology usability on digital banking adoption by customers of selected commercial banks in Nakuru town. It was guided by the Technological Acceptance Model and employed the descriptive research design. The target population was 192,138 bank customers from three Commercial Banks namely Barclays, Equity, and KCB located in Nakuru Town. A sample of 138 customers was determined using the Cochran formulae and selected using clustered and systematic sampling techniques. Primary data was collected using semi-structured questionnaires. Quantitative data was analysed using descriptive and logistic regression method while qualitative data was analysed using the thematic content analysis technique. Finding revealed that technology usability ($W_2= 19.399$, $sig= .044$), has a statically significant and positive influence on digital banking adoption by bank customers in the study area. Customers who found digital technology to have high usability were 3.27 times more likely to adopt digital banking technology than customers who felt that the technologies have low usability The study recommends that banks should design simple and easy to use platforms so as to increase usability. They should also educate customers on how to use the digital banking services.

Key Terms: Technology usability, digital banking, digital banking adoption, Nakuru Town, electronic banking

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Introduction

Digital banking is the offering of banking services to customers through various information and communication technologies such as automate teller machines ATMs, mobile phones, and the internet. According to Mohamud and Mungai (2019), the fast pace of development in digital banking technology has made life a lot easier and more convenient for banking customers. Digital technologies have simplified the processes of carrying out financial transactions through the use the internet and telecommunication technology. Monyoncho (2015) added that the improvement in technology has enabled banks to deliver their services to customers through channels such Automatic teller machine (ATM), mobile and internet banking. In the 21st century, it has become a necessity for banks to invest in advanced technologies to ensure they maintain their competitive advantage among the industry players (Agufa, 2016). This advancement has led to improved service quality, operation cost reduction and the future of banking is on a growth

Digital banking has many benefits to those who are using it. Some of these benefits include cheaper operating costs, improved service delivery, improved digital analytics and predictive models leading to an overall improved customer experience hence bringing the value of customer satisfaction (Khan, 2017). Digital banking has led to banks having a better insight on the ever-changing customer preferences and taste. Insights into customers' behaviour have enabled the development of more targeted, relevant and informed strategies to be executed through digital media (Kumar, Ariharan, & Immanuel, 2016). From the customers' perspective, digital banking has resulted in improved services, better product offering, round the clock

bank services through mobile and internet banking, lower charges, convenience, time saving, and access to a wider array of products and services (Kumar et al., 2016).

The banking industry in Kenya has embraced the digital banking technology as a strategy of gaining competitive advantage (Mohamud, & Mungai, 2019). The adoption of this technology has enabled banks to make improvement in service delivery as well as enhance the efficiency of their operations. This technology is being embraced by commercial banks to reduce their operational cost and improve standards services offered to customers (Njoroge, & Mugambi, 2018). The digital platforms have also provided banks with ways of improving the efficiency and effectiveness of their operations. The adoption of digital banking has enabled many banks to offer services which are more convenient and that save customers' a lot of time by avoiding long queues in the banking halls. Digital technologies have also become useful tools for enhancing financial inclusion and improving customer service (Mohamud, & Mungai, 2019).

Despite massive investment in digital application, many banking customers do not make optimal use of the digital banking platforms. The Financial Access Report 2019 revealed that 25% of Kenyans have access to mobile banking services while 8% have access to digital lending applications (KNBS, 2019). On the other hand, about 30% of Kenyans still rely on traditional bank accounts while 79% dependent on mobile money services particularly Mpesa (KNBS, 2019). These statistics indicates that banks have not been able to penetrate the digital financial space despite the high proliferation of mobile and internet technologies. The studies by Omondi (2018) and Gatari (2016) noted that

congestions and long queues are still a nagging problem in the Kenyan banking industry.

Most of the studies that have been done on digital banking have focused most on the factors and challenges that hinder adoption of digital banking by commercial banks in Kenya. Little research has been done to find out why a significant proportion of banks' customers have not embraced digital banking services. It is in this regard that the current study sought to examine the influence of technology usability on digital banking adoption by customers of commercial banks with a specific focus on selected commercial banks in Nakuru Town.

Literature Review

Digitization is all about innovation and technology advancement requiring a cultural transformation within banks and other financial institutions (OECD, 2018). Banks are intending or moving away from being product-centric towards becoming more client-centric. This is being achieved by focusing on improving the client experience along the entire client journey and full value chain. Technological advances such as big data, artificial intelligence, cognitive computing and automation allow banks to serve their clients remotely and digitally across their ecosystem and value chain regardless of their level of differentiation or dispersion (Hassani, Huang, & Silva, 2018). Core functionality available through application programming interfaces (APIs) and micro services present great opportunities for both banks and their clients. These and other digital platforms provide improved client engagement, while data analytics allow banks to better understand their clients and markets (OECD, 2018).

Digital banking adoption is a multidimensional concept that has attracted approach of measurement from different

scholars. In their study examining e-banking adoption rates in Malta and Gail (2017) assessed digital banking adoption based on the number of features that the customers accessed through digital platforms. The study observed that customers could use digital platforms to access a wide variety of functions including checking account balances, transferring funds, accessing statements of their accounts, paying bills, topping up their mobile phones, submitting loan applications, and making inquiries. Malta et al. (2017) found that viewing account balances was the service that was commonly accessed through digital platform while making loan application was the least accessed service.

Adoption of digital banking technologies by customers is a function of many variables. In the study, Kiarie (2015) found that the adoption of digital technology by banking customers in the North Rift region was influenced by perceived usefulness ($\beta=0.236$, $p=0.01$), perceived ease of use ($\beta=0.262$, $p=0.003$), and reliability ($\beta=0.211$, $p=0.011$) while compatibility of the technology ($\beta=0.121$, $p=0.114$) and self-efficacy ($\beta=0.0039$, $p=0.586$) did not have a significant effect. Njuguna, Ritho, Olweny, and Wanderi (2012) found that only 24.82% of bank customers in Nairobi were using internet banking services. Adoption of online banking technologies was influenced by compatibility, self-efficacy, perceived ease of use, perceived usefulness, and result demonstrability of the technology. The studies by Kiarie (2015) and Njuguna et al. (2012) however focused on internet banking which is just one component of digital banking.

In another study, Okari (2015) found that adoption of internet banking by bank customers in Nairobi stood at 39%. Adoption of internet banking was determined by a myriad of factors including gender where males were more likely to use internet banking than female. Other factors

that were associated with adoption of online banking services include availability of internet connection, internet speed, reliability of internet services, availability of services on online platforms, and designs of websites. The study by Okari (2015) was also limited to assessment of internet banking, which is just one component of digital banking services. The study also made use of descriptive and qualitative methods and thus limiting its ability to make inferences regarding the effect of the factors under investigation on internet banking adoption. To address this gap, the current study utilized the more robust inferential statistics to test the influence of customer awareness, customer trust, technology usability, and electronic banking reliability on adoption of digital banking services.

Technology Usability and the Digital Banking Adoption by Customers

According to Cresswell, Bates, and Sheikh (2013), technology usability refers to the extent to which users believe that using digital banking system will be easy and will not need a lot of effort. Technology usability has an important effect on users' individual preference and intentions to use and adapt to a new technology (Kumar et al., 2016). In context technology, usability has been found to affect electronic service adoption significantly, reflecting the importance of the role of the technology usability variable on adoption of electronic services.

Navigability is one of the main dimensions of technology usability. Navigability refers to the extent to which users of given application can move through the system with ease and find the information or functionality that they need (Fang, 2014). Navigability determines the capacity of a given application to serve its customers. According to Baharuddin, Singh, and Razali (2013), other important dimensions of usability include simplicity, attractiveness,

flexibility, consistency, memorability, and operability. Simplicity is degree of straightforwardness of the system, attractiveness is the allure that the system generate, flexibility is the system ability to accommodate different situations, consistency is the uniformity of the system, memorability refers to how easy it is to remember how to use the system, and operability refers to how easy it is to operate the system (Baharuddin et al., 2013).

Bryson and Atwal (2013) in a study evaluated the adoption of digital banking by bank customers in Senegal's capital, Dakar, and documented the influence of technology usability on adoption of digital technology. Results showed that customers' perception regarding how easy it is to use the digital banking technology was significantly associated with digital banking adoption ($\beta=0.67$, $p<0.001$). Results also revealed that attitude towards digital technology mediate the relationship between technology perceived usability and adoption of digital banking by customers (Bryson, & Atwal, 2013). This implies that customers who perceived that the digital technology were easy to use were more likely to adopt digital banking. The study by Bryson and Atwal (2013) however focused mainly on internet banking and ignored other digital banking option such as mobile banking and ATMs. It was also conducted in Dakar, Senegal and thus may not reflect the situation in Kenya due to technological and social differences that often characterized people of different countries.

In his study examining adoption of electronic banking in Jordan, Al-Smadi (2012) also found that perceived ease of use was one of the main factors that determined the adoption of e-banking platforms. Several factors were examined including perceived usefulness, perceived ease of use, attitude, subjective norms, perceived behavioural control, culture, and perceived risk. The study collected

data from 387 bank customers using questionnaires, which was analysed using the multiple linear regression technique. Results showed that perceived ease of use ($\beta=0.4, p<.001$) and perceived usefulness ($\beta=0.251, p<.001$) had the strongest influence of intention to use e-banking services. Findings also showed that customers perceived ease of use was influenced by the culture particularly uncertainty avoidance. The study by Al-Smadi (2012) was, however, conducted in Jordan and thus may not reflect the situation in Kenya due to social, cultural, and technological differences between the two countries.

Theoretical Framework

The Technology Acceptance Model (TAM) by Davis (1986) guided the study. It explains why users accept or reject an innovation (Davis, 1989). TAM is one of models that is widely used by researchers examine the underlying factors that contribute to the acceptance and adoption of new information systems (Lai, 2017). TAM suggests that that the acceptance of an information system is determined by two main factors: (1) perceived usefulness and (2) perceived ease of use (Davis, 1989). Perceived usefulness is degree in which an individual believes that the use of an information system can improve his or her performance. On the other hand, perceived ease of use is the degree to which an individual believes that the use of an information system could be effortless.

TAM asserts that the probability that a person can use a technological innovation is increased if the targeted individuals perceive the innovation to be useful and easy to use (Sivo, Ku, & Archarya, 2018). These two variables shape the attitude of the target users towards the technology and consequently their behavioural intentions. TAM adds

that the perception regarding ease of use and usefulness of technology is also shaped by external variables such as the targets' skills, age, trust, level of education, prior use, facilitating conditions, ICT self-concept and self-efficacy, absorption capacity, and risk propensity (Surendran, 2012).

A major advantage of TAM is that it has been widely tested and verified by different studies (Olushola, & Abiola, 2017). Numerous studies have found that TAM offers a consistent explanation of differences in the adoption of new technologies in different populations. Another point of strength for TAM is that it has only two concepts making it easy to operationalize and apply in studies (Sivo et al., 2018). A major criticism directed towards TAM is that it does not define the numerous external factors that shape people perceived usefulness and perceived ease of use (Surendram, 2012). Another criticism is that the model does not contemplate any possibility that a technology may be initially accepted and later be abandoned or vice versa.

TAM was relevant to current study as it provided a framework for understanding how the study variables could have shaped the adoption of digital banking by bank customers in Nakuru County. According to this model, technology usability is an important factor as it shapes the customers perception regarding the ease of use of the available digital banking technologies and consequently the attitude towards these platforms. The theory also adds that external factors such as trust, customer awareness, and reliability of the technology also shape the customers perceived usefulness and perceived ease of use.

Conceptual Framework

Figure 1 presents the conceptual framework for the study.

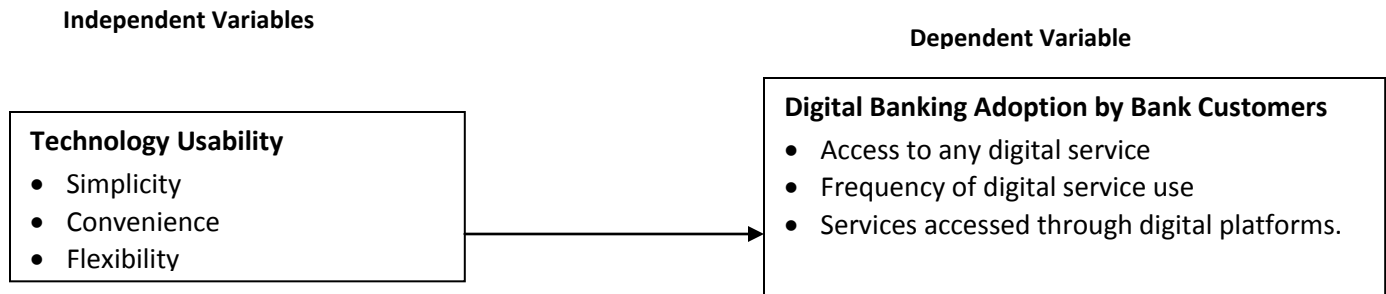


Figure 1: Conceptual Framework for Examining Determinant of Digital Banking Adoption
Source: Author (2019)

As illustrated on Figure 1, technology usability that was measured in terms of the simplicity, convenience, and flexibility of digital-banking platforms. The study posited that the simplicity of the technology would affect the customers' ability to use digital banking services and consequently their willingness to adopt this concept. The flexibility of the technology was also assumed to influence adoption by affecting the number of services that the customer can access through digital channels as well as the customer ability to resolve issues on the digital platforms. Adoption of e-banking services was assessed in terms of whether the respondents has used any of the digital banking services, the frequency of using the digital banking services, and the number of transactions that the respondents access through the digital platforms.

Methodology

This study used the descriptive survey design. The target population were 192,138 individuals with bank accounts in three commercial banks in Nakuru Town namely: Kenya Commercial bank (KCB), Equity bank, and Barclays Bank.

This study adopted the clustered and systematic sampling techniques to select 138 respondents from the population 192,138 customers of the three selected banks in Nakuru Town. The systematic sampling technique was used to select respondents from each bank. Data was collected using a questionnaire. The questionnaire comprised of both open-ended and closed-ended questions in order to facilitate the collection of qualitative and quantitative data. A pilot study was also conducted to help evaluate whether the question could elicit the information needed to address the research objective. The pilot test was performed on 13 customers of Cooperative Bank, Nakuru Branch. The pilot study data was assessed using test-retest method. The Pearson correlation technique was used to analysis the data from the pilot study. The correlation coefficient was 0.823 suggesting that the instrument had acceptable level of reliability. The information gathered was coded and entered into the statistical package for social scientists (SPSS) version 25. Descriptive statistics such as percentages and frequencies were used to describe the status in Nakuru County. Inferential statistics were used to

examine the influence on technology usability on digital banking adoption. The logistic regression method was used in the inferential analysis as the questions were structured in a (Yes) or (No) format.

Data Analysis, Presentation, and Interpretation

From the 138 questionnaires that were administered, 137 were found to have been duly completed and thus were including in the data analysis. This figure translates to a response rate of 99.3%, which according to Mugenda and Mugenda (2003) is excellent for a descriptive research. The high response rate can be attributed to the data collection strategy used by the researcher where the questionnaires were completed on the spot rather than leaving them with the respondents and collecting them later. The researcher also administered the questionnaire, which provided the opportunity to translate and interpret the questions making it easy for the customers to respond.

Technology Usability

The independent variable of the study was technology usability. To assess this variable, the respondents were presented with a set of statements and asked to indicate their agreement with each by either ticking on the (Yes) or (No) column. Their responses are summarized in Table 1:

Table 1: Customers views on Usability of Digital Banking Technologies

NO	STATEMENT	YES	NO
A1	Digital banking is a convenient way to conduct a banking transaction	86.9	13.1
A2	Information displayed on the screen during digital banking is clear, well organized, and easy to read	65.7	34.3

A3	Learning to operate digital banking is easy for me	68.6	31.4
A4	It is easy to navigate while using digital banking thus require little mental efforts	67.2	32.8
A5	Digital banking is an easy way to conduct a banking transaction thus better alternatives	69.3	30.7

Source: Field Data

Table 1 shows that the majority of the respondents (86.9%) agreed with statement A1, suggesting that the viewed digital banking as a convenient way to conduct a banking transaction. This finding is congruent with Larsson and Viitaoja (2017) who argued that one of the benefits of digital banking services is that it makes it more convenient for customers to access banking services. This is because these technologies eliminate the need for the customers to physically present themselves to the bank premises in order to access services. The technologies also enable customers to execute transaction any time of the day or night. This position was also supported by qualitative data where Customer 13 narrated that:

“The e-banking technologies such as mobile banking and ATM are very convenient and easy to use. I took me five minutes training to know how to operate the ATM. The mobile money platforms are also easy to use and self-explanatory.”

Most of the respondents (69.3%) also agreed with statement A2 suggesting that they were of the view that Information displayed on the screen during digital banking is clear, well organized, and easy to read. Similarly, 68.6% of the respondents agreed with statement A3, which asserted that learning to operate digital banking is easy for them.

According to Baharuddin et al. (2013), customers are more likely to adopt technologies that require little mental effort to use or operate. Very complex technological platforms tend to discourage usage. Similarly, views were also capture in the qualitative data. Customer 77 stated that:

“If find most of the digital banking channels to be very user-friendly. They provide customers with adequate instructions on how to use them. One can hardly get stuck.”

Customer 121 added that:

“The ATM, mobile money and agents are easy to use. Anybody can learn how to use this. I think that the most difficult to use are the online banking channels. I have never tried the online platforms.”

The largest proportion of respondents (67.2%) also agreed with statement A4 that it is easy to navigate while using digital banking technologies and thus require little mental efforts. Lastly, the majority of respondents (65.7%) agreed with statement A5, which claimed that information displayed on the screen during digital banking is clear, well organized. According to Baharuddin et al. (2013), clarity is also a vital element of technology usability. Customers must be able to understand the functioning of a given technology and the information displayed on the technological platform for them to develop the confidence to use these technologies.

Digital Banking Adoption by Bank Customers in Nakuru Town

The dependent variable of the study was adoption of digital banking by the bank customers. To assess this variable, respondents were presented with a set of four statements and asked to indicate whether they agreed

with each by ticking on the (Yes) or (No) column. Results are summarized in Table 2.

Table 2: Digital Banking Adoption by Customers

NO	STATEMENT	YES	No
A1	I have embrace the digital transaction as a customer	81.0	19.0
A2	Digital banking adoption is an easy way to use by both the older generation and the younger generation	67.9	32.1
A3	I frequently use digital platforms to conduct my bank transactions	72.3	27.7
A4	I use digital banking platform to conduct most of my bank transactions	59.9	40.1

Source: Field Data

The study established that most respondents (81.0%) have embraced the use digital banking services. This is contrary to the survey by KNBS (2019), which showed that 79% of the bank customers in Kenya still use traditional banking services like over the counter withdrawal and deposit. The findings of the two studies above suggest that while customers may have adopted digital banking services, they are still dependent on traditional bank facilities to conduct some transactions. This perspective is confirmed by results on statement A4, which show that 59.9% of the respondents use digital banking platforms to conduct most of their transactions.

The finding above is consistent with the study by Malta et al. (2017), who found that a significant number of bank customers use digital platforms for performing basic services such as checking back balances, buying airtimes, and transferring small amount. The customers resort to

traditional banking facilities when executing more complex bank transactions or transaction that involve large amounts of money. The majority of the respondents (72.3%) agreed with statement A3, suggesting that they frequently use digital platforms to execute their banking transactions. To further assess adoption of digital banking services, respondents were asked to indicate the services that they access through digital platforms. This information is summarized in Figure 2.

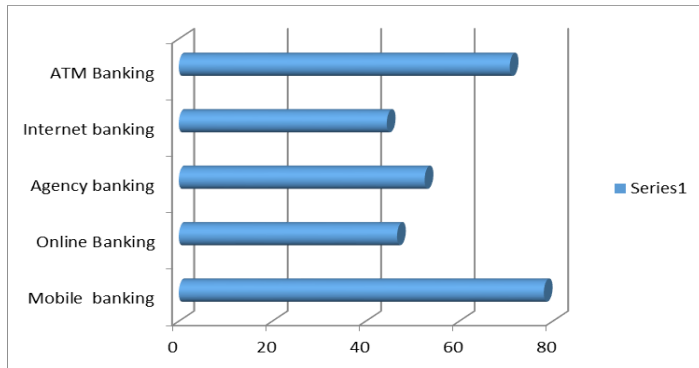


Figure 2: Digital Banking Services accessed by Customers

Figure 2 shows that the majority of the respondents (78.1%) were using mobile banking services, 70.8% were using ATM services, 52.6% were using agency banking, 46.7% were using online banking through mobile applications, and 44.5% using internet banking through the banks websites. The study also sought respondents' views regarding challenges that may be hampering the full adoption of digital banking services. Their views are summarized in Table 3.

Table 3: Factors that hinder adoption Digital Banking Services by Customers

Service provided	Freq.	%
Accessibility of digital outlets	30	21.9
Challenges in use of digital banking	37	27.0

technology		
Costs incurred in digital banking	40	29.2
Safety and security issues	25	18.2
I do not know about digital banking	5	3.6
Total	137	100.0

Sources: Field Data

Table 3 shows that high costs incurred in digital banking was the most frequently cited hindrance to the adoption of digital banking services followed by difficulties involved in using digital banking technology. Limited accessibility service outlets is also a major factor cited by 21.9% of the customers while 18.2% of the respondents linked limited adoption of digital banking to safety and security issues. Only 3.6% felt that lack of knowledge about digital banking was a hindrance to adoption.

Influence of Technology Usability on Digital Banking Adoption

Logistic regression analysis was conducted to examine the influence of technology usability on digital banking adoption. To facilitate this analysis, all the (No) responses were coded as zero (0) while the (Yes) responses were coded as (1). For each of scale, a statistical mean for all the items was obtained. The mean score was rounded-off to the nearest whole number such that it could either be zero (0) or (1). This was done so to obtain a single score for each of the study variable that was then used in the logistic regression analysis. The following model was formulated.

$$\text{Logit}(\pi) = \beta_0 + \beta_1 X_1 + e$$

Where $\text{Logit}(\pi)$ = log of the odds for digital banking adoption, X_1 = Technology usability, β_0 = constant, β_1 = beta coefficient for technology usability, and e = error term. Table 4 presents a summary of the model

Table 4: Model 3 Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	155.838 ^a	.119	.152

Source: Field Data

Table 4 illustrates that the model comprising of technology usability as the independent variable explained 11.9% of the variances in adoption of digital banking according to the Cox & Snell R-Square and 15.2% of the variances according to Nagelkerke R-Square. The significance of the relationship between technology usability and adoption of digital banking services was further examined using the regression coefficient presented in Table 5.

Table 5: Regression Coefficients

	B	S.E.	Wald	df	Sig.	Exp.(B)
Technology usability	1.132	.101	19.399	1	.044	3.276
Constant	-1.265	.086	12.937	1	.026	.029

Source: Field Data

Table 5 shows that beta coefficient for technology usability was 1.132 suggesting when technology usability is changed by 1 unit the log of odds for digital banking adoption would change by 1.132 units. Technology usability also assumed two values (0 low technology usability) and (1 high technology usability). The beta value thus suggests that developing high level of technology usability would increase the log of odds for digital banking adoption by 1.132. The Wald chi-square test showed that the influence of technology usability on digital banking adoption was statistically significant ($W^2= 19.399$, sig= .044).

The findings above led to the conclusion that technology reliability has a statistically positive influence on digital

banking adoption by bank customers in Nakuru town. The findings are consistent with the study Al-Smadi (2012) who also found that perceived ease of use ($\beta=0.4$, $p<.001$) had a statistically significant influence on e-banking adoption in Jordan. Bryson and Atwal (2013) also found that customers' perception regarding how easy it is to use the digital banking technology was significantly associated with digital banking adoption by bank customers in Dakar, Senegal ($\beta=0.67$, $p<0.001$). The solved regression equation for model 3 would thus be:

$$\text{Logit } (\pi) = -1.265 + 1.132 \text{ Technology usability}$$

The exponential beta for technology usability was 3.27. This value indicates that customers who found digital technology to have high usability were 3.27 times more likely to adopt digital banking technology than customers who felt that the technologies have low usability.

Conclusion and Recommendations

Findings of the study led to the conclusion that the technology usability has a positive and statistically significant effect on digital banking adoption among the customers of commercial banks in Nakuru town. This means that improving the usability of the technologies used to deliver the digital banking services would enhance adoption and use of these services. Particularly, banks should focus on improving navigability of its platforms, clarity of messages, and flexibility of the technologies.

To enhance technology usability, banks should ensure that the digital platforms are easy to navigate and find different functions. The platforms should also provide customers with clear instruction on how to access different services. The platform should also be easy to learn and remember such that the customer does not need to relearn every time he or she comes back to use the system. The design of the digital platforms should also be pleasant and attractive.

The study was only done on the 1st tier commercial banks. In order to support the generalization of these findings, this study should be replicated in 2nd and 3rd tier banks as

well as customers of other financial institutions such as microfinance institutions and savings and credit schemes.

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