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INNOVATION OF MOBILE BANKING AND CUSTOMER LOYALTY OF COMMERCIAL BANKS IN MOMBASA COUNTY, KENYA

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ABSTRACT

The purpose of the study was to establish the innovation of mobile banking on customer loyalty of commercial banks in Kenya. The study theoretical constructs included transaction cost, mobile banking security, service reliability and interface usability. The study was anchored on technology acceptance model, task technology fit theory and transaction cost theory. The study used a descriptive cross-sectional survey research design. The study targeted the management staff drawn from ICT, Operations, Finance, Marketing, and Retail banking of all the seven tier 1 commercial banks with operations in Mombasa County as the unit of observation. Stratified random sampling technique was used to select a sample size of 72 participants by help of Yamane statistical formula. Primary data was collected using structured questionnaire based on the objectives of the study. The collected data was edited, coded for processing using the Statistical Package for Social Sciences (SPSS v. 26) and results were presented in frequency tables. Descriptive and inferential statistics were used to analyze information generated from the respondents. The study findings revealed that mobile banking services were affordable and that customers of mobile banking were able to enjoy cost savings. The study concluded that commercial banks mobile banking services were widely accessible to the population and that the cost of transactions was determined by the amount transacted. The mobile banking of commercial bank is safe and secure and that banks mobile banking services platform offers transactions privacy to customers. Also commercial bank customers are notified of transactions on time firms. Respondents were in agreement to the statement that the customers were offered window to reverse transactions. The study concluded that banks mobile banking interface is compatible with multiple devices and that the provision of simple and easy to follow instructions during transactions. It is concluded that it is easy to complete a transaction through the banking application and that banks mobile banking service interface is responsive in that it can be accessed in every gadget. The study suggests that, in order to reduce operational expenses, the management of commercial banks should invest in digital technologies. The banks should seek to innovate to make their services affordable to customers. The study recommends that commercial banks should review current transaction costs so as to make mobile banking services widely accessible. The transaction costs should be relative to the amount transacted meaning that the frequent users who transact less amounts should be charged less and vice versa.

Key terms: Customer loyalty, Back office automation, Growth, Online banking, Service reliability

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INTRODUCTION

In order to meet consumer expectations and protect market share from an expanding number of competitors, the global banking industry is becoming both more strategically focused and technologically advanced. Financial institutions are seeking to establish or maintain competitive edge through innovation as a result of the intensity of regional and global competition. It is essential for banks to increase their capacity for innovation because of the rapidly changing environment and frequent sudden changes (Cahn, Liem, Thu, & Khuong, 2019). As a result, technology advancements have reorganized the worldwide banking sector (Rizaldi Yusfiarto, 2021), which has had an impact on the customer's financial services' design. The rapid pace of change has changed every facet of banking customer behavior (Raza, 2019).

The widespread use of smartphones has altered how consumers view the banking industry's services and goods (Nisha, 2016). Customers often compare banks while using mobile financial services by weighing perceived conveniences that increase consumer effectiveness against factors including trust, service satisfaction, relationships, and the economy (Riza, 2019). Customers are currently very interested in smartphone-based services like mobile banking, both conventional and Islamic banking. These services provide a number of benefits that can be used, including reduced costs and faster transaction times (Arcand, PromTep, Brun, & Rajaobelina, 2017; Baabdullah et al., 2019; Samsudeen et al., 2020). Additionally, the importance of smartphone use pushes customers to switch from using cash transactions to M-banking (Fall, 2020). The primary feature of m-banking, an internet-based banking service that employs smartphones as a medium, is transaction mobility (Baabdullah et al., 2019; Shankar & Rishi, 2020).

Most agree that innovation is a crucial aspect of competitiveness and that it should be incorporated into a company's organizational framework, operational procedures, and line of goods and services. Innovations give businesses a strategic focus to address issues they face as they work to gain a sustained competitive edge (Kuratko, 2016). Any organization's existence and expansion depend on innovation. It is acknowledged as an important strategic driver of economic performance and growth, long-term competitive advantage, and even survival (Durst, 2015).

Faithfulness that occurs naturally from consciousness, based on past experience, is what we refer to as loyalty. As a result of happy customers, loyalty developed. Customer loyalty developed as a result of customer satisfaction on quality, value, expectations, and company, according to the ECSI model (European Customer Satisfaction Index) (Claes, 2017). (Yao-kuei & Tsai-lung Liu, 2018). Marie-Christine Plichon Lichtlé and Véronique contend that customer loyalty (attitudes and behavior) is a result of consumers' commitment and trust, which is developed as a result of their satisfaction with the acquisition or consumption of an item (Marie-Christine & Plichon, 2018).

According to the Community and Innovation Surveys (CIS) (2017) findings, 24 000 businesses in Europe had already implemented one or more process innovations. The number of process innovators outnumbered the number of product innovators in 15 of the 31 nations the CIS poll covered. Process innovation receives major financial investment from businesses. According to statistics from the German Innovation Survey, process innovation accounts for 27% of enterprises' overall innovation budgets, while product innovation accounts for 53% and activities that cannot be classified as either process or product innovation account for 20% of the budgets.

State-run and commercial banks in Indonesia are vying with one another to introduce mobile banking technology. One of the biggest private banks in Indonesia is The Bank Central Asia (BCA). The first bank to introduce mobile banking in Indonesia is Bank Central Asia. m-BCA is the name of the BCA Mobile Banking service (Santosa, 2021). One method for combating unfavorable word of mouth is to provide flawless and gratifying customer service. Consumers indirectly consume an experience when they pay money to use a good or service. At that point, the encounter will have a perceptual impact and come to an emotional close (Enterprise, 2010). (Cahyaningtyas & Santosa, 2021).

The heralded "SIMPLE" virtual banking breakthrough was introduced in the United States of America in 2011 and enabled users take charge of their funds, streamlining the banking process. One of the biggest banks in Australia, Commonwealth Bank of Australia, introduced Kaching online and mobile payments services in 2012 along with other cutting-edge goods in the global banking industry. Kaching combines a variety of cutting-edge payment choices for consumers.

Over the past ten years, mobile banking has become more popular throughout Africa (Rouse & Verhoef, 2016, Kennedy Juma, 2019). Some of the world's fastest-growing economies are found on the African continent, however the majority of these nations only have modest formal banking institutions. Because of this, a sizable portion of the population is more financially excluded. Additionally, open and unrestricted trades are severely limited in certain areas. Mobile technology, on the other hand, allows for quick and inexpensive money transfers, which has increased its popularity across most of Africa. According to Rouse & Verhoef (2016), the technological revolution and proliferation of mobile technology—not just in terms of content but also globally—have contributed to the African population's appetite for mobile banking.

The banking industry in Kenya has unavoidably found itself unable to resist technological indulgence as a result of the increasing wave of information-driven economies (Okiro & Ndungu, 2017). This has caused a surge in mobile banking development, creating a solid foundation for low cost banking, and the expansion of mobile phones in rural Kenya. Omwansa (2016) examined the development and future of M-Pesa and came to the conclusion that Kenya's exceptional mobile phone penetration, the necessity for access to financial services, and the affordability of M-transfers are the main reasons why the service has been successful there. This is backed up by Mallat (2016), who also points out that if the cost of the transaction is passed on to the consumer, it will directly affect them.

Commercial banks in Kenya are reevaluating how to innovate by putting a premium on service procedures in order to obtain a competitive edge. With the bank's Mobile platform completing over 52% of all service requests and managing 50% of all bank service requests coming via the bank's digital channel, Standard Chartered bank has shown that it can change with its clients (Business daily, 2021). Absa Bank Kenya introduced a new vertical card in 2021 along with a contactless payment option. By tapping Absa Cards on a point of sale (POS) device, this innovative technology has the potential to make bank services faster, simpler, and more secure.

The Kenyan financial services industry has been severely impacted by technology upheavals in recent years (Koori, Wanjiku, & Atheru, 2020). According to data from the Central Bank of Kenya (CBK), mobile money is by far the most important. Since its introduction in 2007, the value of mobile transactions has increased at a CAGR of 66.3%, from Kshs 14.8 bn of transaction volume to Kshs 4.0 tn of transaction volume in 2017. (Cytonn report, 2019). The popularity of online banking has also grown, and most banks are now shifting their focus from traditional brick and mortar locations to online channels. Digital lending, which has recently revolutionized the market, was partly a reaction to the slow expansion of private sector credit that followed the limiting of interest rates on loans provided by banks. The efficiency of the banking industry, as determined by the number of deposit accounts per employee, increased by 100.5%, from 770 in 2014 to 1,544 in 2017, according to the CBK. This increase was caused by a decrease in the number of banking sector employees, from 36,923 in 2014 to 30,903 in 2017, despite an increase in deposit accounts of 67.8% (CBK, 2017).

In Kenya, there are 19 monetary remittance providers, 22 local commercial banks, 17 foreign commercial banks, 69 currency bureaus, 14 microfinance banks, 3 credit reference bureaus, 9 representative offices, and 1 mortgage finance firm in the banking sector. The way Kenyan banks are innovating to remain competitive is impacted by recent developments in the banking sector, such as high operational costs, narrowing profit margins, intense competition for market share, intense regulatory changes, technology evolution, and changing consumer demographics and behavior. To gain a competitive advantage, these institutions must find innovative ways to provide better services (Kungu, Desta & Ngui, 2016).

With the outlook for the traditional banking system looking dismal, Kenyan lenders are in a race against time to adopt new technology. The Central Bank of Kenya (CBK) makes the case in the 2017 Bank Supervision Report that the adoption of digital technology in the banking industry would result in significant changes to how the sector functions and provides value to its clients.

The top banks for digital banking, according to the Think Business Banking Awards (2020), were Standard Chartered, Equity, Kenya Commercial, and Sidian banks. The most effective banks were determined to be Bank of India, Bank of Baroda, and I&M Bank. The prize for best product innovation went to Equity Bank and Citibank. Digital payments are essential as a result of the Covid-19 pandemic, which has accelerated the implementation of digital money systems. The current study will concentrate on those commercial banks that are located in Mombasa and have won prizes for innovation.

Statement of the Problem

Internet and wireless telephone are two technologies that have emerged during the past twenty years and have an impact on how services are delivered in the commercial banking industry. Researchers and practitioners are very interested in the acceptance and continuous usage of these technologies in the industry, which has been sparked by other advancements like the Covid-19 pandemic in 2020. The use of mobile banking has been hailed as the banking industry's answer to problems with customer service and cost-cutting. However, complaints demonstrating client discontent are still being received and customer turnover is happening (Tebajjukira & Chandran (2016); Omach (2017)). This is despite the increased adoption and use of technology banking.

Due to the complexity of the process, customers who attempt to access their money using the mobile phone banking channel have reported failure (Namagembe, 2016, Cyrus Osinde, Jamiah Mayanja, and Anthony Tibaingana, 2020). This means that they have two options for accessing information: either through an Android-only mobile application (app) or through unstructured supplemental service data (USSD), however the session time out on USSD makes it disadvantageous for some users.

Concerns over the quality of mobile banking services have been raised as a result, and it is now necessary to gauge customer satisfaction. Consideration must be given to how the caliber of mobile banking services affects client happiness and loyalty, in particular (Jun & Cai, 2016; Yusfiarto, 2021). Numerous research on the impact of electronic service quality on banking patronage have been conducted (Amin, 2016; Cahaya & Siswanti, 2020, Rizaldi Yusfiarto, 2021). These research concentrated on online banking and the predisposing variables that influence consumer views and adoption of mobile banking behavior (Raza et al., 2020; Riza & Hafizi, 2019). Another line of research from earlier studies has projected how the quality of electronic services will affect customer happiness (Yuan et al., 2016, Rizaldi Yusfiarto, 2021). However, there are few studies on mobile banking from the perspective of client loyalty (Arcand et al., 2017; Tumewah et al., 2020), particularly during or after the Covid 19 lockdown.

Wasike (2018) studied the impact of technological advancement on client loyalty in commercial banks in Eldoret. A study on the impact of mobile banking on Equity Bank's performance in Kenya was conducted by Muguna (2019). Juma (2019) conducted research on how USIU-Africa graduate students felt about mobile banking in terms of consumer loyalty. The innovation of mobile banking services in the context of client loyalty, however, was the subject of very few research. By concentrating on how developments in mobile-based financial services effect client loyalty within the local commercial banks in Mombasa, this study aimed to fill this gap.

Objectives of the Study

The general objective of the study is to establish the innovation of mobile banking on customer loyalty of commercial banks in Mombasa County, Kenya.

Specific Objectives

- To establish the effect of transaction cost on customer loyalty of commercial banks in Mombasa County.
- To determine the effect of mobile banking security on customer loyalty of commercial banks in Mombasa County.
- To examine the effect of service reliability on customer loyalty of commercial banks in Mombasa County.
- To establish the effect of interface usability on customer loyalty of commercial banks in Mombasa County.

Research Hypotheses

The study was guided by the following null hypotheses;

- **H₀₁**: There is no significant effect of transaction cost on customer loyalty of commercial banks in Mombasa County.
- **H₀₂**: There is no significant effect of mobile banking security on customer loyalty of commercial banks in Mombasa County.
- **H₀₃**: There is no significant effect of service reliability on customer loyalty of commercial banks in Mombasa County.
- **H₀₄**: There is no significant effect of interface usability on customer loyalty of commercial banks in Mombasa County.

LITERATURE REVIEW

Theoretical Framework

A theoretical framework is a group of concepts that are connected by theories. It develops from a group of propositions that are derived and supported by information or proof (Kothari, 2014). The task technology fit theory, transaction cost theory, and the technology acceptance model serve as the study's main pillars.

Technology Acceptance Model

The technology acceptance model (TAM) was developed by Davis in 1986 in order to determine and explain the underlying factors of computer and information systems acceptance, as well as explaining user behavior within the same area. While the TAM is focused on computer usage behavior, it has adopted its theoretical foundation from the theory of reasoned action, which is a more comprehensive model used to explain human behavior. Its legitimacy is bolstered by the fact that the model and its structures have been widely employed to research information systems adoption on applications in several fields, on various populations (Yousafzai et al, 2016; Arcand et al, 2017). Finding out how external factors affect users' views, intentions, and ultimately their actual behavior has been one of the model's main goals.

Additionally, there is a causal link between usefulness, usability, and actual utilization (Davis, 1989). External factors are viewed as determining factors that have an impact on perceived utility or usability and may include things like design elements, training, and self-efficacy (Chau & Ngai, 2016). Previous studies have revealed that when the model is used in the context of mobile banking, perceived usefulness predominates over perceived simplicity of use and has a greater impact on customers' acceptance of technology in that industry (Pikkarainen et al, 2016). This may be related to prior research by Davis, which found that if a system or program performs better overall, people can overlook some shortcomings in usability. The model supports mobile banking interface usability variable.

Conceptual Framework

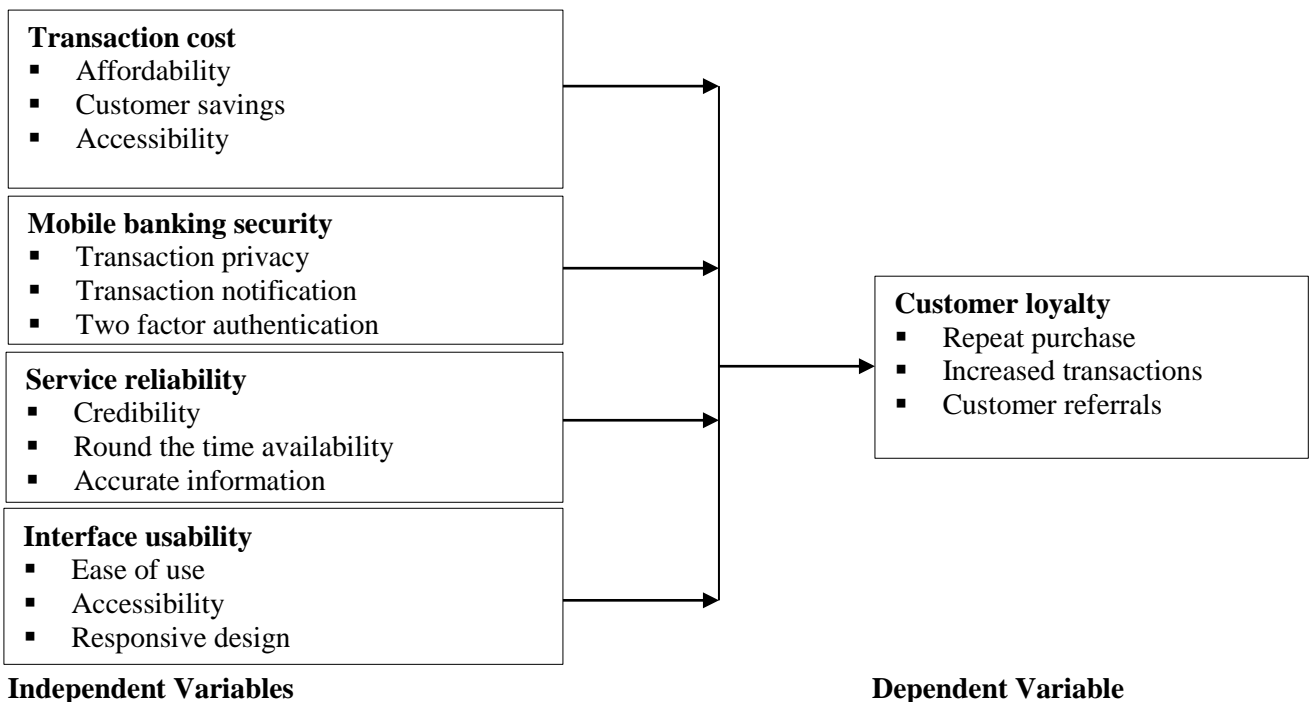


Figure 1: Conceptual Framework

Review of Literature on Variables

This section reviews the mobile banking service quality aspects which include transaction costs, mobile banking security, service reliability and interface usability. The study target variable is customer loyalty as measured by repeat purchase and customer satisfaction.

Transaction Costs

Transaction cost is a key indicator in decisions to adopt new technology. Studies suggest that the cost of a payment transaction has a direct effect on consumer adoption if the cost is passed to consumers. Fenech (2016) in a study on consumer intention to wireless application protocol (WAP) shopping found out the strongest characteristic differentiating the high and the low intention groups was price consciousness. As shoppers in electronic channels are attentive to price the transaction costs of mobile payments should be low enough to make the total cost of the purchase competitive with the physical world prices.

Antonenko and Baev (2017) contend that the overriding factor in as far as financial innovation is concerned is the reduction of transaction cost. Financial innovation is associated with advance in technology which results in reduction in transaction costs. Generally, reduction in transaction costs may stimulate financial innovation thus improving a firm's financial services. Zhao and Roth (2017) found that if a company has a better transaction relationship with its customers, it has a positive impact on the customer's relationship quality.

Okombo (2015) while studying the effect of electronic banking on firms' financial performance established a positive relationship between low transactional costs due to electronic banking and the financial performance of deposit taking micro finance institutions. This implied that the lower the transactional costs the better the financial performance of the microfinance institutions. The study revealed that there were various ways in which low transaction costs influenced the firms' financial performance.

Mobile Banking Security

The emerging technologies and the continued advancement of the Internet offer a platform for hackers to carry out different cyber-attacks as well as a means of developing sophisticated cyber threats. In the modern world,

there are numerous ways of compromising customers' bank information by expert criminal hackers. They include corrupting the quality of an information system's performance, data degradation, spreading of malicious viruses, and modification of a bank's online information system (Mwendwa et al., 2016). As such, for banks seeking to gain customer loyalty, there is a need for the creation of a robust, consistent, and safe online environment from where the customers can carry out transactions and access different banking services.

Moreover, the security concept also encompasses the encryption of shared data as well as ensuring the privacy of payment and credit information (Sathiyavany & Shivany, 2018). Mir, Ara and Dar (2017) suggest that perceived credibility has a substantial impact on the acceptance levels of provided services and builds trust in a brand. Some of the primary dimensions that drive credibility are privacy and security. In the context of mobile banking, the concept represents the customers' trust on a banking application's or website's safety levels which determine their ability to undertake online transactions (Bhatt & Bhatt, 2016). The security concern, therefore, has an impact on the users' attitudes towards the adoption of mobile banking services which is further linked to customer loyalty.

Service Reliability

Reliability is perceived as a primary determinant of service quality in the banking industry (Liu & Wang, 2017). The reliability dimension of mobile banking concerns the ability with which the service organization can deliver the service dependably and accurately. Reliability involves processes entailing confidence on decisions that ensure consistency of performance and credibility. The characteristics of reliability involve offering services by safeguarding the consistent of services, and always the services are delivered on timely basis. Reliability is one vital decision-making processes in the banking industry, which has a significance effect of customer-centered viewpoints on banks sector performance and dependability (Aghdaie & Faghani, 2017).

Conversely, the customers' affirmative to the wide spectrum of services in the banking industry constructs in delivering what consumers need in order to benefit the consumer satisfaction has a significant effect on consumer loyalty and repatronization of products and services (Saha, Hasan & Uddin, 2016). Multiple studies have found reliability as a significant element in not only mobile banking but also in online banking in general (Khurana, 2017; RamseokMunhurrun & Naidoo, 2016). Generally, online banking reliability has been described as the accurate deliverance of banking information and services through the use of websites and applications as well as the proper functionality of the online banking sites and applications (Foon & Fah, 2017).

A study by Gakere (2016) uncovered that the mobile banking user's population understanding of reliability was founded on the perceived convenience and dependability levels. Regarding convenience, the study's findings discovered that the speed and ease of bill payment services affected the correspondents' outlook on the mobile banking services reliability as well as the level of loyalty to the banking institution. The ease to follow mobile banking instructions, provision of satisfactory feedback during mobile banking transactions, mobile banking personalization, and the aspect of the adequacy of balance inquiry are also among the factors that affect mobile banking reliability in the Kenyan landscape. Furthermore, the research also found that mobile money transfer functions reliability had a significant effect on customer loyalty.

Interface Usability

In mobile banking applications and websites, interface design addresses multiple aspects, which are generally divided into four classifications (Klaassen, 2017). These categories comprise of experience design, graphic design, navigation, and information design. Experience design entails the overall user experience alongside the other three classifications. Navigation design, on the other hand, focuses on the formulation of mechanisms for the facilitation of interaction with the interface whereas the graphic design category is attributed to the visual presentation (Sangar & Rastari, 2016).

The last category, the information design, is linked to the identification and grouping content items. Despite that the four categories significantly affect mobile banking application's or website's responsiveness, the experience design has the most impact on the speed and accuracy of the mobile banking application as well as substantially affects user experiences, satisfaction, and loyalty. Access is a way to ensure there is easiest use of a service. Therefore, customer service experience entails five main areas of measurement ensuring improvement of service quality.

Responsive web design and interface, according to Hussian and Mkpojiogu (2016), not only helps in solving user experience problems but also significantly a site's responsiveness. This aspect permits for increased responsiveness to users' environment and behavior regardless of a device's orientation, screen resolution, and size. Subsequently, responsive web design and interface allow a site to adapt itself to any screen width or device by the presentation of flexible media queries, images, and grid layout while responding and recognizing to mobile features such as device orientation and geo-location (Doyle, 2017). As a result, a mobile banking user can obtain relevant feedback and information fast and at a speed that matches a user utilizing the banking website for the same information or feedback.

The perceived ease of use and convenience is among the primary elements that drive the delivery and development of mobile banking services as well as a critical component of determining the success of an online banking application or website (Sangar & Rastari, 2016). The concept is related to the availability of an easy-to-remember layout and content, terms and conditions, understandable and concise content, and ease of navigation. Adoption of a mobile banking application is also significantly reliant on the customers' acceptance levels based on the application's ease of use. According to Abbasi, Kamran and Akhtar (2017), the lesser the complexity or difficulty level of an online application, the higher the likelihood of its adoption.

Mobile interface usability augments user experiences by enabling users to realize specified goals with satisfaction, efficiency, and effectiveness (Hussian & Mkpojiogu, 2016). Moreover, mobile interface usability allows for the users' involvement and interactivity with the system, product offerings, and services hence affecting the affective, experiential, and emotional aspects, which further amplify the user's satisfaction and loyalty (Hussian & Mkpojiogu, 2016).

Customer Loyalty

Loyalty refers to the willingness to re-patronize or repurchase a favorite product or service (Liu, Guo, Maggie & Chia-Hui, 2016). Although the distinction of loyalty has many different degrees, scholars have different methods of measuring this concept. Customer loyalty can be divided into behavioral loyalty and attitude loyalty. Behavioral loyalty emphasizes repeated purchase behavior. Attitude loyalty emphasizes that in addition to repeated purchase behavior, customers have positive emotions toward suppliers, generate positive word-of-mouth sales, and recommend products or services of this supplier to others, and encourage them to use it.

According to De Ruyter et al (2016), loyalty behaviors include increasing the scale of relationship, increasing the scope of relationship, Word of Mouth recommendation, continuing to purchase services from the same financial institution and increased purchase frequency. Customer loyalty is measured using two dimensions which are attitudinal loyalty and behavioral loyalty suggested by Baloglu, (2016), (Chiou & Droge, 2016), (Yang & Peterson, 2017), (Curran & Meuter, 2015) and (Luarn & Lin, 2016) to determine Customer loyalty.

Attitudinal loyalty is a situation whereby various feelings create an individual's general attachment to a service, organization or product (Curran & Meuter, 2016). These customer feelings describe the individual's cognitive extent of loyalty (Hallowell, 2016). The dimension of behavioral reflects the extent to which attitudinal feelings are interpreted into loyalty behavior. The behavioral repurchase dimension of customer loyalty involves repeated purchase of product whereas attitudinal loyalty refers to favorable attitude and attitudinal commitment toward a product leading in repeat purchasing behavior. It is a biased purchase

response hence leading from an attitude that is evaluative favoring the purchase. This study adopts the research results of Gronholdt, Martensen, and Kristensen (2017) to measure the behavioral loyalty and attitude loyalty. Use repurchase willingness, recommended behaviors to others, price tolerance, willingness to cross-buy, etc. as indicators of loyalty.

Empirical Review

Ma, Jang, and Lai (2020) investigated the influence of transaction cost and service quality on partner loyalty – the mediating effect of relationship quality. The target population is three large medical institutions in Taiwan. Questionnaires were distributed to all medical equipment purchasers in the institution. A total of 1,000 questionnaires were distributed and 352 were collected. This study uses partial least squares (PLS) as an analysis technique to detect or construct predictive models. Use SmartPLS software to carry out structural equation modelling to understand the relationship strength and direction between latent variables. The results of the study found that relationship quality has a significant mediating effect in the relationship between asset specificity and loyalty or between service quality and loyalty. That is, by investing in exclusive assets and improving service quality, customers will not show better loyalty, but asset specificity and high-quality services can affect loyalty through relationship quality.

Dachyar and Fatkhurrohman (2016) researched on the effect of innovation factors to customer loyalty in telecom companies in Indonesia. The study used structural equation modeling to analyze innovation factors. The study adopted questionnaire to collect primary data. Based on the results, we can draw a conclusion that although the innovation factors directly do not affect the customer satisfaction and loyalty, even though still have a significant effect on customer satisfaction and loyalty through its influence on antecedents of customer loyalty.

Agolla, Makara, and Monametsi, (2018) researched the impact of banking innovations on customer attraction, satisfaction and retention: the case of commercial banks in Botswana. To analyse the data, descriptive and inferential statistics are utilised. This study was conducted from November 2016 to February 2017 in Gaborone City and the commercial hub in Botswana. Random sampling technique was employed to sample study participants. The data were analysed using IBM Statistical Package for Social Sciences (SPSS) version 20. The study offers evidence of antecedents of banking innovations from a developing country (Botswana). The results indicate that, innovative banks are likely to attract and satisfy their customers.

Juma (2019) did a study on the mobile banking effect on customer loyalty among USIU-Africa graduate students. The study adopted a descriptive research design employing a quantitative approach solely. The target population comprised of USIU-Africa graduate students from three different graduate degree programs whereby a sampling frame of 2,068 students was obtained. From the target population, a sample of 335 respondents was attained using Yamane formula. For data collection, a closed-ended questionnaire was administered for the gathering of primary data. The collected data, including both inferential and descriptive statistics, was then analyzed by use of the statistical package for social sciences (SPSS) Version 22. The study concluded that there was significant relationship between speed of response and increased customer loyalty levels. The capacity of a mobile banking application to respond to customer requirements in a flexible and timely manner also greatly affect customer loyalty.

Wasike (2017) researched on the effect of technological innovation on customer loyalty among commercial banks in Eldoret, Kenya. The research employed a descriptive survey design. The researcher targeted a population of 483,000 customers. Stratified, convenient and purposive sampling techniques were adopted in the study. Questionnaire and interview schedules were adopted in this study. The researcher conducted a multiple regression analysis so as to determine the extent to which innovation technologies affect customer loyalty in commercial banks. The results showed that online and mobile banking are statistically significant in explaining customer loyalty.

Muguna (2019) did a study on mobile banking effect on performance of Equity bank in Kenya. Descriptive research design was used to describe the independent variables whereas explanatory research design was used to describe the link between the independent and dependent variables used in the study. Questionnaires were used to collect the said primary data. Statistical Package for Social Sciences (SPSS) version 22 was used to analyze data. Results were presented in form of figures and tables. Regression analysis was used to explain the extent with which changes in the dependent variable could be explained by changes in the independent variable. The study revealed that there was a significant positive correlation between mobile banking service reliability and firm performance.

METHODOLOGY

Research Design: The study used a cross-sectional research design. Descriptive cross-sectional approaches as applied in this study aimed at making predictions regarding the occurrence of phenomenon under study and by taking a sample of a large population at one point in time. Ma, Jang, and Lai (2020) used cross-sectional design in their study on transaction cost and service quality on partner loyalty.

Target Population: Target population is an entire group of individuals, events or objects having common characteristics that conform to a given specification (Creswell, 2016). According to Central Bank of Kenya report (2021) the Tier 1 commercial banks in Kenya include Equity bank, Absa bank, Kenya Commercial Bank, Diamond Trust Bank, Cooperative bank, Standard Chartered bank and NCBA bank. The current study targeted the management staff drawn from ICT, Operations, Finance, Marketing, and Retail banking of all the seven tier 1 commercial banks with operations in Mombasa County as the unit of observation.

Table 1: Target Population

Bank	Target Population	Percentage
Cooperative Bank	14	16.1
Standard Chartered Bank	9	10.3
Equity Bank	19	21.8
KCB Bank	16	18.4
Diamond Trust Bank	7	8.0
Absa Bank	10	11.5
NCBA	12	13.8
Total	87	100

Source; CBK (2021)

Sampling Frame: Kothari (2014) posit that a sampling frame is a set of information used to identify a sample population for statistical treatment. The sampling frame for this study was the management staff drawn from ICT, Operations, Finance, Marketing, and Retail banking of all the seven tier 1 commercial banks with operations in Mombasa County.

Sample Size and Sampling Technique: The study adopted the Yamane statistical formula to calculate the sample proportion as shown below.

$$n = \frac{N}{1 + N(a)^2} = \frac{87}{1 + 87(0.05)^2} = 72$$

Where;

n = the size of sample,

N = the population size and

e = is the allowed margin of error (0.05)

Stratified random sampling was used in the study. According to Bryman and Bell (2013), stratified sampling ensures that the resulting sample is distributed in the same way as the population in terms of the stratifying criterion. In addition, stratified sampling is a good approach and method when there is a good statistical database available. It gives flexibility to the researcher to make a decision on identification and allocation of the units for the strata. It also gives possibilities to use and make more than just one stratifying criterion.

Data Collection Methods: In this study a structured questionnaire was used to solicit the primary information from the respondents. The questionnaire in this study comprised of closed ended questionnaire items carefully worded to capture and solicit the intended information. Likert scale data was constructed and analyzed at interval measurement scale whereby scale items were created by calculating a composite score from a five type Likert-type items (Boone & Boone, 2015). This study mainly utilized Likert five point scales as it is one of the best and most frequently used scales to measure opinions due to its ease and balance (Zikmund, 2015).

Data Collection Procedures: The researcher sought authorization letter from the University to collect research data. The researcher presented the University introduction letter to the participants to seek their consent to take part in the data collection. A structured self-completed research questionnaire was distributed to the target population and collected after one week through drop-and-pick later method. The questionnaire included the construct items adapted from previous studies and some questions on demographics. Each participant was assured of the confidentiality of his/her anonymous responses.

Pilot Study: A pilot study was administered in order to test for validity, reliability and practicability of the research instruments (Kothari, 2014). In order to ensure validity and reliability of research instruments, the researcher conducted a pilot test involving sixteen respondents to test for face and content validity as well as for reliability. Kothari (2014) argues that a pilot test of 20% of the population can be used for pilot testing. The pilot test subjects were not involved in the actual study.

Data Analysis and Presentation: The data collected was coded and analyzed using the Statistical Package for Social Sciences (SPSS) version 25 as a data analysis tool. In this study, both descriptive and inferential data analysis techniques were used. Descriptive statistics was used as a measure of central tendencies and measures of dispersion (mean and standard deviation). Regression analysis was conducted to test whether the strength of the relationship between the independent variables and the dependent variable are statistically significant. The following regression model was adopted:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

Y = is the dependent variable (Customer loyalty)

β_0 = will be regression coefficient (intercept)

$\beta_1, \beta_2, \beta_3$ and β_4 are the coefficient function of the independent variables,

X_1 = Transaction costs

X_2 = Mobile banking security

X_3 = Service reliability

X_4 = Interface usability

ε is the error term

FINDINGS

Response Rate

The questionnaires were distributed to the targeted respondents. 67 of the 72 questionnaires that the researcher distributed were fully completed when they were returned. This represented a 93.1% response rate. This calculation of the response rate excluded the participants in the pilot research. The return rate implies that

respondents collaborated with the researcher in the data collection process due to the manner in which the field assistant administered the questionnaires and the enough time given to complete them.

Validity Results

The researcher tested both construct validity and face validity of the research instrument. In regard to face validity and construct validity, expert opinion was sought from supervisors on the suitability of measurement scales adopted in the study. Continued input was incorporated at different stages of the research proposal development until the final copy was adopted for data collection. Content validity was tested by Kaiser-Meyer-Oklin (KMO) and and Bartlett's test of sphericity as shown in Table 2.

Table 2: Validity Results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.669
Bartlett's Test of Sphericity	Approx. Chi-Square	182258.27
	Df	15
	Sig.	0.00

As shown in Table 2, Kaiser-Mayor-Oklin (KMO) measures of sampling adequacy and Bartlett's test of sphericity were applied to examine the degree of attributes relationship. The Kaiser-Mayor-Oklin (KMO) measures of sampling adequacy and Bartlett's test of sphericity was adopted to examine suitability of exploratory and confirmatory factor analysis to analyze the data. KMO coefficient for the study was good (0.669) and Bartlett's test of sphericity had chi square value of 182258.27 and p value of 0.00. At 5% level of significance, measurement attributes were related and they warranted exploration using factor analysis.

Reliability Results

Reliability of the questionnaire was tested using Cronbach Alpha coefficient. This coefficient ranges from 0 to 1, and the closer it's to 1, the better the research instrument.

Table 3: Reliability Results

Variables	Number of items	Cronbach's Alpha	Comments
Transaction costs	4	0.879	Accepted
Mobile banking security	4	0.794	Accepted
Service reliability	4	0.811	Accepted
Interface usability	4	0.758	Accepted
Customer loyalty	4	0.803	Accepted

The finding presented in Table 3 showed that transaction costs was measured using 4 items had a Cronbach's Alpha of 0.879. This implied that the scale used was reliable and that all the items were correlated and measured the same thing. The results further showed that mobile banking security which was measured using 4 items had a Cronbach's Alpha of 0.794 which was above the threshold of 0.7 adopted for this study. Similarly, other variables service reliability, interface usability and customer loyalty had Cronbach's Alphas of 0.811, 0.758 and 0.803 respectively which were above the threshold of 0.7 adopted for this study. The overall reliability for the entire questionnaire variables was 0.809. These results implied that the scale used in this study was reliable and it was adequate for data collection.

Correlation Analysis

Correlation analysis was done to determine the extent and size of the association between the study variables using the Pearson's product moment correlation analysis. The results are shown in Table 4.

Table 4: Correlation Results

		TC	MBS	SR	IU	CL
Transaction costs	Pearson	1				
	Correlation					
	Sig. (2-tailed)					
	N	67				
Mobile banking security	Pearson	.340**	1			
	Correlation					
	Sig. (2-tailed)					
	N	67	67			
Service reliability	Pearson	.634**	.796**	1		
	Correlation					
	Sig. (2-tailed)					
	N	67	67			
Interface usability	Pearson	.089**	.587**	1		1
	Correlation					
	Sig. (2-tailed)					
	N	67	67	67		
Customer loyalty	Pearson	-.515**	.479**	.587	.501	1
	Correlation					
	Sig. (2-tailed)					
	N	67	67	67	67	67

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation results showed that transaction costs was discovered to have a negative and significant effect on customer loyalty as indicated by a correlation coefficient of -0.515 and a p-value of 0.000. Further, correlation results revealed that mobile banking security has a positive and significant effect on customer loyalty as shown by r of 0.479 and a p-value of 0.05, the bivariate correlation between service reliability was determined to be both significant and positive as indicated by r of .587. Moreover, there was a substantial and positive bivariate correlation between interface usability and customer loyalty ($r=0.501$, $p=0.000$).

Multiple Regression Analysis

The research data was used to regress customer loyalty on transaction costs, mobile banking security, interface usability and service reliability. The results of regression analysis are presented as follows.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.695 ^a	.484	.431	2.118540

a. Predictors: (Constant), Service reliability, Interface usability, Mobile banking security, Transaction costs

The regression results showed a moderate regression between innovation of mobile banking and customer loyalty. In the model summary, the R^2 is 0.484 indicating that predictors explain 48.4% change in customer loyalty.

Table 6: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2268.117	4	567.029	14.531	.000 ^b
	Residual	2419.406	62	39.022		
	Total	4687.623	66			

a. Dependent Variable: Customer loyalty

b. Predictors: (Constant), Service reliability, Interface usability, Mobile banking security, Transaction costs

From the ANOVA results in Table 6, it was established that the significance value in testing the reliability of the model was obtained as 0.000 which is less than 0.05, the critical value at 95% significance level. Therefore the model is statistically significant in predicting the relationship between the study variables.

Table 7: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	11.519	4.061		2.836	.000
Transaction costs	-.438	.199	-.175	-2.201	.035
Mobile banking security	.175	.059	.127	2.966	.020
Service reliability	.519	.216	.483	2.403	.042
Interface reliability	.407	.122	.175	3.336	.000

a. Dependent Variable: Customer loyalty

The derived regression coefficients of the model are:

$$Y = 11.519 + -.438X_1 + .175X_2 + .519X_3 + .407X_4$$

The regression results showed that independent variables had significant value below 0.05 meaning that they were all significant. From the results, it showed that holding all factors constant at zero, the change in customer loyalty would be 15.012. Further, the regression results showed that a unit change in transaction costs would lead to decrease in customer loyalty by 0.438. A unit change in mobile banking security would lead to 0.175 unit change in customer loyalty. Further, a unit change in service reliability would lead to 0.519 unit change in customer loyalty and finally, a unit change in interface reliability would lead to an increase in customer loyalty by 0.407.

Discussion of Key Findings

The regression coefficients served as the foundation for fulfilling the study's goals. This was achieved by considering the P-values that are associated with the relevant regression coefficients and t-values. The initial objective of the study was to find out how transaction costs affect customer loyalty in commercial banks. The regression results for transaction costs was $\beta_1 = -0.438$, $t = 2.201$, and $p < 0.05$ showing that there was a negative and significant relationship between transaction costs and customer loyalty. A unit increase in transaction costs would result in a decrease in customer loyalty by 0.438. Therefore, the null hypothesis that transaction costs has no significant effect on customer loyalty is rejected since p-value is less than 0.05. The study findings are supported by Ma, Jang, and Lai (2020) whose study investigated the influence of transaction cost and service quality on partner loyalty and revealed that relationship quality has a significant mediating effect in the relationship between asset specificity and loyalty or between service quality and loyalty.

The second objective of the study was to investigate how mobile banking security affect customer loyalty in commercial banks. According to the regression analysis's findings ($\beta_2 = 0.175$, $t = 2.966$, $p < 0.05$), mobile banking security significantly affects customer loyalty. According to the study, an increase in mobile banking security leads to a 0.175 change in customer loyalty. The null hypothesis that mobile banking security has no significant effect on customer loyalty is therefore rejected since the p-value is less than 0.05.

Third objective of the study sought to investigate the effect of service reliability on customer loyalty. According to $\beta_3 = 0.519$, $t = 2.403$, and $p < 0.05$, the regression analysis results showed a substantial positive relationship between service reliability and customer loyalty in commercial banks. According to the findings, an increase in service reliability will improve customer loyalty by 0.519 units. The null hypothesis that service reliability has no significant effect on customer loyalty is therefore rejected since the p-value is less than 0.05. The results are supported by Muguna (2019) which focused on mobile banking effect on performance of

Equity bank in Kenya and established that there was a significant positive correlation between mobile banking service reliability and firm performance.

Finally, the study aimed to determine how interface usability affects customer loyalty in commercial banks. According to regression analysis, interface usability and customer loyalty has significant and positive connection ($\beta_4 = 0.407$, $t=3.336$, and $p<0.05$), which implies that a unit increase in ease of interface usability would lead to an increase in customer loyalty by 0.407 units. The null hypothesis that interface usability has no significant effect on customer loyalty is therefore rejected since the p-value is less than 0.05. The study results agree with a research by Juma (2019) on mobile banking effect on customer loyalty which revealed that capacity of a mobile banking application to respond to customer requirements in a flexible and timely manner also greatly affect customer loyalty.

CONCLUSION AND RECOMMENDATIONS

Summary of the Findings

The goal of the study was to investigate the effect of innovation of mobile banking on customer loyalty in commercial banks. The results of the pilot study, the respondents' demographic data, the descriptive analysis of independent variables, and the inferential statistics are the four sub-sections that make up the study. The study response rate was excellence.

According to the descriptive findings, respondents agreed that banks mobile banking services are affordable and that customers of mobile banking are able to enjoy cost savings. The study results further agreed that banks mobile banking services are widely accessible to the population and that the cost of transactions is determined by the amount transacted.

According to a descriptive analysis, respondents agreed that the mobile banking of commercial bank is safe and secure and that banks mobile banking services platform offers transactions privacy to customers. Respondents agreed that bank customers are notified of transactions on time firms. Respondents were in agreement to the statement that the customers are offered window to reverse transactions.

According to the descriptive findings, respondents agreed that the bank has recorded decreased transactions processing error rate and that the ability of a mobile banking application to function as needed at all times. Respondents also agreed that the relevancy and accuracy of the information provided and that the mobile banking systems provide accurate information.

According to a descriptive study, respondents agreed that banks mobile banking interface is compatible with multiple devices and that the provision of simple and easy to follow instructions during transactions. Respondents also agreed that it is easy to complete a transaction through the banking application and that banks mobile banking service interface is responsive in that it can be accessed in every gadget.

Conclusions of the Study

According to the study's findings, banks mobile banking services are affordable and that customers of mobile banking are able to enjoy cost savings. The study concludes that commercial banks mobile banking services are widely accessible to the population and that the cost of transactions is determined by the amount transacted.

The study concludes that the mobile banking of commercial bank is safe and secure and that banks mobile banking services platform offers transactions privacy to customers. It is concluded that commercial bank customers are notified of transactions on time firms. Respondents were in agreement to the statement that the customers are offered window to reverse transactions.

The study comes to the conclusion that the bank has recorded decreased transactions processing error rate and that the ability of a mobile banking application to function as needed at all times. The study further concludes

that the relevancy and accuracy of the information provided and that the mobile banking systems provide accurate information.

The study comes to the conclusion that banks mobile banking interface is compatible with multiple devices and that the provision of simple and easy to follow instructions during transactions. It is concluded that it is easy to complete a transaction through the banking application and that banks mobile banking service interface is responsive in that it can be accessed in every gadget.

Recommendations of the Study

The study recommended that, in order to reduce operational expenses, the management of commercial banks should invest in digital technologies. The banks should seek to innovate to make their services affordable to customers. The study recommends that commercial banks should review current transaction costs so as to make mobile banking services widely accessible. The transaction costs should be relative to the amount transacted meaning that the frequent users who transact less amounts should be charged less and vice versa.

The study recommended that the management of commercial banks should prioritize mobile banking security. This will be made possible through developing robust security policies. This is geared towards assuring customers of the safety of their money hence promotes customer loyalty. The commercial banks management should develop systems which would inform customers in real time of any account interactions. The banks should provide a mechanism for transaction reversal of unintended transactions by the customers.

The study recommended that the management of commercial banks should focus on continuously improving service reliability. The banking services accessibility should be error free for the customers to build trust with the commercial bank. This calls for the commercial banks to pay immense attention on building systems which are reliable and robust. The mobile banking application should function throughout and the commercial banks should continuously monitor these systems. The banks should ensure the mobile banking systems provide relevant and accurate information to the customers to improve loyalty.

The study recommended that the management of commercial banks should invest in ensuring that the mobile banking interface is compatible with multiple devices and that it is simple and easy to follow instructions during transactions. This would ease the efforts expended by customers in accessing bank services through mobile banking platform. In addition, the mobile banking interface should be user friendly and entertaining at the same time. The mobile banking service interface should be made responsive. This implies that any bank customer using any digital gadget should be able to seamlessly access bank services.

Suggestions for Further Research

The study has looked at innovation in mobile banking and how it affects customer loyalty in commercial banks. Moreover, insights have been provided to offer further research directions for innovations in mobile banking in the banking sector. By conducting extra research, more effective ways can be developed to manage the relationship between the mobile banking innovations and customer loyalty. In the past decade or so, great changes have happened in the digital banking ecosystem and it is expected that digital changes will continue to evolve in the future when more research has been undertaken and new findings have been reported.

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