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ABSTRACT

The outbreak of COVID-19 pandemic saw overwhelming effects on consumers' buying behavior globally, with economic productive activities shifting from offline to online. As a result, many business leaders were left with no option other than adopt the use of Information Technology to ensure business operations continuity, enhance efficiency as well as sustainability. In Kenya, unlike most commercial banks, Saccos have largely been left behind in embracing new banking technologies such as agency banking, internet banking, or mobile banking. Therefore, the use of paperwork, physical and in-person meetings to conduct business has remained widespread amongst many Saccos in the country, before COVID 19 that forced Saccos to shift to virtual banking as an effective alternative, toward addressing their customers' needs while ensuring safety. This study examined the adoption of Mobile Banking models and Virtual Banking technologies and innovations to establish the factors influencing their adoption by potential users. The study also explored the adoption of Virtual banking amongst Saccos in Kenya, investigating the electronic delivery channels used, and their suitability. The study objectives were accomplished through an exploratory and descriptive approach based on ways of improving access to credit through relationships between Sacco and their clientele in Kenya through the adoption of Virtual Banking. The data used was collected from SACCO-based respondents who included Sacco ICT officers, managers, and members using questionnaires. Data analysis was done using the Statistical Package for Social Sciences (SPSS). The study established that there was wide adoption of various Mobile Banking models and technologies to realize virtual banking adoption by Saccos. Most Saccos were found to favor the Joint venture model and the non-bank-driven model. The extent of adoption of virtual banking amongst bank clientele was found to be influenced by social, economic, and technological factors. The study recommended that Saccos should consider sharing information and technologies across various networks as this is likely to lead to much more gains in adopting technologies that would improve their sustainability as while fostering better customer experience.

Key Words: *Virtual banking, Mobile Banking Service, Banking models, Sacco Business, Electronic Banking, Online Banking.*

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INTRODUCTION

The global outbreak of COVID-19 pandemic has remained overwhelming, taking by storm many countries across the world, including Kenya. The pandemic has strained the global healthcare system with spilling effects on consumers' buying behavior both nationally and globally. Economic productive activities have witnessed a downward trend due to imposition of various containment measures such as quarantine, lockdowns, curfews, and social distancing. This has forced people to alter their usual behavior to remain proactive and hence cope with the unplanned disturbance and deviation from the norm. A significant shift of normal activities to online platforms has compelled many people, for instance, to work remotely.

Amidst all the turmoil associated with year 2020, one positive trend that has emerged is the increased adoption of digitalization to socialize, learn, work, and shop while observing safety regulations in the daily routine. To stay afloat, organizations have been compelled to search for convenient tools and solutions for working remotely to manage in virtual terms, time, planning and tracking their progress. Some of technologies being implemented include virtual private networks (VPN), voice over INTERNET, virtual meetings, and cloud technology, among others that have impacted greatly for instance virtual banking (ASARECA, 2019).

In Kenya, unlike most commercial banks, the Sacco movement is yet to adapt to the new banking technologies such as agency banking, internet banking, or mobile banking (Ngure et. al, 2017). Saccos are still using paperwork in their service delivery, physical meetings with members at branches to communicate information on products and policies, with most Sacco customers doing their transactions in person (Kwara, 2020). The "KWARA" catalyst fund portfolio company developed a software to assist Saccos operating in remote areas to digitize their products. This followed a survey among 166 Sacco revealing high prevalence in the use of manual service delivery amongst many Saccos, with the most affected being customer services. Currently, many Saccos have embraced digital technologies in loan applications, communication with members and customer's intelligence Kwara (2020).

Virtual banking, the adoption of new technologies with overall effects on the organizations' remittance and mobile banking, Mobility (2019), stands as an effective alternative, toward addressing the challenges posed by the Covid19 pandemic. Internet banking is a well-known common innovation used by Sacco to link their ledgers and allow easier comparability of data. It reduces remittance costs between Sacco thus aiding in realizing revenue. Mobile banking allows Saccos to make basic transactional services like cash deposit and withdraws easily accessible to their clients. Mobile banking allows Saccos to transfer money between individuals; this has allowed Sacco to carry out transactions within the required time and allows individuals to use security protocols to prevent unauthorized access of information Mook et al., (2015).

Pytkowska & Korynski, (2017) define financial technologies as all innovations in financial solutions that lead to the use of electronic tools, resources, and devices that alter business models to generate more value-adding opportunities and revenues. Some of the benefits arising from the adoption of digital technologies by financial institutions include predictive models that enhance overall customer experience, cheaper operating costs, enhance electronic analytics, enhance service provision, and better profit margins.

According to Odun & Utulu, (2016), the current turbulent environment has made organizations to adapt to the new technological revolutions taking place across the globe. Specifically, the technological advancements have made it possible for information to be transmitted easily and at a faster rate than before. As a result, traditional methods of marketing have been overtaken by new forms of digital advertising which has led to increase of consumer awareness due to the access

of internet services.

The understanding of the importance of the adoption of the new technologies in every aspect of business is still a new concept to some Saccos. Some shy away from adopting the technology owing to the heavy financial implication it will have on the financial capability of the company. On the other hand, some companies have experienced resistance to change by their employees as some perceive the adoption of the technologies as a way of replacing their services. The realization of the benefits accrued from the adaptation of the technological innovation can only be realized if the players involved are well informed of the overall good of the new change Gondat, (2014).

Digital payments have been keeping many countries in the vivid by reducing contact with the virus. The move by China to introduce cash-less-life community assisted to maintain quarantines and helped in curbing the degree of transmission. As from 2019 Chinese non-bank online payments system yielded about $ 35 trillion USD, and being the leading innovator of online payments, China has been able to survive her financial transactions as other countries still struggle to cope with new technologies (Marous, 2020).

In Africa only 25% of the population currently use INTERNET for banking transactions and with such a very low penetration, the continent still needs to invest deeply in her ICT sector. This is turn requires better legal and regulatory frameworks on cyber security, personal data protection and privacy. Private partnerships therefore particularly important to develop the ICT sector policies to adopt digital technologies ASARECA (2019).

Statement of the Problem

Unlike most commercial banks in the country, many Saccos in Kenya are yet to adapt fully to the new banking technologies, including agency banking, internet banking and mobile banking (Ngure et. al, 2017). Today, most SACCOs conduct their transactions via the conventional branch-based retail banking and customer services. But the advent and increased uptake of virtual banking technology, following the new normal ushered by the Covid19 pandemic, has seen many Saccos left with no option other than altering their financial solutions to meet their customer needs as well as stay afloat. Now, Saccos in the country are coming up with electronic systems run online to reduce transactional costs and improve their operations. However, even in a few Saccos who have adopted the technology meant to develop better and easier i-banking platforms, customers barely notice these systems thus making them underutilized despite their availability. This has led to most Sacco customers still doing most of their transactions in person despite endangering their safety (Kwara, 2020).

Therefore, there exists a need to generate reliable and realistic data on the current adoption of technologies in banking amongst Saccos in Kenya. This paper presents a study aimed at obtaining knowledge on the available m-banking models that other Saccos can utilize toward adopting the technology, understand users' preference of the electronic delivery channels for virtual banking, as well as the desire to pinpoint factors that influence their intent to utilize virtual banking among Saccos in Nairobi County in the face of COVID-19 to drive decision making. This is important as the results of the research provides valuable information for aiding the Sacco sector to come up with mechanisms for adoption of virtual banking as well as their marketing approaches to spur emerging forms of i-banking platforms in years to come.

Objectives of the Study

The overall objective of this study was to assess the extent of adoption of virtual Banking technologies amongst select Saccos in Kenya in the face of COVID-19 pandemic, for fact driven decision making.

The specific objectives of the research were to:

- Examine the Mobile Banking models available for Virtual Banking among Saccos in Nairobi County in the face of COVID-19 to drive decision making.

- Discover influences of implementation of virtual banking technologies by potential users in SACCO industry in Nairobi County in the face of COVID-19 pandemic for fact driven decision making.
- Investigate the most digitally competitive electronic delivery channels used by Saccos in Nairobi County in the face of COVID 19 pandemic for fact driven decision making.
- Establish the suitability of the framework used to explore the adoption of Virtual Banking among Saccos in the face of COVID-19 for data driven decision making.

Some of the key research questions addressed in this research work include:

- Which are the mobile banking models used to realize virtual banking adoption by Saccos in Nairobi County in the face of COVID-19?
- Which are the factors influencing adoption of virtual banking in Saccos in Nairobi County amidst the corona virus pandemic?
- Which are the most digitally competitive electronic delivery channels being utilized by Saccos in the face of COVID-19 pandemic in Nairobi County?
- What suitable framework can be used to explore the adoption of Virtual Banking among Saccos in the face of COVID-19?

LITERATURE REVIEW

Mobile Banking Models

Banks are vital in the financial markets' management since they act as the main mediators while doing large financial activities. A relationship struck between a client and a bank mainly depends on the exchange of information and financial resources; all businesses are based on innovation through development of novel business models (Kristic & Vukasovic 2018).

In the past, the banking sector was faced with various problems such as application for loans taking weeks for processing and according to Andy (2016), persons lacking credit history could not be given access to services in the bank. Moreover, finance access was made expensive and exceedingly difficult due to lack of credit information from medium and small enterprises.

A good number of models exist in the banking industry which is in use by service providers of mobile banking. In today's world, new cheaper and efficient models of business that focus more on customers compared to traditional banking, have emerged. Most organizations have embraced extensive and efficient use of resources, latest technology, and low payout rations, to rebuild capital base, using analytics, and other new models.

In the Joint Venture model (JVM), customers do not use banks' branches to carry out their financial transactions but instead use mobile phones. Therefore, this model uses different channel, which is a customer's mobile phone, to boost financial services, making it cheaper compared to traditional banks. The associated target market is also bigger and distinct. This model can be put into place when a bank and an agent establish correspondent arrangements, with the relationship of customer account resting upon the bank.

Some examples of the JVM model include M-Kesho by Equity bank Group, M-banking services offered by the Co-operative Bank of Kenya, Hello Money offered by Barclays Bank, M-Shwari offered by the Commercial Bank of Africa, SIM-plea banking offered by the National Bank of Kenya, Mobi-bank offered by the Kenya Commercial Bank and Mobile Banking offered by Standard Chartered Bank (Vita et. al, 2016).

A non-bank-led model is a situation where banks perform limited operations in their everyday management of the accounts and sometimes may not even do any operation at all, as the non-bank agents do all transactions. Typically, roles of banks are in this type of model few, such as keeping safely funds that are surplus. The management of accounts is done by non-bank agents who have

direct contact with customers. Safaricom's M-pesa uses this model to allow customers to withdraw money from their M-pesa accounts at some bank ATMs. The other mobile service providers are also expected to adopt this model in offering the same service as they are yet to roll them out (Raza et al., 2017).

The non-bank driven model is where the non-bank agent effectively becomes the depository entity through the issuance of e-money. Account ownership and transactions management are done purely by the telecommunication companies. This model is used by Orange Money, M-Pesa of Safaricom and Airtel Money through their contracted agents (Raza et al., 2017).

According to Network Banking Industry Architecture (2014), Core banking system was identified as the first virtual banking. Recently, a good number of companies have presented new models aimed at developing their systems. However, many companies are using the BIAN AND MIRA-B reference models which have been given attention in this largely technologized world with reference to banking system. BIAN was developed in 2008 while the last final changes on the model was implemented in 2015. Special applications are given a common framework by BIAN, which has 42 countries as members including SunGard and Microsoft. Its objective is to make sure that programs highly interact to improve the relationship between financial institutions and banks. It addresses service operations using service domain solutions. The services are further categorized into service visions, there being a possibility for set of services. The three main tools that are dominant include glossaries, complementary documents, met models, and design instructions.

According to Microsoft Corporation (2012), using the Microsoft Industry Reference Architecture for Banking (MIRA-B) to bank architecture provide credit institutions with logical architecture to be used in purposes of design. It can be compatible with BIAN in a less or more way by adopting its technology on MIRA-B; there is a wider architecture of banking in Microsoft.

Electronic Delivery Channels

Branchless banking

In the banking industry branchless banking is a channel distribution strategy that delivers financial services on its own, not involving other banking branches. It allows branch networking by providing clients with a variety of options to access financial services and examples include automated teller machines (ATM's), internet, mobile phones and POS devices. Every technology gives different services, but they inform an overall distribution channel strategy (International monetary fund, 2016).

Internet TV banking

Internet banking also called online banking, makes use of the internet to pay bills, transfer funds, view cheques and save account balance. Customers can access accounts through computer software browser that run the bank programs. The banks' browser is found on the world's largest web server. It can also be called net, virtual, and or web bank (Enable telecommunication, 2016).

ATMs

Known as an automated teller machine (ATM) or cash machine, this is a telecommunication device that is computerized, it ensures customers have access financial activities. Transactions take place in absence of a cashier, outside a bank, and for its access one must enter personal identification number (PIN).

Electronic funds transfers (EFT)

This is channel delivery where the exchange is electronic; it involves money transfer from one account to the other by use of a system of computers from one institution to the other without the involvement of paper money, the term referred to as electronic funds transfer (EFT), the most used type of this system deposit direct, whereby a payroll is directly deposited to a worker's account. Also, it can be used to transfers credit, for example, payrolls payment and transfer debit, for example, payment of mortgage.

Self-service (pc) banking

This type of banking targets business with minimum input in their firms, assisting them to access the services at home by telephone. This type of banking is also termed as pc banking or online banking, and it provides customers with a variety of services that are convenient, by making transactions between accounts, checking balances, paying bills, and determining If they are qualified for credit or mortgage (IMF 2017).

POS banking (credit and debit cards)

According to Gerlach (2017), this is a system, where a computer is a located in one central place at the shopping joint, substituting cash from funds transferred electronically, drafting or chequeing to purchase goods, payment of sales, data, and venue the transaction has occurred. For example, transacting on a debit or credit card passes the payment details to the payment processor or financial institution.

Factors Influencing Virtual Banking

Virtual banks provide financial services mainly online from the Fitch Sector. Therefore, there are no physical institutional branches as everything is done online. This concept does not ride on brick and mortar but harnesses available technology to offer financial services to customers. Technology in today's world presents limitations in different areas; they have different innate characteristics depending on the customer and the company, on relative advantage Rogers (2013)

Social Factors

Even after online banking having numerous advantages, 48% of the population has not adopted it. This is mainly because most of the clients are used to traditional form of banking. Therefore, marketers need to find more convincing ways to lure clients to adopt online banking from the traditional way of banking. Donner Tellez (2018) Attitude changes toward what one used to do affect banking adoption. People's personal characteristics determine adoption decisions, users encourage the great ease and convenience of managing their wealth, clients who accept the technology have higher probability of being in full control of their finances and with time they can easily adopt virtual banking. At the same time technology does not easily get used with old people, it has been concluded that older people are reluctant or rigid (Monitise, 2018).

Economic Factors

There are several factors that affect the way customers use virtual banking. These factors include service pricing, prices that are absolute, for example, during the trailing of money transactions, some of the branches may offer deposit-free services therefore making online banking save and cheap. The cost of a transaction is very vital since a customer will be able to determine how much it will cost them to access and carry out actual transaction (Rosenberg, 2010).

Technological Factors

According to Ombati et al., (2011) electronic banking explains the universal term for how a customer performs transaction electronically without being present at a brick and mortar, the process mainly involves the INTERNET; it also refers to the use of ATMs, telephone banking and electronic money transfers.

Handset operability is how easy a handset device can be accessible to banking services. A good number of mobile devices exist with different ways of operation but they perform the same role, this can affect the customer when the user can't perform some device because probably the type of character required may not be found by the mobile device, this has been forcing the banking sector to have problems to implement virtual banking due to the type of device by customers, some of these devices can only upload Java ME and other support SIM application Toolkit, only SMS, or WAP browser., it also can take almost five months for any new client using a handset to find the full package on the handset, it is a problem some of the customers cannot access some services , they don't know how to access Munities, (2018).

Theoretical Frame Works and Models

Here, we use several intention models and concepts of theories to help us have a deeper meaning of the adoption of technology. These concepts have led to new other concepts, for instance, Theory of Planned Behavior (TPB) Ajzen (1991), Technology Acceptance Model (TAM) Davis (1989], and many more. The models have largely helped in knowing predictions of acceptance behaviors of clients'-commerce may involve perceived ease of use (PEOU) perceived usefulness (PU), perceived behavior control (PBC) and subjective norm (SN) Awa et al., (2015).

The Technology Acceptance Model (TAM)

According to Rainier Et al., (2014), this model was developed by Davis (1986) to establish behavior technology of a user computer, the model however was found from Reasoned Action theory, which intends to describe human behavior in general in the adoption of computer, and has two main variables, "Perceived Usefulness" (PU) and ''Perceived Ease of Use'' (PEU). This Technology Acceptance Model (TAM) showcases a connection between, ease of use, perceived usefulness system design features, actual usage behavior and attitude towards using.

According to Davis (1989), Perceived usefulness (PU) involves a potential user having in mind the thoughts that using certain systems may improve their performance in a work area. Usefulness is derived from useful meaning having an advantage of using specific IS. On the other side, perceived ease of use (PEOU) involves a potential user having in mind the thoughts that using certain systems will be effort-free. 'Ease' means, having no hardship at all or any form of difficulty. Conclusively, Ease of Use means 'user-friendliness' of IS.

Researcher Keven Katesh & amp; Davis (2000) improved on the model to create TAM2 that contained, processes of social influence (image, norm, and voluntariness) and congestive instruments to all processes (result demonstrability, job relevance, and perceived ease of use, output quality), this model offers a lot of knowledge, in explaining that which drives the user towards technology adoption.

The problem with TAM is that it does not consider policies of organization that regulates the use of the system, but according to a study by Dinga & Er (2018), the core arguments is that staff IT proficiency increases the skills and experience which adds to output in the organization. The use of ICT is not based on perceived ease of use but towards organization culture to train the staff to adopt knowledge, and to be in the know of the latest technology influenced by the staff Raza et al., (2017).

According to Zahid et al (2013) who advanced an argument showing that Tam did not involve education and age as external factors, but rather the willingness and acceptance of technology, and went further saying that it is not easy to measure behavior, this study however will inquire with TAM on the use of technology, and the motivating factors that will force the employees to excel.

Schumpeter's Theory of Innovation

Schumpeter (1939) in his "equilibrium destruction" theory explains innovation as being creative or excellent. This theory describes innovation as being a vital factor of economic dynamics and competitiveness which incessantly do away with the old order and give birth to new ones, its end advantageous for employment, investment, and growth (Śledzik, 2013). This theory identifies causative factors of change; the entrepreneur (innovator), change in the circular flow and how the innovator interacts in the flow with the forces. The emergent process of development is described as a form of business that is in form of a wave that is specific (Paul, 1943). Independent thinkers in huge firms opened advantages for new 11 profits and benefits through their innovations. In the long run, the theory noted, profit margins from the innovation because of investment and activity by imitators. To equilibrate the economy, an innovation or even set of the same could come out and the business cycle begins again. The causative factor, according to Schumpeter, is innovation, but did not address the outcome of innovation (Śledzik,

2013).

Empirical Literature

Ugwuanyi (2017) assessed the impact of communication technology and information on the economic activities of societies which are cooperative. The research used employed primary data collected in interviews, questionnaires, and focus group discussion. The findings using descriptive statistics overall confirmed a positive association between information and technology and performance of cooperative societies.

Ngando (2017) evaluated the contribution of the technology advancement on improving the virtual banking in Sacco in Tanzania. Data was collected through design questionnaires for 300 respondents. Findings concluded that there have been significant challenges among people as recognized and proved by an increase in income employment level, hence increase in savings and asset ownership to them in which case Technology should play a key role in harnessing the benefits.

Wichita et al., (2014) did a study on ICT adoption impact, product and size diversified on financial virtual banking. Research designs that were descriptive were used on a target group of non-deposit and deposit Sacco in the county of Nairobi, resulting to 44 and 999, respectively. Another technique, Purpose Sampling technique was implemented on 40 Sacco and secondary data that was gathered from the financial statements. Findings indicated that the higher the ICT adoption, the higher the Sacco virtual banking. Adopting ICT resulted to better payments, reduced service time and faster processing due to the improved technology used in delivering services. Unfortunately, restrictions and regulation requirements became major obstacles in this strategy, thus seconding previous findings by Ochieng' (2017) who observed that approximately 79% Sacco had fallen short of the regulations and requirements needed in the 2008 Societies Act.

Muchangi et al., (2018) investigated the impact the services of mobile communication had on virtual banking on Sacco that was taking deposits in the country. Explanatory and descriptive methods of research designs were used in both qualitatively and quantitatively to collect, analyses and report data. The research used 85 Sacco that were taking deposits from a target population of 109, all the Sacco had licenses from the Societies Regulatory Authority as by the end of December 2011.Questionnares given to two managers .one from a finance department and the other from the information technology. The results showed that there was a positive impact of mobile communication on Sacco that took deposits. Different Research Studies Concerning Virtual Banking Adoption

Many authors have used various e-business models to research about the relationship of customers using internet banking. The table below gives a summary of this research done by the authors.

METHODOLOGY

The inquiry was undertaken within the City of Nairobi (the capital city) in Kenya. Saccos in the City of Nairobi were purposively targeted for the study because being the capital city it had the model structures for financial institution-SME interactions. Moreover, Saccos found in the city would possibly give a good spread for all categories that the study targeted.

A descriptive design approach was used to obtain details concerning a phenomenon that is being studied from a selected number of respondents. An exploratory descriptive approach was utilized to assess how to improve access to credit through relationships between Sacco and their clientele in Kenya. Citing Robson (2000), Saunders et al (2003) argued that this research design is appropriate for getting new information as well as posing questions to analyze a concept from different angles. The exploratory survey design was relevant for this study since it intended to unveil the existing SME-SACCO relationships and their implications for Sacco in improving access to credit to her members in Kenya. This research design was

able to seek new insights when respondents were asked questions on how they access virtual banking services by Sacco in the face of COVID-19 pandemic. Explanatory research was used through a well-designed structured questionnaire, this design being appropriate for this study since it unveiled the existing challenges faced by the SACCO banking industry in adopting virtual banking (Robson 2002 cited in Saunders et al., 2003)

Both quantitative and qualitative data was utilized. First, a qualitative study was conducted, relying on the existing literature to discover the antecedents that contributed to the implementation of virtual banking. Thereafter, a quantitative study was undertaken using structured online questionnaires developed using Google forms, with a few guided interviews using the same questionnaires that were administered to the rest of the respondents online.

This study targeted banking Sacco officials and Members in Nairobi County which had over 167 Saccos. The study only sampled a total of 150 Sacco officials and 150 Sacco Members.

This examination targeted a total of 300 SACCO officials and Members. Participants for major players in the SACCO institutions were selected through purposive sampling approach. Both primary and secondary data was utilized.

Data was gathered mainly through semi-structured interviews and questionnaires. This ensured that relevant data was collected for the specific research problem.

Saunders et al (2003) proposed questionnaire as the commonly used approach in collecting data, particularly from a large sample size before performing data analysis. Email (Google forms) was utilized to administer questionnaires. Emails were preferred in getting the question guides back within short time. The question guides comprised multiple choice, Likert scale (in which participants were asked to rate items on a level of agreement), as well closed-and open-ended questions.

Through open-ended questions, the respondents had freedom to express their opinions and views. On the other hand, participants gave specific responses via the closed-ended questionnaires.

In this study, both quantitative and qualitative data analysis was done. Both Microsoft Excel program and SPSS version 26.0 were employed in analyzing the data collected. Table format was used to analyze questionnaires that had set columns for priority (nominal or ordinal scales) as well as those with Yes or No responses. Due to its ability to manage a huge amount of data, SPSS proved efficient in analyzing the data for this inquiry. Also, this software has a broad array of statistical approaches tailored to certain topics in social sciences. The study used structured (closed- ended) questionnaire to get responses from respondents to gain a better and more insightful interpretation of the results from the study. The study used quantitative methods of data analysis. Data collected was edited, cleaned, and coded and computed using SPSS version 24.

Data Analysis

Qualitative and quantitative methods of data analysis were used to carry out this research. Also, the statistical methods of analyzing data were used which involved Microsoft Excel and Statistical Package for Social Sciences (SPSS).

The results showed that, out of 300 subjects who participated 250 filled and returned the questionnaire which was 83% and was deemed adequate for the study.

Demographic information showed the results recorded from the respondents who participated in the survey of adoption of Virtual Banking among SACCOs in the face of COVID-19. They included Sacco ICT officers, Sacco managers, and Sacco Members from Nairobi County.

250 respondents in total were involved in the study, 158 (63.2%) males while 92 (36.8%) females.

FINDINGS AND DISCUSSIONS

The research was carried out to establish the available mobile banking models in the implementation of virtual banking. Following a review of the existing literature about online banking, the study obtained data which proposed various mobile banking models that could be utilized in the implementation of virtual banking. M-banking banking models available for virtual banking adoption were identified to be Joint venture model and non-bank-driven model-. These were the ones mostly used by many Saccos.

The research was carried out to establish the influence of implementation of online banking in various Saccos in Nairobi County, Kenya. Following a review of the existing literature about online banking, the study obtained data which propose various factors that influence users to adopt virtual banking. But some researchers mentioned several factors several times showing how important those factors are in the implementation of online banking. The influences of the adoption of virtual banking technologies in Saccos were identified to be technical factors, economic factors, and social factors. In specific, they included privacy, flexibility and convenience, web usability, service quality, attitude, security, and trust. Given these factors, a research was conducted in Nairobi County Saccos to gather first-hand information via questionnaires. The study findings were analyzed based on two common beliefs about Technology Acceptance Model that is perceived usefulness (PU) and perceived ease of use (PEOU). This is because the dual beliefs are critical in the implementation of IS. From the findings, it was uncovered that virtual banking platforms ought to appeal and very eased to use it goes along way into facilitating the implementation of banking technology. Security is another crucial consideration; virtual banking can be adopted with much ease if the virtual banking sites are believed to be secure. When there are security issues that accompany online banking, then the perceived usefulness belief is violated, and this could lead to the system being rejected. Furthermore, trust on SACCOs is a critical determinant in the implementation of online banking. It only by trusting the Saccos that people will be able to adopt virtual banking and make good use of it. Put simply, Saccos must first build customer trust if they wish to make customers feel that virtual banking is useful. Service quality adds to the list of most important factors behind the implementation of virtual banking. About 60% of the participants believed that customized, unique, and integrated solutions are critical in the implementation of i-banking. The role of integrated services in helping customers monitor their financial details at one point should not be understated as it increases its usefulness. Besides, integrated services mirror ease of use belief of tech acceptance model are customers do not encounter any problem while moving from one platform to another by use of online banking solutions. Additionally, as per the study outcomes, convenience as regards place and time mirrors the ease of use and is a major determinant of the implementation of virtual banking. It is when the Saccos take into consideration the privacy issues that virtual baking will be deemed useful for customers. Lastly, attitudes towards computer, personal banking experience, perceived reliability, prior computer experience, customer view of the ease of use and usefulness, and prior knowledge experience greatly influence the behavior and attitudes towards online banking.

The perceived usefulness and the perceived ease of use (the major beliefs concerning Technology Acceptance Model) are critical variables in the implementation of IS. Therefore, important factors derived from the extant literature and analyzed through the study tools must mirror usefulness and ease of use to help customers in effective implementation of virtual banking.

The research was carried out to establish the most digitally competitive electronic delivery channels in the implementation of virtual banking. Following a review of existing literature as regards the implementation of virtual banking, the study

obtained data that reveals that many electronic delivery channels in the implementation of virtual banking exist. The most digitally competitive electronic delivery channels used by Saccos were identified to be **Mobile** and **ATM.** It was also established that Pay bill was the most used virtual/ internet banking service.

CONCLUSION AND RECOMMENDATIONS

This research study showed that there are two main available mobile banking frameworks which can be utilized for the implementation of virtual banking; Joint venture model and non-bank-driven model. It also showed that there are two most digitally competitive electronic channels, ATM and Mobile that are being utilized. From the study findings, it was acknowledged that trust and technological issues are critical in improving the behavioral intention of the customers to do online financial transactions. The dual beliefs of technology acceptance model-perceived usefulness and ease of use, combined with trust-based issues are a pair of factors that greatly influence the behavioral intent to utilize virtual banking, with each exerting a substantial impact on the intent to utilize via various mediating factors like subjective form, attitude, as well as perceived behavioral control. Therefore, while designing online banking websites, attention should be given to this combination of factors to appeal to many customers to use virtual banking. Also, as aforementioned, customers tend to rely on trust more than they do on perceived ease of use and perceived usefulness to shift their attitude towards online banking. This means that just like perceived usefulness and perceived ease of use, trust-based issues do influence customers' view and attitude towards utilizing online banking. Unauthorized access, privacy protection, and accuracy of declaration among other things are some of the major trust-based issues that affect the adoption of online banking.

Based on findings and conclusions of the study, the outcome of this study had three practical implication and recommendation for Saccos, namely that;

- Saccos should consider using effective presentations of all kinds of media advertising like websites, leaflets, and brochures meant to educate and inform potential users regarding the pros of virtual banking to influence their perception and hence behavior and attitude towards online banking.
- Sacco assistants at branches and Sacco tellers should provide information about virtual banking to help reach out to many adopters. While providing this information, reference should be made to "time saving", "convenience" every time everywhere, "low costs", and "information availability". Besides, Saccos need to provide information beyond banking solutions and designs its websites as effective delivery channels.
- There is need to foster cooperation among Saccos to provide shared technological services and a set of other instruments to facilitate shared services. Some Saccos do not have the financial muscle to have own standalone system or access to some services. When one activity is paired with others both within Saccos and with external customers, suppliers, and channels, the value of virtual banking is increased.

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