Effect of Mobile Bank Innovation and Cost of Implementation on Financial Performance of Commercial Banks in Kenya (A Case Study of a Commercial Bank in Embu County)

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***Abstract:*-Financial institutions in Kenya are in the process of significant transformation. The force behind the transformation of these institutions is innovation in information technology, rapid development of information technology has made banking tasks more efficient and cheaper. Banks are now increasingly choosing mobile platforms for innovative payment models and commerce capabilities. The general objective of the study was to analyze the effect of mobile banking innovation on the financial performance of Commercial Banks in Kenya. The specific objective was to establish the effect of mobile banking innovation financial performance of commercial banks in Kenya and to ascertain the extent to which the costs of implementing and maintaining mobile banking service influence the financial performance of Commercial Banks This study adopted descriptive research design. Target population was a total of 120 respondents from a commercial bank of study in Embu. Stratified random sampling method was used to pick a sample size of 36 respondents. The study collected both primary and secondary data. Primary data was collected using questionnaires. Secondary data was collected from annual reports of the bank. The collected data was analyzed using descriptive statistic especially frequency and percentage presentation. The findings were presented using Graphs and Frequency Distribution Tables. The findings established that new innovation on mobile banking products and costs of implementing and maintaining mobile banking service influence the profitability and creation of shareholder wealth in the bank. This study concludes that new mobile banking product innovation significantly influence financial performance of commercial banks in Kenya**

***Key Words:* Automatic Teller Machine, Central Bank of Kenya, Information Communication and Technology, Kenya Bankers Associations, Short Message Service, Technology Acceptance Model, Wide Area Network and Personal Identification Number.**

I. INTRODUCTION

Mobile networks in Kenya offer mobile-money services in the name of M-pesa by safaricom Ltd, Orange money by Orange Company, Yu- cash by Esser and Airtel Money by Airtel Company. In Kenya, mobile money market registered customers are about 15 million users transferring Kenya shillings two billion daily from above service providers. Mobile-Money providers have partnered with several commercial banks to offer mobile based financial products that are aimed to reach the unbanked Kenyan citizens in all 47 counties in Kenya.

Banks are among the most important financial institutions in the economy. They are the principal sources of credit for millions of individuals and families and for many units of governments (schools, districts, cities, counties) among others. Moreover, for small local businesses ranging from grocery stores to automobile dealers, banks are often the major source of credit to stock their shelves with merchandise to fill a dealer's showroom with new cars. When businesses and customers make payments for purchase of goods and services, more often than not they use bank-provided cheques, credit or debit cards or electronic accounts connected to a computer network like, M-Pesa of Safaricom or Airtel-Money by Airtel Company in Kenya. When these customers need financial information and financial planning, it is the banker whom they turn most frequently for advice and counsel (Rose, 2002).

The Banking industry in Kenya is governed by the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK, 2013).The banking sector was liberalized in 1995 when exchange controls lifted. The CBK, which falls under the Cabinet Secretary for National Treasury docket, is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system. The banks have come together under the Kenya Bankers Association (KBA), which serves as a lobby for the banking sector's interest's .The KBA serves a forum to address issues affecting members (Price Water House Coopers, 2013).

According to CBK, (2013), Kenyan banks have continued to embrace new technology innovation to improve service delivery. A considerable number of banks have adopted the use of mobile phone technology as a service delivery channel to enhance convenience to their customers. In this regard, a number of new products that leverage on ICT, in particular mobile phone telephony were introduced by several institutions (CBK, 2013).

Financial performance refers to how adequately a financial firm meets the needs of its shareholders (owners), employees, depositors and other creditors and borrowing customers. At the same time, commercial banks must find a way to keep government regulators satisfied that their operating policies, loans and investments are sound, protecting the public interest. The success or failure of these institutions in meeting the expectations of others is usually revealed by a careful study of the financial statements of the bank (Rose et al, 2008). The significant changes that have occurred in the financial sector have increased the importance of performance analysis for modern banks. The new banking environment is characterized by intense competition and a movement towards increasingly market oriented banking systems. In many countries, the widespread privatization of process has led to the effect of weakening political interference in bank management while the objective of shareholder's wealth maximization is now a priority (Koch & Macdonald, 2005).

Statement of the Problem

In the recent past, Kenya financial market has witnessed a lot of transaction due financial innovation in mobile banking in Kenya, which has also seen intense competition in the banking sector. This has resulted in an increase uptake of the mobile banking services by both private and public financial institutions and banks. Today, banks in Kenya have adopted wireless and mobile technology into their boardrooms to offer their customers the freedom to pay bills, assist customers plan their payments at their convenience, to receive updates on the various marketing, and provide more personal and intimate relationships (Ongwenyi, 2012). This uptake of the service comes along with several financial costs, challenges and risks on the part of service providers as well as customers. The rush by commercial banks and other players in the financial and communications industry has created a paradigm shift in the operations and financial performance of these players immensely (Ongwenyi, 2012). According to Gatere (2014), the symptoms of these changes are obvious as indicated by new products and new production processes. The cost of implementation of the new service requires immense financial resources, both physical infrastructures, Human resources, and other resources required for the successful cost of implementation of the service.

Thus need for this study to empirically identify and analyse the effects of mobile banking innovation on the financial performance of commercial Banks in Kenya.

Research Objectives

The general objective of the study was to establish the effect of mobile banking innovation on the financial performance of Commercial Banks in Kenya.

The specific objectives were

i. To establish the effect of new mobile banking products innovation developments on the financial performance of commercial Banks in Embu County, Kenya.
ii. To ascertain the extent to which the costs of implementing and maintaining mobile banking service affects the financial performance of commercial Banks in Embu County, Kenya.

Research Questions

i. Does mobile banking product innovation development affect the financial performance of commercial Banks in Embu County, Kenya?
ii. Does the cost of implementing and maintaining mobile banking service innovation affect the financial performance of commercial Banks in Embu County, Kenya?

Theoretical Literature Review

This section brings out theory anchoring the study, which is the Theory of Information Production and Contemporary banking and the liquidity preference theory.

Theory of Information Production and Contemporary Banking

Diamond (2014) suggested that economic agents may find it worthwhile to produce information about possible investment opportunities if this information is not for free for instance surplus units could incur substantial search costs if they were to seek out borrowers directly. Banks enjoy economies of scale and have expertise in processing information related to deficit units (borrowers). They may obtain information upon first contact with borrowers but in real sense it’s more likely to be learned over time through repeated dealings with the borrower.

Rogers (2011), identified five critical attributes that greatly influence the rate adoption. These include relative advantage, compatibility, complexity, triability and observability. If an organization observes the benefits of mobile and internet banking, they will adopt these innovations faster and have internet access and information technology departments than organizations without. Rose (2014), further noted that the most important innovation on mobile banking in financial dimensions for any banks are profitability and risk. The objective of maximizing profitability requires an institution to be continuously on the look-out for new opportunities for further revenue growth, greater efficiency and effective planning control.

Liquidity Preference Theory

The liquidity preference theory was formulated by Keynes (1971). The theory suggests that liquidity preference entails the degree to which individuals prefer cash over less liquid assets. It basically entails individuals` ease of holding cash. The theory suggests that, holding all other things equal, investors actually prefer liquid investments in comparison to illiquid ones. Investors prefer cash as it results to a resultant demand in premiums after they fortify their cash by adopting illiquid investments (Choudhry, 2011). Liquidity is cash money whereas liquidity preference is people liking for cash money. Therefore, attraction to mobile banking supports the liquidity preference theory since customers can easily access their finances through mobile banking platforms.

Empirical Literature Review

Mobile banking Products Development and Financial Performance

According to Njenga (2009), mobile banking services can offer services such as; Account information, which entails mini-statement enquiry and checking account history, alerts on account activity or passing of set threshold, monitoring of term deposits, access to loan statements, access to card statements, mutual funds/Commercial statements, insurance policy management, pension plan management and status on cheques, stop cheque payments.

Payment and transfer services which include; domestic and international transfers, micropayment handling, mobile recharging, commercial payment process, bill payment processing, peer to peer payment, business to business payment. Saving and investment services which include; portfolio management services, real-time stock quotes, personalized alerts, notification on security prices. Support services that entail status of request for credit including mortgage, approval and insurance coverage, cheque book and card requests. Exchange of data messages and email services which include; complaint submission and tracking, communication on new ATM location. Contact service which includes general information such as wealth updates, news loyalty-related offers and location-based services (Njenga, 2015).

Ongwenyi (2012), revealed that banking transactions have increased as a result of the adoption of mobile banking. He also observed that among the products that have transformed the way of banking included payment of bills, account opening, cash deposits and withdrawals, the newly emerged mobile banking service represent an innovation where both intangible services and an innovative medium of service delivery employing high technology are present, thus the concepts of innovation and diffusions of innovation are even more intricate as technology and service aspects have an effect on characteristics of mobile banking services.

Mobile Banking Cost of implementation and Financial Performance

There is limited documentation on mobile banking cost of implementation, but the universal principles of system cost of implementation apply. According to Nyandiere (2006), system cost of implementation involves four phases namely hardware selection, acquisition and installation, User training, file conversion/creation and system changeover / adoption.

A user may acquire the hardware and software directly from a manufacturer and developer respectively, or may also purchase them from an intermediate supplier. He further observed that the following financing methods are available for companies planning to implement new systems; purchasing, where the buyer acquires ownership of item after payment of an agreed amount. Leasing on the other hand involves formation of an agreement between lessee and less or detailing the use of equipment, the length of time to use the equipment and the periodical payment.

The third financing method is renting, which involves a single agreement where one party agrees to use another party's resources at certain periodical payments. The agreement is not as binding as that of a lease agreement (Nyandiere, 2006).While choosing the appropriate software, a company may be guided by several factors(software factors) and may include; User requirements, where the selected software or package should fit user requirement as closely as possible. Secondly, processing time involves the response time, for examples if the response time of software is slow the user might consider the software or package as unsuccessful. The third factor is documentation.

Software should be accompanied by manual, which is easy to understand by non-technical person. The manual should however not contain technical jargon. Software should also be friendlier to users. The package should be easier to use with clear on screen prompts, menu driven and extensive on screen help facility. The software should have in-built controls which may include password options, validation checks, audit trails or trace facilities among others.

Other factors that should be considered include; the software should be up-to-date. Example ,should have changes or corrections in line with business procedures, one should consider whether the user could freely change the software without violating copyright, one should consider how many users are using the software and how long it has been in the market, Compatibility of the software: how the software integrates with other software particularly the operating system and the user programs, Portability: one should consider how the software runs on the user computer and whether there will be need for the user to upgrade his hardware, and Cost: the user company should consider its financial position to establish whether it can afford the software required for efficient operations rather than the least cost package software available (Nyandiere, 2006).

Nyandiere (2006), further observed that while acquiring new software, the acquiring entity may consider entering into software contracts and acquiring software licenses. Software contracts include costs, purpose and capacity of the software. Software contracts include Warrant terms, System support, Arrangements for upgrades, maintenance arrangements, and delivery period/time especially for written software. Other factors included in software contracts include performance criteria and software ownership.

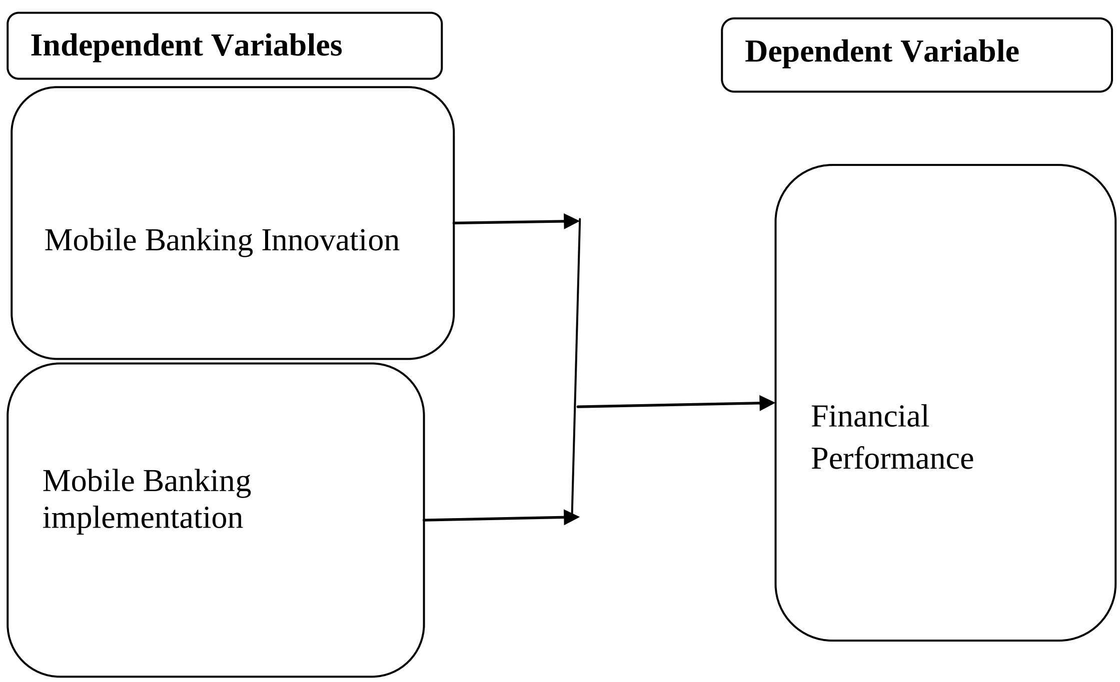
Software licensing on the other hand covers the number of users that can use the software legally, whether the software can be copied without infringing copyrights, whether the software can be altered without the developer's consent, the circumstances under which the licensing can be terminated, limitations of liability example, if the user commits fraud using the software and the obligation to correct errors or bugs if they exist in the software user training is important before system adoption so that the system users can familiarize themselves with the hardware and the system before the actual adoption.

The aims of user training are to reduce errors arising from learning through trial and error, to make the system to be more acceptable to the users, to improve security by reducing accidental destruction of data, to improve quality of operation and services to the users, to reduce the cost of maintenance by minimizing accidental destruction of data or hardware and to ensure efficiency in system operation when it goes live. The persons to be trained include system operators, senior managers, middle managers and all those affected by the system directly or indirectly. Training should cover current staff and recruited personnel (Nyandiere, 2006).

System maintenance is carried to improve the system adaptability and flexibility. Flexibility involves minor changes in a system in order to cope up with the growth in business transaction volume. Adaptability involves changing a system in order to benefit the user from advances in both software and hardware technology. System maintenance may include corrective maintenance, perfective maintenance, adaptive maintenance, preventive maintenance and replace maintenance. Corrective maintenance is usually a change effected in a system in response to detected problem or error. Its objective is to ensure that the system remains functional. Perfective maintenance is a change to perfect a system, to improve its performance in terms of response time to user request or to amend a system interface to make a system more user friendly. Adaptive maintenance involves changing a system to take account of a change unit functional environment.

Conceptual Framework

Figure 1



II. RESEARCH DESIGN AND METHODOLOGY

Introduction

Research methodology is a framework within which facts collected are placed together so as to bring out their clear meaning. This section of study includes: research design, target population sampling techniques, sample size, sampling procedure, and data collection instruments, validity, reliability and data analysis.

Research Design

This is the overall plan for conducting the study in order to answer the Pre-set questions. This study adopted a descriptive research design. It was efficient in establishing the effects of mobile banking innovation of Commercial Banks.

A descriptive research design is a scientific method of investigation in which data is collected and analyzed in order to describe the current condition, term or relationship concerning a problem in their natural setting.

Descriptive research is used to obtain information concerning the current status of the phenomena to describe what exists, with respect to variables or conditions in a situation, Mugenda & Mugenda, 2012.

Target Population

Breda G.Cox (2011), defines target population as a set of units for which the survey data are to be used to make inferences, thus target population defines those units for which findings of the survey are meant to generalize. The study focused on various branches of commercial Bank in Embu County, Kenya.

Table 1 Distribution of Target Population and accessible population

. Categories	Target Population	Percentage (%)
Management	20	17
Finance and marketing	25	21
Customer service	40	33
Credit	35	29
Total	**120**	**100**

Source: Commercial Bank Human Resource Management (2016)

Sampling Techniques

Sampling is the selection of a small group which represents an instead larger one (Mugenda & Mugenda, 2012). The study used stratified and random sampling techniques. The stratified technique ensured that a sample picked will represent the population. The simple random sampling will be used to select participants from the various selected Commercial Banks within Embu County, Kenya

Sample Size

A sample is a set of individuals selected from a population and usually intended to represent the population in a research study (Neuman, 2004). This is achieved by getting thirty percent (30%) of the target population. Mugenda & Mugenda, 2012 recommends this ratio because it gives a smooth curve.

Table 2: Distribution Sample Population Selected

Categories	Sample	Population Percentage (%)
Management	6	17
Finance and marketing	8	22
Customer service	12	33
Credit	10	28
Total	**36**	**100**

Data Collection Instrument/Procedure

The data collection instrument in this study was structured questionnaires. The questionnaire was appropriate to aid the respondents in giving collect answers without fear (Pamela,2013). The questionnaires contains mainly closed ended questions which have a list of options and were preferred because of their convenience since it allowed the access of data from scattered sample at a low cost thus the result was more reliable (Kothari, 2014).

The data collection was drop and picks technique which was convenient for the respondents and also enable the researcher to obtain adequate responses. The researcher administered the questionnaires personally to the respondents and picked them later after a week. This way is efficient as it ensures collection of responses from a large sample is ensured (Pamela, 2003).

Pilot Test

The study will carry out a pilot test, the validity and reliability of the questionnaires in gathering the data required for the purposes of the study. Kombo and Tromp (2011), and Kothari (2004), describe a pilot test as a replica and rehearsal of the main survey. Dawson (2002), states that pilot testing assist researchers to see if the questionnaire obtained the required results. Reliability was to be tested by use of four questionnaires which will be piloted with random selection from the bank management who will not be included in the final study.

Validity and Reliability

According to Mugenda and Mugenda (2012), reliability is the consistency with which research instrument measures what purposes to measure. The test retest technique was used to test the reliability of the research instrument.

The test involved administering ten respondents twice to the same group of subject with time intervals of one week. According to Mugenda and Mugenda (2012), validity is the accuracy and meaningfulness of interferences which are based on research results. The study applied content validity as a measure of the degree to which data obtained from the research instrument mean fully and accurately reflect or represent a theoretical concept.

The researcher gave a copy of questionnaires to the supervisor to check if it represented all the objectives of the study. The researcher personally administered research tool after a prior visit that assisted in refining timings of the distribution of the questionnaires.

Ethical Consideration

Businesses today are technology and innovation driven. There is huge competition in the sphere and therefore like other industry or business function ethics is essential here also. Specially because ethics by itself is only a tool to create and doesn't know ethics or morals!

Every day we have innovative products and services that announce their arrival in the market place and others that go obsolete. It is this technology and innovation that leads to ethical issues, considering the competition to stay ahead by innovating is immense. Issues like data mining, invasion to privacy, data theft and workplace monitoring are common and critical.

In the first case we are compelled to think about the pace at which technology is progressing. There are manifold implications here, be it things like computer security or viruses, Trojans, spam's that invade the privacy of people or the fact the technology is promoting consumerism. Commercial Bank Limited has ensured that a follow-up in how ethical issues are considered as its way to take care of its clients.

Nowadays data storage is primarily on computer systems. With the advent of internet technology the world has got interconnected and data can be accessed remotely by those who are otherwise unauthorized to do the same. This is one of the pitfalls of innovation. The other one i.e. the pace of technological change also raises the question of ethics.

III. RESEARCH FINDINGS AND DISCUSSION

A) *Response rate*

Table 1 Response Rate

Response	Frequency	Percentage
Returned Questionnaires	31	86%
Questionnaires not returned	6	14%
Total	**37**	**100%**

Table 1 show 86% of response rate while 14% did not respond. This shows that the respondents co-operated and this made it possible for study to get the information for the study.

B) *Gender Analysis*

Gender of respondents was very significant to this study. The genders were presented in the table 2.

Table 2 Gender Analysis

Population category	Frequency	Percentage (%)
Male	25	81%
Female	6	19%
Total	**31**	**100%**

Table 2 shows that the total number of male who responded was 81% while female respondents' were 19%. From the study, it can be concluded that there was no gender balance in the organizations. This shows that the males supported the study findings than the females.

C) *Mobile Banking Service innovation.*

i. On whether the organization offered mobile banking services

Table 3: Organization offering Mobile Banking Services

Category	Frequency	Percentage
Yes	31	100
No	0	0
Total	**31**	**100**

Table 3, shows that 100% of the respondents declared that their banks offer mobile banking services.

ii. *Mobile Banking Service Introduction*

On when the mobile banking innovation was introduced by commercial banks in their respective banks.

Table 4: Mobile Services introduction

Category	Frequency	Percentage
Below 5 years ago	28	92%
No idea	3	8%
Total	**31**	**100**

Table 4, shows that 92% stated that their banks started offering the service less than five years while 8% had no idea when the service began.

iii. *Innovation of New Mobile Banking products.*

As to whether the organizations introduced new mobile banking products as a result of innovation of mobile banking service. Findings showed that 94% of the respondents agreed that their organizations introduced new innovation mobile banking products as a result of the adoption of mobile banking service, while 6% did not agree.

iv. *Opinion on the new mobile banking product innovation influence and the financial performance of Commercial banks in Kenya?*

As to whether the new mobile banking products influence the financial performance of Commercial banks, the study established 83% of respondents were in agreement that it influences financial performance.

Table 5 New mobile Banking Innovation Influence on Financial Performance

Category	Frequency	Percentage
Agree	25	83
Disagree	6	17
Total	**31**	**100**

D) *Mobile Banking Cost of implementation*

The researcher wanted to know whether mobile banking maintenance and

Cost of implementation costs affect bank financial performance. All the respondents were in agreement that mobile banking innovation affects financial performance of commercial banks in Kenya.

Table 6 Mobile Banking Maintenance and Cost of implementation costs

Category	Frequency	Percentage
Yes	31	100
No	0	6
Total	**31**	**100**

E) Financial Performance

When the respondents were asked to rate the financial performances of their banks in a period of last 5 years, the findings showed that 67% indicated that banking innovation was good and affects financial performance positively.

Table 7:Rating of Financial Performance

Category	Frequency	Percentage
Good	24	67
Excellent	10	28
Bad	2	5
Total	**36**	**100**

IV. SUMMARY OF DATA ANALYSIS

Research aimed to establish the effects of mobile banking innovation on the financial performance of Commercial banks in Kenya and how best the factors can be addressed to improve the bank performance. Data about the variables was obtained from a sample of 36 of which 31 employees responded using the questionnaire. The study showed that 86% of the respondents responded appropriately to the questionnaire. This showed that the research was popular.

According to the research done, majority of the respondents of the organizations were male. That was 81% of the respondents. Male respondents were higher as compared to female respondents. This showed that there is gender bias in the organizations. Most of the respondents were aged between 35-40 years which is 48% of the total respondents. The majority of the respondents had attained a diploma in their level of education at 65%.

On the current positions of the respondents, majority of them were in management at 69%. This could be because most of the operations are carried out through innovation to improve the services in the organization. The data collected showed that majority of the respondents at 53% had worked in the bank for a period of not more than one year. This could be as a result of transfers to other parts of the country.

Results showed that 81% of the respondents stated that the bank was registered locally. All the respondents agreed that their bank offered mobile banking services. 92% of the respondents stated that the bank begun offering mobile banking service less than five years ago.

Majority of the respondents at 83% agreed that mobile banking innovation for their services affect the performance of Commercial Bank. Most of the respondents at 50% declared that payments and transfers services affect bank performance a lot. This could be as a result of expenses incurred while carrying out the transactions. Access to account information moderately affects bank performance. This was stated by 42 percent of the respondents since the innovation is not very familiar to them.

Majority of the respondents at 53% stated that influence of savings and investments moderately influenced the performance of Commercial Bank since most use the M-Pesa transactions which are easier to use. As to whether the costs of implementing and maintaining the mobile banking service affect the financial performance of their bank. According to the findings, all the respondents (100%) reported that the costs of implementing and maintaining the mobile banking service innovation affect the financial performance of their bank. From these findings we can deduce that the cost of implementing and maintaining the mobile banking service affects the financial performance of their bank81% stated that software acquisition affected their bank performance while system failures affected at 100%.

V. CONCLUSION AND RECOMMNENDATIONS

New mobile banking innovation

This study concludes that new mobile banking products significantly influence financial performance in Commercial banks positively. The study also concludes that payments and transfer services and access to account information influence the profitability and creation of shareholder wealth in their bank a lot. On the other hand, savings and investment influence the profitability and creation of shareholder wealth in their bank moderately.

Mobile Banking Cost of implementation and Associated Costs

The study also concludes that there is a negative significant relationship between mobile banking costs and financial performance in Commercial banks in Kenya. The study also concludes that cost of implementation cost, software maintenance cost, software acquisition cost and user training cost influences the profitability and maximization of shareholder's wealth in their bank moderately.

Recommendations of the Study

New mobile banking Products

This study established that new mobile banking products influence the profitability and creation of shareholder wealth of their bank a lot. This study therefore recommends that Commercial Banks in Kenya should improve their mobile banking products and ensure that there is no market cannibalism where new products compete for the market with other products.

Mobile Banking Cost of implementation

The study also found that mobile banking costs influence and financial performance in Commercial banks in Kenya moderately. This study therefore recommends that Commercial banks in Kenya should minimize mobile banking costs completely so as to reduce its influence on the financial performance.

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