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Mobile Banking Innovation and Financial Performance of Selected Commercial Banks in Kenya

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Abstract

The decline in the profitability of the banks is a great source of worry. This is a problem because the financial industry in Kenya is largely commanded by commercial banks who are the main contributors to the economy. Therefore, in such a scenario the collapse of the banking sector can ultimately lead to that of the economy as a whole. The inconsistency in profitability of commercial banks has been attributed to dynamic changes financial technology including mobile banking. In order to minimize on their operational costs, commercial banks have had to invest on technology working hand in hand with mobile service providers to come up with mobile banking. Mobile banking is a service offered by a bank or a financial institution that allows clients access account remotely by using a mobile device or tablet, and may use a software or Unstructured Supplementary Services Data. It allows the clients to access financial services with less hustle as well as assisting the banks and financial institutions reduce their overhead costs. The purpose of this study was to determine the mobile banking innovations and financial performance of selected commercial banks in Kenya. The study objectives were to; establish the influence of m-banking charges, establish the influence of new m-banking products, determine the influence of m-banking costs and determine the influence of m-banking efficiency on financial performance of selected commercial banks in Kenya. The study also sought to establish the moderating effects of CBK rules and regulations and m-banking on the financial performance of selected commercial banks in Kenya. The study adopted a descriptive research design. The target population comprised of 42 commercial banks. Data were collected using structured questionnaires. Data collected was analyzed using descriptive statistics and inferential statistics. Correlation result findings revealed that m-banking charges and financial performance

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are positively and significantly related. Regression of coefficients results showed that mobile banking charges, mobile banking products, m-banking efficiency and financial performance of selected commercial banks are positively and significantly related. Regression results also showed that mobile banking cost is negatively and significantly related with financial performance. During test for moderation, it was found that CBK rules and regulations moderate m-banking and financial performance of selected commercial banks in Kenya. The R^2 before moderation was 53.9% but after moderation the R^2 improved to 54.0%. This implies that compliance with CBK rules and regulations improves the performance of commercial banks. The study concluded that m-banking charges, m-banking products, m-banking costs and m-banking efficiency influences financial performance of selected commercial banks in Kenya. The study also concluded that CBK rules and regulations moderate the relationship between m-banking and financial performance of selected commercial banks in Kenya. The study recommends mobile banking efficiency be a driving goal for all commercial banks. Mobile banking efficiency is a necessary ingredient for performance.

Keywords: *mobile banking innovation, financial performance, commercial banks, Kenya*

INTRODUCTION

World Bank (2017) report provides evidence of a dropping profitability of commercial banks across the years. The profitability of commercial banks measured in ROE was 21.99% in 2016 declined from 23.10% in 2017. The drop in profitability was also witnessed in 2013, 2014 and 2015 as the ROE declined to 20.94%, 20.88% and 17.39% in that order (Ahmed & Wamugo, 2018). The profitability hence dropped in 2017 that was majorly linked to the capping of interest rate in 2016. The 2016 financial reports of banks witnessed huge banks profitability declining between 4 percent and 10 percent (Central Bank of Kenya, 2018). The decline has brought more worries to the public government and investors especially with the placement of Imperial bank and Chase bank under receivership.

The decline in the profitability of the commercial banks is a great source of worry. This is a problem because the financial industry in Kenya is largely commanded by commercial banks who are the main contributors to the economy (Munyoki, Rotich & Anyango, 2015). Therefore, in such a scenario the collapse of the banking sector can ultimately lead to that of the economy as a whole. The inconsistency in profitability of commercial banks has been attributed to dynamic changes financial technology including mobile banking (Njoroge & Mugambi, 2018).

Financial technology has continued to revolutionize the banking industry. The delivery of financial services has experienced major changes during the past few years (Ahmed & Wamugo, 2018). A feature of the banking industry across the globe has been that it is increasingly becoming turbulent and competitive thereby forcing commercial banks to innovate for survival (Harelimana, 2017). Banks, aided by technological developments, have responded to the challenges by adopting new

strategies which emphasize on attempting to build customer satisfaction through offering better products and services and at the same time to minimize operation costs (Mabwai, 2016).

Mobile banking is the use of a mobile phone to access financial services (tight to traditional bank account) and trigger a financial transaction (Chatain, 2011). It involves a diverse set of stakeholders from both mobile operators to the financial institutions (Al-Jabir, 2012). Mobile money transfer (MMT) is an innovation to transfer money using the information, communications and technology (ICT) infrastructure of the mobile network operators (Mbiti, 2011). Mobile banking is evolving as the new front on which banks can differentiate their service delivery (Ouma, Odongo, & Were, 2017). Financial services and banks have an opportunity to control costs, generate attract or retain customers, new business, and gain other advantages use of applications for mobile phone users (Johnstone, 2010). The mobile banking platform enables increased penetration by banks to areas not accessible for physical presence that involves huge investments in physical infrastructure (Harelimana, 2017). Banks are also able to sell more services to existing clients through mobile banking thus increasing the banks share of wallet. Mobile banking services is much cheaper than other money transfer options like western union (Omwansa, 2009). M-banking charges differ from different mobile banking services and banks. This is the main income that commercial banks in Kenya earn from (Sangaré & Guérin, 2016). The mobile banking tariffs are both set by the Mobile Network Operators (MNO) and the banks. This is a fixed fee for each mobile banking transaction that will take place.

Mobile banking products enable users to use their devices to manipulate their bank accounts, store money in their mobile phones through a linked account, even access credit or transfer funds (Waiganjo, 2018). The major aim of the applications was clients from developed world. By complementing services offered by banks, such as voice mail/landline interfaces, cheque books, ATMs, Credit cards, point of sale networks, internet resources. The mobile platform offers an easy way of managing money without physically handling cash (Karjaluoto, 2002). The M-Pesa has made money transfer companies to lower their prices and rates; M-Pesa has also made these firms and other financial firms to better their products and services (Mabwai, 2016). Firms in some cases, have partnered with M-Pesa to offer an integrated service (Njiraini & Anyanzwa, 2008).

The provision of banking services was traditionally an expensive venture. In order to provide services to their customers, banks had to invest in machines, buildings and staff so as to provide services to their customers (Munyoki, Rotich & Anyango, 2015). Due to the coming of m-banking banks need not invest in capital equipment so as to provide banking services (Njoroge & Mugambi, 2018). Mobile banking has penetrated to rural areas and many people can now access financial services. Most urban dwellers use m-banking services to pay for prepaid electricity, airtime and remittance to relatives and friends in rural villages.

Further, mobile banking is emerging as a major electronic channel for the global banking and financial service industry (Kithaka, 2014). The pervasive essence of mobile devices/ services and the ability of m-banking services to reduce overall streamline operations, operational costs, and increase customer base are expected to raise prospects in the industry (Insight, 2010). The use of m-banking can contribute to customer satisfaction, improved bank performance, expanded product range, in terms of increased market share, better response to client demand and customized products. M-banking continues to be used as a strategic tool which influence banks income structure since successful strategy in terms of customer enhancement or retention ultimately leads to the profitability (Mageto, Muturi & Abuga, 2017). For financial institutions, m-banking and mobile money can help develop reduce operational, costs customer loyalty, increase banking penetration, meet government service obligations (Wishart, 2006).

Commercial banks in Kenya are licensed, regulated and supervised by the central bank of Kenya as mandated by the banking act (Cap 488). Pursuant to the prudential guidelines on Incidental business activities, banks are allowed to act as distribution means for other financial services such as security brokerage, insurance and other financial services categorized as incidental business to the banking business (Meshak & Nyamute, 2016). Banks can only act as distribution means for non-banking products based on approval by CBK and also based on approved contractual agreement with the primary financial service provider (Orioki, 2011). The guideline contributes on the ongoing capability of enhancing financial inclusion by taking financial services closer to the public (CBK, 2015).

Mobile banking has grown through the years, most banks saw the MNO to be there competitors as they take some of their customers i.e. clients would prefer having money on M-Pesa and not in a bank account which would mean they would have to go to a bank to withdraw cash or deposit (Klein & Mayer, 2011). In 2012, the number of registered M-Pesa customer grew by 6% to 14.9 Million representing 78% of Safaricom entire 19 Million customer base (Mulupi, 2012). The movement from traditional bank to m-banking has caused many banks to come up with strategies to retain existing customers and attract more customers (Mas & Radcliffe, 2010). The goal is to reduce operational, administration and competition that has driven banks to adopt m-banking (Nyaga, 2014). Nevertheless cost reduction is only realizable with a growth in customer adoption (Bradley & Stewart, 2003).

Statement of the problem

The profitability of commercial banks measured in ROE was 21.99% in 2016 declined from 23.10% in 2017. The drop in profitability was also witnessed in 2013, 2014 and 2015 as the ROE declined to 20.94%, 20.88% and 17.39% in that order (Ahmed & Wamugo, 2018). The decline in the profitability of the banks is a great source of worry. This is a problem because the financial industry in Kenya is largely commanded by commercial banks who are the major financial players contributing to the economy (Munyoki, Rotich & Anyango, 2015). Therefore, in such a scenario the collapse of the banking sector can ultimately lead to that of the economy as a whole.

The inconsistency in profitability of commercial banks has been attributed to dynamic changes financial technology including mobile banking (Njoroge & Mugambi, 2018).

Mobile banking was introduced in Kenya as a competitive tool, and also as an operational cost reduction mechanism (Ahmed & Wamugo, 2018). The banking sector in Kenya has experienced some hard times following the collapse of many banks in the 1990's (Munyoki, Rotich & Anyango, 2015). Four banks and twenty-four non-bank financial institutions-accounting for 15 percent of financial system liabilities-faced liquidity and solvency problems between 1985-1989. (World Bank Database of Banking Crises October 6, 2003)

Different scholars have done studies in the mobile banking and electronic banking areas in Kenya. Ngari and Muiruri (2014) studied the effects of financial innovations on the financial performance of commercial banks in Kenya. The study differs as Ngari and Muiruri (2014) focused on the whole financial innovative aspect and did not in detail show the study of mobile banking innovations and its effect on the financial performance on selected commercial banks. Kingoo (2011) studied the relationship between electronic banking and financial performance of commercial banks in Kenya where the main focus was on the microfinance institutions in Nairobi. This study only focused on mobile banking unlike Kingoo (2011) that focused on electronic banking in a wider scope.

Wambari (2009) studied mobile banking in developing countries selecting a case study of Kenya. The study aimed to establish the significance of m-banking in the day to day activities of small businesses in Kenya and to understand the difficulties involved in using mobile banking as a business tool and recognize the merits and demerits therein. This study presents that the acquisition and the use of mobile phones leads to economic benefits as the use of mobiles is an outcome of social process implanted in social practices such as SME's practices. The effect of mobile banking innovations on the financial performance of selected commercial banks in Kenya was not clear as major variables that affect the financial performance were left out, thus this study will attempt to bridge the gap.

Objectives

1. To establish the influence of m-banking charges on financial performance of selected commercial banks in Kenya.
2. To establish the influence of new m-banking products on financial performance of selected commercial banks in Kenya.
3. To determine the influence of m-banking costs on financial performance of selected commercial banks in Kenya.
4. To determine the influence of m-banking efficiency on financial performance of selected commercial banks in Kenya.
5. To establish the moderating effects of CBK rules and regulations and m-banking on the financial performance of selected commercial banks in Kenya.

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LITERATURE REVIEW

Theoretical review

Bank focused theory

The bank-focused theory involve use of non-traditional low-cost delivery to provide banking services to clients like internet banking and mobile phone banking (Lyman, Ivatury & Staschen, 2006). Despite the fact that the bank-centered model offers points of interest, for example, marking perceivability and more control to the monetary establishments concerned, it isn't without its difficulties (Acharya, 2009). Clients' primary concerns are to do with the dependability and availability of administration, nature of experience, degree of personalization permitted, security of character and exchanges (Safieddine, 2000).

Banks address these issues by giving a branchless keeping money benefit with a simple to utilize interface, influenced safe with the assistance of multi-to factor validation and other innovation, equipped for running without interference 365 days a year (Kapoor, 2010). The model subsequently gives a stage of the benefits that banks can get from embracing advancements, for example, m-managing an account in propelling administrations to their clients. The study was anchored on this theory. The theory is relevant to the study as it allows the comparison of traditional banking systems and mobile banking to compare the costs and benefits associated with the two platforms.

Financial intermediation theory

Financial intermediation is a process which involves surplus units depositing funds with financial institutions who then lend to deficit units. Bisignano (1992) identified that 12 financial intermediaries can be distinguished by four criteria. First, their main categories of liabilities or deposits are specified for a fixed sum which is not related to the performance of a portfolio (Woodford, 2010). Second, the deposits are typically short-term and of a much shorter term than their assets. Third, a high proportion of their liabilities are chequeable which can be withdrawn on demand and fourthly, their liabilities and assets are largely not transferable. The most important contribution of intermediaries is a steady flow of funds from surplus to deficit units.

According to Scholtens and van Wensveen (2003), the role of the financial intermediary is essentially seen as that of creating specialized financial commodities. These are created whenever an intermediary finds that it can sell them for prices which are expected to cover all costs of their production, both direct costs and opportunity costs (Scholtens & Van Wensveen, 2000). Financial intermediaries exist due to market imperfections. As such, in a 'perfect' market situation, with no transaction or information costs, financial intermediaries would not exist. Numerous markets are characterized by informational differences between buyers and sellers. In financial markets, information asymmetries are particularly pronounced (Maggiori, 2017). Borrowers typically know their collateral, industriousness, and moral integrity better than do lenders. On the other hand, entrepreneurs possess inside information

about their own 13 projects for which they seek financing (Leland & Pyle, 1977). Moral hazard hampers the transfer of information between market participants, which is an important factor for projects of good quality to be financed.

Innovation diffusion theory (IDT)

This theory was officially introduced by Bradley and Stewart in the year 2002 and it asserts that firms engage in the diffusion of innovation in order to reduce costs, protect their strategic positions, and gain competitive advantage. The innovation diffusion theory put forward by Rogers in 1962 is a well -known theory that describes how an innovation is diffused between users over time (Liu & Li, 2010). It also helps to understand customers' behavior in the adoption or non-adoption of an innovation (Dineshwar & Steven, 2013). The theory depicts that the adopters of any innovation follow a bell-shaped distribution curve which may be divided into five parts to categorize users in terms of innovativeness (Liu & Li, 2010). Rogers classified users as innovators, early adopters, early majority, late majority and laggards.

The adoption and use of mobile banking requires the willingness of commercial institution to learn, innovate, adopt and apply emerging technologies so as to remain competitive and improve service delivery. Mobile banking requires continuous improvement that is only possible through technological research and development. In that regard, the performance of a commercial bank is improved.

Growth of the Firm Theory

This theory was fronted by Penrose (1959) who offered durable principles governing the growth of firms and the rate at which firms can grow efficiently and be profitable. Penrose (1959) provides a theory of effective management of firm's resources, productive opportunities, and diversification strategy. Specifically, Penrose (1959) provides an explanatory logic to unravel causal links among resources, capabilities, and firm performance. Penrose (1959) provides at least three key arguments concerning linkages among firm's resources, productive opportunities, and profitable firm growth. Penrose (1959) first maintains that firms can create economic value not due to mere possession of resources, but due to effective and innovative management of resources.

This indicates that a firm commanding massive resources is not necessarily more profitable than firm commanding little resources (Penrose & Penrose, 2009). Creative resource deployments spur differences in productive opportunities and financial performance. According to the theory, the desire to maximize profit induces the behavior of a firm (Ezra, 2013). This theory governs decision making in especially in resource allocation in financial innovation. Theory of the firm is relevant to this study as it informs firm performance. Financial performance shows the financial health state of a company over a specific period of time. This makes markets endogenous in the theory of the firm by creating market for its goods and developing suitable pricing mechanisms. It also creates and manages institutions that require personnel and financial capital making firms endogenous.

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Journal of Finance and Accounting
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Conceptual framework

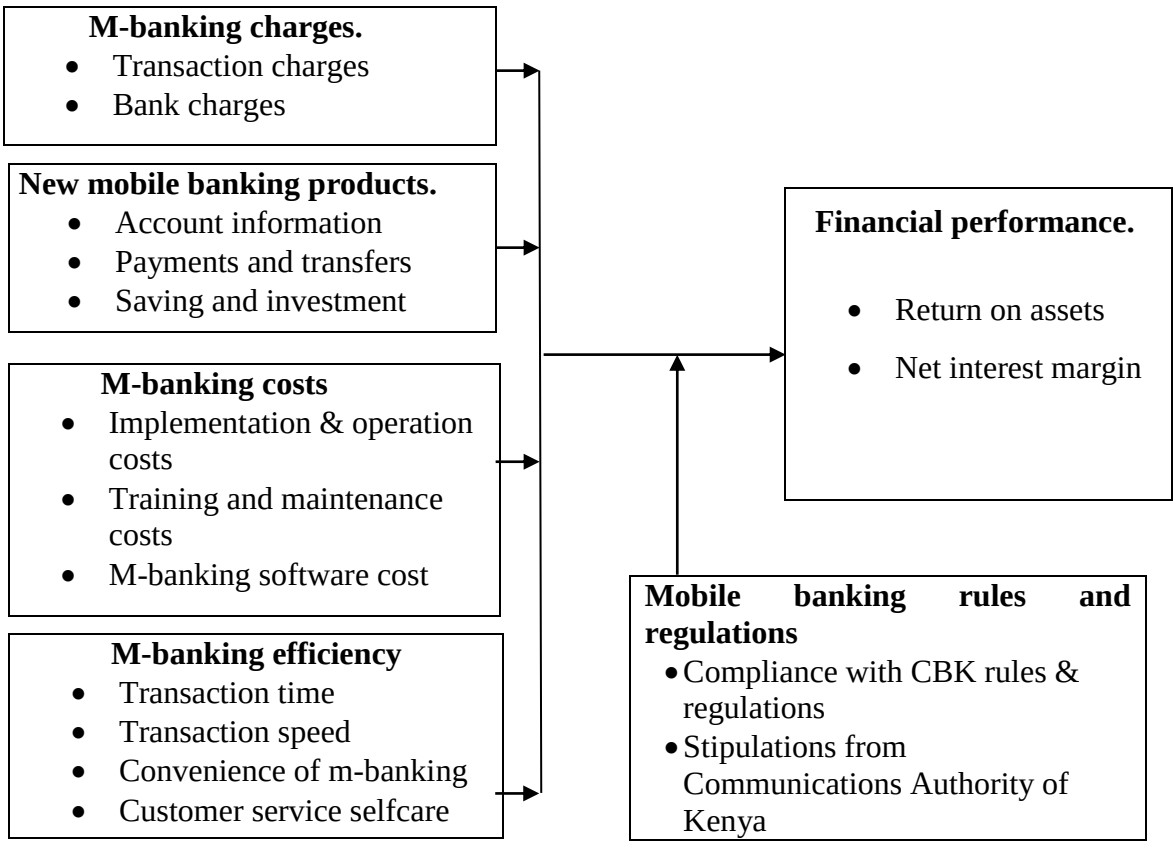

Figure 1 Conceptual framework

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Journal of Finance and Accounting
Volume 3||Issue 3||Page 228- 254||Nov|2019|
Email: info@stratfordjournals.org ISSN: 2616-4965

RESEARCH METHODOLOGY

The study adopted a descriptive research design. The target population of this study was 38 commercial banks operating in Kenya as at 1st September 2016 (NSE, 2018) and the target respondents were 3 senior management officers per bank making a total of 114 respondents. The study employed questionnaire to collect data. The quantitative data collected using questionnaire and analyzed using SPSS software Version 25.0. The statistics generated included both descriptive statistics and inferential statistics. The specific descriptive statistics included frequencies, mean scores and standard deviation. The particular inferential statistics were correlation and regression analyses. The analysis of variance (ANOVA) was employed to reveal the overall model significance. A critical p value of 0.05 was used to determine whether the individual variables are significant or not. The multiple regression model to be determined is.

$$\mathbf{Y=} \beta_0 + \beta_1 \mathbf{X_1} + \beta_2 \mathbf{X_2} + \beta_3 \mathbf{X_3} + \beta_4 \mathbf{X_4} + \mathbf{e}$$

Where Y= Financial Performance of Commercial Banks

X_1= M-banking charges

X_2= New mobile banking Product

X_3= M-banking Costs

X_4= M-banking Efficiency

β_0 = the constant term

β_1 = 1….4 was be used to measure the sensitivity of the dependent variable (Y) to unit change in the predictor variables.

e is the error term which captures the unexplained variations in the model.

The study adopted Kenny and Baron (1986) moderating technique. The change in R^2 was used to confirm moderating effect of mobile banking rules and regulations. Therefore, the model will be as shown below;

$$\mathbf{Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 M + \beta_6 C.M + \epsilon}$$

Where;

X_1, X_2, X_3, X_4 = Independent variables

M = Moderating Variable

C = Composite function of X_1, X_2, X_3, X_4 (Mobile banking)

C.M = Moderator Multiplied by the Composite of mobile banking (Interaction Term)

Change coefficient of determination (R square) was used to interpret moderating effect of CBK rules and regulations on relationship between mobile banking and financial performance of commercial banks. An increase in R square implies that the moderator has a positive moderating effect on the relationship between mobile banking and financial performance of commercial banks otherwise negative effects.

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Journal of Finance and Accounting
Volume 3||Issue 3||Page 228- 254||Nov|2019|
Email: info@stratfordjournals.org ISSN: 2616-4965

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

Response Rate

The number of questionnaires that were administered was 114. A total of 103 questionnaires were properly filled and returned. The results for the response rate are as presented in Table 1.

Table 1: Response rate

Response	Frequency	Percentage returned
Returned	103	90.4
Unreturned	11	9.6
Total	**114**	**100.0**

The results in Table 1 indicate an overall successful response rate of 90.4%. According to Mugenda and Mugenda (2003) and also Kothari (2004) a response rate of above 50% is adequate for a descriptive study. Babbie (2004) also asserted that return rates of above 50% are acceptable to analyze and publish, 60% is good, 70% is very good while above 80% is excellent. Based on these assertions from renowned scholars, 90.4% response rate was very good for the study.

M-banking charges and financial performance of commercial banks

The first objective was to establish the influence of m-banking charges on financial performance of commercial banks in Kenya. The result findings are shown in Table 2.

Table 2: M-banking charges and financial performance of commercial banks

Statement	Mean	SD
In m-banking one (customer) should maintain an account with both the bank and mobile network service provider.	2.3	1.3
M-banking charges are not expensive	2.3	1.4
M-banking charges affect the Financial performance of commercial banks Positively.	2.1	1.3
Different m-banking services have different charges.	2.3	1.4
More users of m-banking positively affect the financial performance of commercial banks.	2.3	1.3
The mobile network tariff of a user also determines how much the charges will be.	2.3	1.4
Average	2.3	1.3

Results in Table 2 revealed that majority of the respondents (mean=2.3, SD=1.3) agreed that in m-banking one (customer) should maintain an account with both the bank and mobile network service provider. The results also showed that majority of the respondents who were (mean=2.3, SD=1.4) agreed that m-banking charges are not expensive. The results also showed that majority of the respondents (mean=2.1,

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Journal of Finance and Accounting
Volume 3||Issue 3||Page 228- 254||Nov|2019|
Email: info@stratfordjournals.org ISSN: 2616-4965

SD=1.3) agreed that m-banking charges affect the financial performance of commercial banks positively. The results also show that (mean=2.3, SD=1.4) of the respondents agreed that different m-banking services have different charges. Results also showed that (mean=2.3, SD=1.3) of the respondents agreed that more users of m-banking positively affect the financial performance of commercial banks. Further, majority (mean=2.3, SD=1.4) agreed that the mobile network tariff of a user also determines how much the charges will be.

On a five point scale, the overall mean of the responses was 2.3 which mean that a great number of the respondents were agreeing to the statements in the questionnaire. The standard deviation was 1.3 meaning that the responses were clustered around the mean response. Mobile banking has been beneficial to both the banks and customers as it reduces operating cost of the institution and its convenient and cheap as lesser fees are charged on mobile transaction. The results are agree with Njoroge and Mugambi (2018) on the effect of electronic banking on financial performance in Kenyan commercial banks and established that customers in Equity bank prefer mobile banking because of its convenience, cheap charges on mobile transaction and its lack of geographical limitation to customers. Further, the study sought to find out whether new mobile banking products influences financial performance of commercial banks. Result findings were presented in Figure 2.

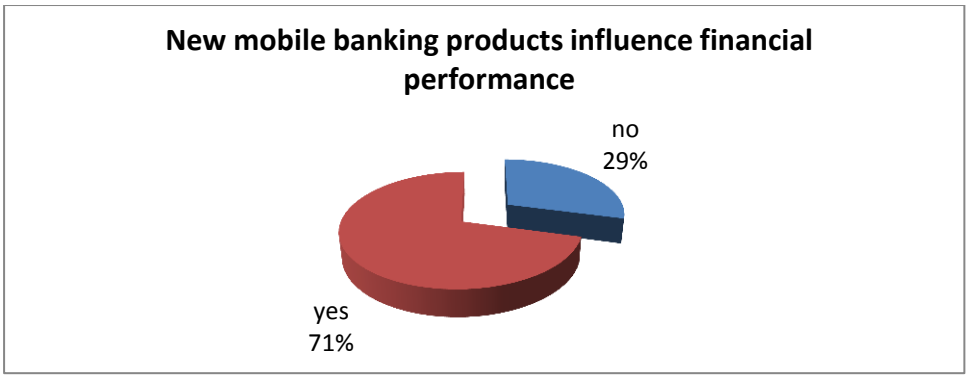

Figure 2: New mobile banking products and financial performance

Majority 71% agreed that new mobile banking products influences financial performance of commercial banks while 29% objected that new mobile banking products influences financial performance of commercial banks. This implies that mobile banking product diversification is healthy for the business.

New m-banking products and financial performance of commercial banks

The second objective was to establish the influence of new m-banking products on financial performance of commercial banks in Kenya. The result findings are shown in Table 3.

Table 3: New m-banking products and financial performance

Statement	Mean	SD
Commercial banks should always update/innovate their m-banking products.	2.0	1.3
The increase of new mobile banking products affects the financial performance positively.	2.4	1.4
Mobile banking products enables the bank to provide better quality services at less cost.	2.2	1.4
New mobile banking products increases the number of users registered on m-banking.	2.0	1.3
Average	2.2	1.4

Results in Table 3 revealed that majority of the respondents (mean=2.0, SD=1.3) agreed that commercial banks should always update/innovate their m-banking products. The results also showed that majority of the respondents who were (mean=2.4, SD=1.4) agreed that an increase of new mobile banking products affects the financial performance positively. The results also showed that majority of the respondents who were (mean=2.2, SD=1.4) of the respondents agreed that mobile banking products enables the bank to provide better quality services at less cost. The results also show that (mean=2.0, SD=1.3) of the respondents agreed that new mobile banking products increases the number of users registered on m-banking.

On a five point scale, the overall mean of the responses was 2.2 implying that a great number of the respondents were agreeing to the statements in the questionnaire. The standard deviation was 1.4 meaning that the responses were clustered around the mean response. New mobile banking product has improved because they ensure efficiency of the banking services enhancing financial performance of the banks. Commercial banks have developed innovative mobile banking products and offered a wide range of services in an effort to increase efficiency which is the ultimate goal of banks. The results are in line with Munyoki, Rotich and Anyango (2015) on the effect of mobile banking on the financial performance of banking institutions in Kenya that many mobile banking products are being offered by banks such as Fund Transfer between Accounts/ E-funds transfer, Bill Payment, order for cheque books and bank statements and therefore concluded that the financial performance of the banks that provide these mobile banking products has improved because they ensure efficiency of the banking services.

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Journal of Finance and Accounting
Volume 3||Issue 3||Page 228- 254||Nov|2019|
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M-banking costs and financial performance of commercial banks

The third objective was to determine the influence of m-banking costs on financial performance of commercial banks in Kenya. The result findings are shown in Table 4.

Table 4: M-banking costs and financial performance of commercial banks

Statement	Mean	SD
The cost of implementing and maintaining the mobile banking service affects the financial performance of commercial banks negatively.	1.7	1.1
Software acquisition cost affects the financial performance of banks negatively.	1.9	1.2
Training cost affects the financial performance of banks negatively.	1.8	1.0
Maintenance cost affects the financial performance of banks negatively.	1.8	1.1
Average	1.8	1.1

Results in Table 4 revealed that majority of the respondents (mean=1.7, SD=1.1) agreed that the cost of implementing and maintaining the mobile banking service affects the financial performance of commercial banks negatively. The results also showed that majority of the respondents who were (mean=1.9, SD=1.2) agreed that software acquisition cost affects the financial performance of banks negatively. The results also showed that majority of the respondents who were (mean=1.8, SD=1.0) of the respondents agreed that training cost affects the financial performance of banks negatively. The results also show that (mean=1.8, SD=1.1) of the respondents agreed that maintenance cost affects the financial performance of banks negatively.

On a five point scale, the overall mean of the responses was 1.8 implying that a great number of the respondents were agreeing to the statements in the questionnaire. The standard deviation was 1.1 meaning that the responses were clustered around the mean response. Mobile banking reduces the transaction costs in regards to time and distance because they can perform banking transactions despite not being near the bank branch. Transaction costs for financial transactions are usually very high especially over the counter transactions. M-banking has the potential of reducing costs across the financial system. According to Kigen (2010), the impact of mobile banking on transaction costs of financial institutions had considerably reduced the transaction costs noticeably though they were not felt directly by the banks because of the then small mobile banking customer base.

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Journal of Finance and Accounting
Volume 3||Issue 3||Page 228- 254||Nov|2019|
Email: info@stratfordjournals.org ISSN: 2616-4965

M-banking efficiency and financial performance of commercial banks

The fourth objective was to determine the influence of m-banking efficiency on financial performance of commercial banks in Kenya. The result findings are shown in Table 5.

Table 5: M-banking efficiency and financial performance of commercial banks

Statement	Mean	SD
M-banking efficiency affects the financial performance of commercial banks positively.	2.1	1.2
M-banking increases the customer service of commercial banks in Kenya positively.	1.9	1.3
Payments of bills can be made through m-banking.	2.0	1.2
One can access m-banking any time 24 hours.	2.1	1.3
Average	2.0	1.2

Results in Table 5 revealed that majority of the respondents (mean=2.1, SD=1.2) agreed that m-banking efficiency affects the financial performance of commercial banks positively. The results also showed that majority of the respondents who were (mean=1.9, SD=1.3) agreed m-banking increases the customer service of commercial banks in Kenya positively. The results also showed that majority of the respondents who were (mean=2.0, SD=1.2) of the respondents agreed that payments of bills can be made through m-banking. The results also show that (74.8%, mean=2.3, SD=1.3) of the respondents agreed that one can access m-banking any time 24 hours.

On a five point scale, the overall mean of the responses was 2.0 implying that a great number of the respondents were agreeing to the statements in the questionnaire. The standard deviation was 1.2 meaning that the responses were clustered around the mean response. M-Banking helped to promote efficiency and confidence in the financial system thus winning public trust. Mobile banking also provides efficient cash management and security of cash. The results are in line with Otieno (2018) who conducted a study on the effect of mobile banking on financial performance of commercial banks in Kenya found management efficiency influences financial performance of commercial banks in Kenya. According to Bonface and Ambrose (2015) in a study on mobile banking and financial performance of commercial banks in Kenya M-Banking helped to promote efficiency and confidence in the financial system thus winning public trust.

Stratford Peer Reviewed Journals and Book Publishing
Journal of Finance and Accounting
Volume 3||Issue 3||Page 228- 254||Nov|2019|
Email: info@stratfordjournals.org ISSN: 2616-4965

Financial performance of commercial banks

Respondents were asked to show how commercial banks have been performing in Kenya in relation to mobile banking. The result findings are shown in Table 6.

Table 6: Financial performance of commercial banks

Statement	Mean	SD
M-banking positively affects the financial performance of commercial banks in regards to return on equity.	1.9	1.2
M-banking positively affects the financial performance of commercial banks in regards to return on asset.	1.8	1.1
M-banking positively affects the financial performance of commercial banks in regards to net interest margin.	1.9	1.2
M-banking positively affects the financial performance of commercial banks in regards to the Profitability.	1.9	1.1
Average	1.9	1.2

Results in Table 6 revealed that majority of the respondents (mean=1.9, SD=1.2) agreed m-banking positively affects the financial performance of commercial banks in regards to return on equity. The results also showed that majority of the respondents who were (mean=1.8, SD=1.1) agreed that m-banking positively affects the financial performance of commercial banks in regards to return on asset. The results also showed that majority of the respondents who were (mean=1.9, SD=1.2) of the respondents agreed that m-banking positively affects the financial performance of commercial banks in regards to net interest margin. The results also show that (mean=1.9, SD=1.1) of the respondents agreed that m-banking positively affects the financial performance of commercial banks in regards to the Profitability.

On a five point scale, the overall mean of the responses was 1.9 implying that a great number of the respondents were agreeing to the statements in the questionnaire. The standard deviation was 1.2 meaning that the responses were clustered around the mean response. Performance is the ability of an organization of an association to pick up and deal with the assets in a few distinctive approaches to create upper hand for their business. There are two sorts of performance, financial performance and non-financial performance (Almajali, Alamro & Al-Soub 2012). Financial performance emphasizes on variables related directly to financial report. Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues.

Stratford Peer Reviewed Journals and Book Publishing
Journal of Finance and Accounting
Volume 3||Issue 3||Page 228- 254||Nov|2019|
Email: info@stratfordjournals.org ISSN: 2616-4965

Correlation matrix

The study attempts to determine the association among the study variables. The results are as presented in Table 7.

Table 7: Correlation matrix

		Mobile Banking charges	Mobile Banking Products	Mobile Banking Cost	Efficiency	Financial Performance
Mobile Banking charges	Pearson Correlation	1.000	.446	-.265	.325	.526
	Sig. (2-tailed)		0.000**	0.007**	0.001**	0.000**
New Mobile Banking products	Pearson Correlation		1.000	-.302	.371	.536
	Sig. (2-tailed)			0.002**	0.000**	0.000**
Mobile Banking cost	Pearson Correlation			1.000	-.358	-.512
	Sig. (2-tailed)				0.000**	0.000**
Mobile banking Efficiency	Pearson Correlation				1.000	.518
	Sig. (2-tailed)					0.000**
Financial Performance	Pearson Correlation					1.000
	Sig. (2-tailed)					

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

The results in Table 7 indicate that mobile banking charges and financial performance are positively and significantly related (r= .526, p=0.000<0.05). Mobile banking has been beneficial to both the banks and customers as it reduces operating cost of the institution and its convenient and cheap as lesser fees are charged on mobile transaction. The results are agreed with Njoroge and Mugambi (2018) on the effect of electronic banking on financial performance in Kenyan commercial banks and established that customers in Equity bank prefer mobile banking because of its convenience, cheap charges on mobile transaction and its lack of geographical limitation to customers. According to Mabwai (2016) mobile banking transactions charges are levied as revenue of the commercial banks.

Correlation results further showed that mobile banking products and financial performance are positively and significantly related (r= .536, p=0.000<0.05). New mobile banking product has improved because they ensure efficiency of the banking

services enhancing financial performance of the banks. Commercial banks have developed innovative mobile banking products and offered a wide range of services in an effort to increase efficiency which is the ultimate goal of banks. The results are in line with Munyoki, Rotich and Anyango (2015) that many mobile banking products are being offered by banks and therefore concluded that the financial performance of the banks that provide these mobile banking products has improved because they ensure efficiency of the banking services. The results also agree with Harelimana (2017) that mobile banking products offered by Unguka Bank Ltd some of which include, Fund Transfer between Accounts, Bill Payment, and order for cheque books and bank statements and mobile money.

Mobile banking cost is negatively and significantly related with financial performance ($r=-.512$, $p=0.000<0.05$). When mobile banking cost goes up, financial performance goes down and vice versa. Mobile banking reduces the transaction costs in regards to time and distance because they can perform banking transactions despite not being near the bank branch. Transaction costs for financial transactions are usually very high especially over the counter transactions. M-banking has the potential of reducing costs across the financial system. According to Kigen (2010), the impact of mobile banking on transaction costs of financial institutions had considerably reduced the transaction costs noticeably though they were not felt directly by the banks because of the then small mobile banking customer base.

Further, mobile banking efficiency and financial performance are positively and significantly related ($r=.518$, $p=0.000<0.05$). As mobile banking efficiency rise, financial performance also rises. M-Banking helped to promote efficiency and confidence in the financial system thus winning public trust. Mobile banking also provides efficient cash management and security of cash. The results are in line with Bonface and Ambrose (2015) in a study on mobile banking and financial performance of commercial banks in Kenya M-Banking helped to promote efficiency and confidence in the financial system thus winning public trust.

Regression Analysis

The results presented in Table 8 presented the fitness of model used of the regression model in explaining the study phenomena. Mobile banking charges, mobile banking products, mobile banking costs and mobile banking efficiency were found to be satisfactory variables in explaining financial performance of commercial banks. By use of a mobile phone and the information technology, customers are able to enjoy a wide range of services including mobile accounting, mobile brokerage and mobile financial information. This is supported by coefficient of determination also known as the R square of 53.9%.

Table 8: Model summary

Indicator	Coefficient
R	0.734
R Square	0.539

This means that mobile banking charges, mobile banking products, mobile banking costs and mobile banking efficiency explains 53.9% of the variations in the dependent variable which is financial performance of commercial banks. This means that we have other factors which affect financial performance of commercial banks which are not included in the model. The results further indicate that the model applied to link the relationship of the variables was satisfactory.

Analysis of Variance

Table 9 provides the results on the analysis of the variance (ANOVA). This was to establish if there was any significant difference among the variables means. Independent variables were explored to determine if their existed any significance difference with the dependent variable (financial performance of commercial banks).

Table 9: Analysis of Variance

Indicator	Sum of Squares	df	Mean Square	F	Sig.
Regression	25.371	4	6.343	28.666	.000
Residual	21.684	98	0.221		
Total	47.055	102			

The results indicate that the overall model was statistically significant. Further, the results imply that the independent variables are good predictors of financial performance of commercial banks. This was supported by an F statistic of 28.666 and the reported p value (0.000) which was less than the conventional 0.05 significance level. Hence, the result findings from the ANOVA showed that the model was statistically satisfactory.

Coefficients

The hypothesis was tested using p-value method. The acceptance/rejection criteria were that, if the p value is greater than the significance level of 0.05, we fail to reject the Null hypothesis (Ho) but if it's less than 0.05 level of significance, the Ho is rejected.

Table 10: Coefficients

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	1.29	0.392		3.291	0.001
Mobile banking charges	0.302	0.090	0.265	3.376	0.001
Mobile banking products	0.235	0.078	0.243	3.026	0.003
Mobile banking cost	-0.211	0.056	-0.282	-3.743	0.000
Mobile banking efficiency	0.220	0.071	0.242	3.103	0.003

Thus, the model for the study is;

Financial performance of commercial banks = 1.290+ 0.302Mobile banking charges+ 0.235Mobile banking products -0.211 Mobile banking costs+0.220 Mobile banking efficiency.

Stratford Peer Reviewed Journals and Book Publishing
Journal of Finance and Accounting
Volume 3||Issue 3||Page 228- 254||Nov|2019|
Email: info@stratfordjournals.org ISSN: 2616-4965

This overall model shows that mobile banking charges will increase financial performance of commercial banks by 0.302 units. Mobile banking products will increase financial performance of commercial banks by 0.235 units. Further, mobile banking costs decreases financial performance of commercial banks by -0.211 units while mobile banking efficiency will also increase financial performance of commercial banks by 0.220 units. Finally, the positive constant (1.29) represents other modules which increases financial performance of commercial banks but have not been included in the model.

Regression of coefficients results in Table 10 shows that mobile banking charges and financial performance of commercial banks are positively and significantly related (β=0.302, p=0.001<0.05). Results in Table 10 indicate that the p-value is 0.001<0.05. The null hypothesis was therefore rejected and conclusion made that banking charges influences financial performance of commercial banks. Mobile banking has been beneficial to both the banks and customers as it reduces operating cost of the institution and its convenient and cheap as lesser fees are charged on mobile transaction. The results are agree with Njoroge and Mugambi (2018) on the effect of electronic banking on financial performance in Kenyan commercial banks and established that customers in Equity bank prefer mobile banking because of its convenience, cheap charges on mobile transaction and its lack of geographical limitation to customers.

Table 10 further indicates that mobile banking products and financial performance of commercial banks are positively and significantly related (β=0.235, p=0.003<0.05). The null hypothesis was that there is no relationship between new m-banking products and financial performance of selected commercial banks in Kenya. Results indicated that the p-value is 0.003<0.05. The null hypothesis Ho_2 was therefore rejected and conclusion made that mobile banking products influences financial performance of commercial banks. New mobile banking product has improved because they ensure efficiency of the banking services enhancing financial performance of the banks. Commercial banks have developed innovative mobile banking products and offered a wide range of services in an effort to increase efficiency which is the ultimate goal of banks. The results are in line with Munyoki, Rotich and Anyango (2015) on the effect of mobile banking on the financial performance of banking institutions in Kenya that many mobile banking products are being offered by banks such as Fund Transfer between Accounts/ E-funds transfer, Bill Payment, order for cheque books and bank statements and therefore concluded that the financial performance of the banks that provide these mobile banking products has improved because they ensure efficiency of the banking services.

It was further established that mobile banking costs and financial performance of commercial banks were negatively and significantly related (β=0.-211, p=0.000<0.05). The null hypothesis was that there is no relationship between m-banking costs and financial performance of selected commercial banks in Kenya. Results indicated that the p-value is 0.000<0.05. The null hypothesis Ho_3 was therefore rejected and conclusion made that m-banking costs influences financial performance of commercial banks. Mobile banking reduces the transaction costs in

Stratford Peer Reviewed Journals and Book Publishing
Journal of Finance and Accounting
Volume 3||Issue 3||Page 228- 254||Nov|2019|
Email: info@stratfordjournals.org ISSN: 2616-4965

regards to time and distance because they can perform banking transactions despite not being near the bank branch. Transaction costs for financial transactions are usually very high especially over the counter transactions. M-banking has the potential of reducing costs across the financial system. The results are in line with Coderias (2017) who conducted a study on the impact of mobile banking on commercial banks in Kenya and found that mobile banking reduces the transaction costs in regards to time and distance because they can perform banking transactions despite not being near the bank branch.

The study also revealed that mobile banking efficiency and financial performance of commercial banks was also positively and significantly related (β=0.220, p=0.003<0.05). The null hypothesis was that there is no relationship between m-banking efficiency and financial performance of selected commercial banks in Kenya. Results indicated that the p-value is 0.003<0.05. The null hypothesis Ho_4 was therefore rejected and conclusion made that m-banking efficiency influences financial performance of commercial banks. M-banking helped to promote efficiency and confidence in the financial system thus winning public trust. Mobile banking also provides efficient cash management and security of cash. The results are in line with Bonface and Ambrose (2015) in a study on mobile banking and financial performance of commercial banks in Kenya M-Banking helped to promote efficiency and confidence in the financial system thus winning public trust.

Moderating effect of compliance with CBK rules and regulations

The fifth objective of the study was to establish the moderating effects of CBK rules and regulations and m-banking on the financial performance of selected commercial banks in Kenya. All the independent variables were moderated by the variable compliance with CBK rules and regulations to give a composite (interaction term). The results presented in Table 11 shows the model fitness for a regression model after moderation.

Table 11 Model Fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.743[a]	.552	.529	.46625

a. Predictors: (Constant), Interaction term, Mobile banking cost mean, Mobile banking products, M-banking efficiency , Mobile banking charges

The R^2 before moderation was 53.9% but after moderation the R^2 improved to 55.2%. This implies that compliance with CBK rules and regulations improves the performance of selected commercial banks. Further the moderating term has significance with P value 0.000<0.05. The null hypothesis was that CBK rules and regulations do not moderate the m-banking innovations on the financial performance of selected commercial banks in Kenya. Results indicated that the p-value is 0.000<0.05. The null hypothesis Ho_5 was therefore rejected and conclusion made CBK rules and regulations moderate the m-banking innovations on the financial performance of selected commercial banks in Kenya. This implies that compliance

Stratford Peer Reviewed Journals and Book Publishing
Journal of Finance and Accounting
Volume 3||Issue 3||Page 228- 254||Nov|2019|
Email: info@stratfordjournals.org ISSN: 2616-4965

with CBK rules and regulations moderates the overall effect of explanatory variable on the performance of performance of commercial banks.

Table 12 Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	25.968	5	5.194	23.891	.000[b]
Residual	21.087	97	.217		
Total	47.055	102			

a. Dependent Variable: Financial performance

b. Predictors: (Constant), Interaction term, Mobile banking cost, Mobile banking products, M-banking efficiency, Mobile banking charges

A regression model was run after moderation. The results are presented in Table 4.14. The regression coefficients of variables are presented according to the effect on the overall model.

Table 13 Regression of Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.370	.391		3.499	.001
M-banking charges	.229	.099	.201	2.306	.023
M-banking products	.188	.082	.195	2.301	.024
M-banking cost	-.273	.067	-.365	-4.060	.000
M-banking efficiency	.160	.079	.176	2.036	.045
Interaction term (Moderator*composite of mobile banking)	.051	.031	.170	1.657	.101

a. Dependent Variable: Financial performance

$Y = 1.370 + .229X1 + .188X3 - .273X2 + .160X_4 + .051C_5 * M$

Y = Financial performance of commercial banks

X_1 =M-banking charges

X_2= M-banking products

X_3 = M-banking costs

X_4= M-banking Efficiency

Moderator (M) = Compliance with CBK rules and regulations*Composite of mobile banking

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$= Regression coefficients of changes included in Y by each X value

ε= Error term which is normally distributed with a mean and variance of zero

It was found that compliance with CBK rules and regulations, Communications Authority of Kenya moderate the relationship between mobile banking and financial the performance of commercial banks. The R^2 before moderation was 53.9% but after

moderation the R^2 improved to 55.2 %. This implies that compliance with CBK rules and regulations improves the performance of selected commercial banks. The adherence of rules and regulation guiding mobile banking promotes financial performance of commercial banks. The Banking Act, Central Bank of Kenya Act, Proceeds of Crime and Anti-Money Laundering Act and the Kenya Information and Communications Act are some of the laws that have useful provisions in regulating mobile banking. There are also a number of bills and draft regulations like Electronic Transactions Bill, National Payment System Bill and Draft Regulation for the Provision of Electronic Retail Transfers. Once enacted, these bills shall address some of these challenges. There is also a bit of technological regulations which depends i on the manufacturer of the device and telephone company. Mobile banking depends on technology and monetary values hence invoke the mandate of both the Communications Authority of Kenya (CAK) and Central Bank of Kenya (CBK) respectively. This poses confusion as to the most appropriate regulatory body for mobile banking. CBK does not have the technological capacity to regulate on its own and the CAK does not have the financial capability to regulate independent of CBK. Neither, CBK nor CAK can do it on their own hence there is need for collaboration in mobile banking regulation.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The conclusions of this study were enlightened by the findings based on each study objective and also findings of other similar studies. Each objective was reviewed and a conclusion provided which covers both practice and theory. The study concludes that that m-banking charges influence financial performance of selected commercial banks in Kenya. Commercial banks charge some levy fees when a customer transacts via a mobile banking platform. The m-banking charges form part of the revenue to the commercial bank.

The study concludes that new m-banking products influence financial performance of selected commercial banks in Kenya. Banks have developed innovative products and offered a wide range of services in an effort to increase efficiency which is the ultimate goal of banks. Mobile banking platform brought numerous mobile product and services. Some of the products and services include deposit making, withdrawals, and funds transfer and self-care services. The products and services generate revenue to the commercial bank thus enhancing financial performance. The study makes a conclusion that mobile banking cost negatively affects financial performance. Operating a mobile banking platform attracts some costs. The cost includes expenses on acquiring mobile banking operating system, hardware requirements and expenses on human resource personnel to operate and maintain the platform. The expenses eat into some of the total revenue collected through mobile banking. However, if the mobile banking platform is effective with many users, the costs associated with

operating it does not surpass the revenue collected from it. As a result, m-banking costs negatively influence financial performance of commercial banks.

It was also concluded that that mobile banking efficiency influences financial performance. M-Banking helped to promote efficiency and confidence in the financial system thus winning public trust. Mobile banking also provides efficient cash management and security of cash. The more efficient is the mobile banking, the more effective it can serve the purpose of generating revenue to the bank, enhance customer self-care services and thus improve overall performance of the bank. It was also concluded that compliance with CBK rules and regulations moderates the relationship between mobile banking and financial the performance of commercial banks. Issues regarding mobile money and mobile banking have gained centre stage in the recent couple of years. New legislative frameworks and other regulatory guidelines have come up to act as a guide and to monitor the extent to which these services can be used. Thus it is the role of the Central Bank governing authority to oversee that mobile banking is effective by serving customers and does not infringe the security of customers' private and confidential data.

Recommendations for management

The study recommends that m-banking charges are adjusted accordingly to suit different services rendered in a commercial bank. It also recommends that more m-banking products should be developed. This will ensure that mobile banking sector continues to grow. Further, the study recommends that commercial banks should adopt more efficient ways to reduce mobile banking costs. This will ensure the banks improved financial performance as expenses reduce. Based on the above findings, the study recommends that mobile banking service provider may consider lowering mobile banking transactions to attract more service users. The study recommends that the banks should improve the efficiency of mobile operating platform to reduce time taken to complete transaction and improve the quality of mobile banking services so as to motivate them use the M-banking services. This will increase the number of transactions and hence improve the financial performance of the commercial banks.

The service provider should reduce the procedure followed in accessing ones bank account since it was not certain whether it is easy to access banks account from clients' phone for transactions. The service provider should work out mechanisms to avoid remittance delays sine it was felt that sometimes there occurs remittances delay. Further still, more stringent measures should be put in place to make it impossible for unauthorized person to transact money in the account without owner's approval. Finally, the study recommends mobile banking efficiency be a driving goal for all commercial banks. Mobile banking efficiency is a necessary ingredient for performance and customer retention. M-banking efficiency is only possible through continuous improvement of the mobile banking platform and connectivity.

Policy implications

From the above conclusion, the study recommends that policy makers consider mobile banking in their formulation of policies because of the technological developments and the expected switch from physical branch networks to technologically supported banking services. This is because despite negligible relationship between mobile banking and financial performance of commercial banks in Kenya, the impact could be pronounced if much change is recorded in technological developments and more customers adopt mobile banking services. This is because the relationship may not be direct but an indirect one resulting from the convenience that the mobile banking services offers to commercial banks. Mobile banking is being used to improve financial operations in commercial banks. The banks have put in place measures to become more competitive by training its staff, investing in research and development of technology. In the long run, mobile banking is likely to have major impacts on the profitability of commercial banks as it enhances business operations. The study further recommends that commercial banks keep adopting and using mobile banking in their operations because the number of people with access to a mobile hand set is increasing every day.

In addition, the Central Bank of Kenya and Communication Authority Kenya should step up to oversee state of customer privacy and security. Mobile banking platform has attracted many fraudsters who are conning unsuspecting customers, accessing customers' private and confidential data as a result of weak mobile banking platforms for some service providers. Mobile banking service providers have been booming without proper regulations and guiding frameworks thus exposing customers to fraudulent acts. Thus, it is the mandate of Central Bank of Kenya and Communication Authority Kenya to ensure that mobile banking service provides adhere to specified standards and procedures before operating a mobile banking service.

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