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EFFECT OF E-BANKING ON FINANCIAL PERFORMANCE OF LISTED COMMERCIAL BANKS IN KENYA

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Abstract

The objective of this study was to examine the effect of electronic banking on financial performance of listed commercial banks in Kenya. This study was guided by four objectives, establishing the effect of mobile banking, agency banking, ATM banking and online banking on financial performance of listed commercial banks in Kenya. The study employed quantitative research design using panel data analysis. The targeted population of the study was the 11 listed commercial banks in Kenya. Secondary data was extracted from CBK banking supervisory reports and published annual reports of banks. The data was recorded on data collection sheets. Both descriptive and inferential statistics were used. The findings were presented using tables with associated explanations. The study found that there was strong positive relationship between mobile banking, agency banking, ATM banking and online banking and financial performance of listed commercial banks in Kenya. Financial performance of commercial banks and m-banking were strongly and positively correlated. There was a strong positive correlation between financials performance of individual commercial bank and agency banking. There was a strong positive correlation between financials performance of individual commercial bank and agency banking. There was a weak positive correlation between financial performance of individual commercial bank and online banking.

Keywords: *Electronic banking, mobile banking, online banking, ATM banking and Agency banking.*

Introduction

The kind of revolution in IT that has affected all facets of life has been in so characterised by adjustments globally especially players in the banking industry. The invention of e-banking has changed and redesigned the practice of banking. Technology at the moment is considered as one the major contributor to the success of firms as well as other core competencies. Study by Yaklef (2001) discovered cost minimization as a critical benefit that banking institutions derive from use of technology in banking. The need to minimise cost of operation and administrative costs of banking has pushed commercial banks to adopt the electronic banking world over. However, cost minimization can only be realised with improved adoption of technology inform of mobile banking by customers of the bank (Bradley & Stewart, 2003).

E-banking is the adoption of telecommunication networks and internet to offer a wide variety of products that are value laddered to commercial bank clients. Internet banking may also involve importation of data to personal accounting software. Some of the e-banking makes it possible for bank clients to monitor their own accounts from the bank or from other places. Banking using the internet is regarded as a complementary channel used in service delivery. Based on ATMs being introduced, phone banking, PC banking that is the building blocks of initial electronic finance, the improved usage and diffusion of online banking has introduced a new channel of distribution to retail banking. Online banking has increased acceptance in the entire world as a new channel of delivery to perform a number of banking transactions. Additionally, online banking provides an avenue for banks clients to carry out bank's transactions within their comfort (Yaklef, 2001).

There exist two approaches of offering Internet banking worldwide. Firstly, a bank that is existing can come up with a website and then goes ahead to give online banking in addition to its traditional channels of delivery. Secondly, a bank may decide to come up with an inter net only or "branchless or "virtual" bank (Steven, 2002). The Internet banking also aids commercial banks in penetrating and expanding their services into other financial markets without the need for brick and mortar. Due to the availability of e-banking worldwide, there is an expectation of mixtures on the products that the bank offers, ways of delivering services to clients and how the banks perform. Internet banking have made is possible for Banks to better serve their vast clients by making sure that the services they are given are fast, of good quality, efficient and are convenient to them. Online banking is also argued for creating and improving banks revenue and hence profitability. Additionally, industry players and analysis also state the possible effect of online banking on cost savings efforts. Internet banking has also affected risk profile of the commercial banks (Berger, 2003).

The first time e-banking was invented was in mid-70s. Despite its invention, there were no users of internet services because of the high cost of internet services and therefore, e-banking experienced stunted growth. By late 90s more people started embracing the use of internet to make transaction; this is when e-banking experienced a boom. As internet usage grew so did e-banking. There was tremendous growth in the use of internet but still the number of people willing to make

money transfers using the internet remained low; people were still hesitant. E-commerce was greatly adopted because of the innovativeness of businesses like AOL, Amazon and eBay who made online buying common thing. By the year 2000, more than 80% of banks located in America were offering online bank services but still the growth was slow. For example, it took about 10 years for the Bank of America, to acquire 2 million clients using e-banking.

Recently, banks in Nigeria are experiencing great success in terms of them delivering variety of value added products and services via e-banking; this has led to increased acceptance of e-banking (Agboola, 2006; Ayo, 2010). Idowu, Alu and Adagunodo (2002) indicated that Nigerian banks have established that by using technology, they are able to gain competitive advantage and overdo their competitors. Therefore, there is tremendous rate of adoption of technology in the banking sector in Nigeria (Salawu & Salawu, 2007). Despite the high adoption rate of e-banking, it does not mean that it improves the performance of the banks or that of the country's economy. There is need to have parameters that can measure the performance of the banks over a specified period of time after he adoption of e-banking.

In Kenya the use of ATMs was among the first and widely embraced e-banking services (Nyangosi, 2009). The annual reports provided by CBK indicated that, in the recent past, the use of ATM has been overtaken by the use of m-banking services (CBK, 2012). Currently, it estimates that 8 million people use M-banking services. There has been an overwhelming increase in the number of m-banking users; this is because of the increasing number of mobile users and the fact that it is easy to use the services. The partnership between financial institutions and non-financial institutions has been on the increase; customers are able to pay their bills in e-commerce platforms using e-banking services via a shared bank platform.

Statement of the Problem

With the rising cost of doing business in general, and banking business in particular, most banks find themselves grappling with high costs and wastages or inefficient use of resources. The problem is even made worse with increased competition in banking industry as banks scramble for customers. Additionally, banks in Kenya must find ways to cut down costs due to reduced revenue expected with the interest rate capping law among other challenges. One way of cutting, down on costs is embracing electronic banking.

Studies show that electronic banking has a number of benefits to commercial banks especially on cost efficiency. Ugwueze & Nwezeaku (2016) studied the association of e-banking and how commercial banks in Nigeria performed. The findings showed that Point of Sale is not related to both time deposits and the savings but are related with demand deposits. The findings in Nigeria cannot be generalised to Kenya. Maiyo (2013) studied on how e-banking influenced how Kenyan commercial banks performed financially, establishing that embracing e-banking banking has improved how Kenyan commercial banks performed from a rise in effectiveness, efficiency and productivity. Kiragu (2017) also studied the how electronic banking effected how Kenyan commercial banks performed financially finding that the profits of the commercial banks have

increased exponentially on embracing e-banking by the respective commercial banks. This study was conducted on all commercial banks in Kenya; the current study will focus on listed commercial banks. Another study by Asia (2015) analysed what E-banking contributed on financial performance of Institutions carrying out banking activities in Rwanda. The study found out that e-banking systems had a major effect on how banking industries performed. This study focused on all financial institutions including the micro finance firms.

According to the CBK report in 2016, Kenya Electronic Payment and Settlement System (KEPSS) and East African Payment System (EAPS) recorded 2.855 million dealings worth Kshs. 27,002 billion in 2016, compared to 2.240 million transactions worth Kshs. 24,311 billion in 2015. This was 30% and 12% growth in volume and value respectively. The report further revealed a 12% reduction in the average amount transacted Kshs 10.9 million to Kshs 9.56 million. There was an increment of 27% in the average number of transactions moved each day from 8,954 to 11,413 dealings. The increase was attributed to the integration of KEPSS and EAPS. From the previous empirical studies done locally and internationally, there still exist gaps in literature. The previous studies omitted a number of important dimensions of electronic banking that affect performance of commercial banks with most studies choosing to focus on only a few dimensions of electronic banking. Additionally most studies did have been either case studies of specific banks or survey of all commercial banks. There is no known study in Kenya that has considered the dimensions of electronic banking of interest in the current study among the listed commercial banks in Kenya. The current study therefore sought to bridge this gap by examining the effect of electronic banking on financial performance of listed commercial banks in Kenya.

Objectives of the study

To examine the effect of electronic banking on financial performance of listed commercial banks in Kenya. Specifically the study sought to;

1. To establish the effect of mobile banking on financial performance of listed commercial banks in Kenya.
2. To assess the effect of agency banking on financial performance of listed commercial banks in Kenya
3. To determine the effect of automatic teller machine banking on financial performance of listed commercial banks in Kenya
4. To examine effect of online banking on financial performance of listed commercial banks in Kenya.

Theoretical Review

Transaction Cost Theory

The basic idea that transactions are part of economic thinking was first introduced by Commons (1931) who argued that that individual activities are essentially transactions in nature instead of being personal character or even exchanging of items in the economic system. the shift from thinking that is commodity in nature to thinking that is transactions in nature and the working rules that are collective action forming the foundation for change from the classical and hedonic schools to the institutional schools of economic thinking. However the term "transaction cost" was initially introduced by Coase (1960), who employed it to come up with theoretical framework for estimating when some specific economic roles would be done by organizations, and point in time when the economic tasks would be done on the market. The cost of transacting kind of thinking was popularised in the works of (Oliver, 2009). Transactional cost theory is relevant for the current research on the impact of e-banking on financial performance of listed commercial banks in Kenya in that one of the object of adoption of technology in banking is to lower the prices involved in transacting for the benefit of the customers and the banking institutions. Reduced transactional cost is expected to improve revenues of the banking institution.

Technology Acceptance Theory

TAT was first proposed by Davis, Bagozzi and Warshaw (1989) to examine the conceptual model of the intention of user or the degree to which information system or new technology has been done. TAT is designed on the basis of perceived usefulness and ease of use of the new technology. Perceived usefulness of technology suggests the personal conviction to better the degree of work performed by a specific new technology or information system. Perceived ease of use of new technology implies how easy a person can learn the way to use or run a new technology or information system (Scott & Davis, 2015). The TAT model has stressed on the way perceived ease of use of new technology directly influences perceived usefulness of the technology. External variables such as environment factors surrounding an individual intervene in influencing perceived ease of use and usefulness. Hence, Technology Acceptance Theory has a basis in both crucial perceptive factors that is perceived usefulness and perceived ease of use. Technology Acceptance Theory is applied vastly on the researches involving IT. Liu and Arnett (2000) analyzed the important variables to come up with a successful website which has its basis on TAT theory. Technology Acceptance theory is a key theory that underpins the current study on how e-banking affects the way listed banks in Kenya perform.

Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT was first proposed and theorised by Venkatesh *et al.*, (2003). Several researchers including Venkatesh *et al.* (2003) reviewed 8 models regarding the usage of ICT, they are; “the social cognitive theory a model , TAM and TPB ,Diffusion of Innovations (DOI), Technology Acceptance Model (TAM), the model of PC utilization, DOI, the motivational model, Theory of Reasoned Actions (TRA) and Theory of Planned Behaviour (TPB).” UTAUT was created mainly to help researchers in the field of IT/IS in the process of adoption and diffusion. In the theory, it is argued that there are 4 major: “Effort expectancy, performance expectancy, facilitating conditions and social influence.” The four constructs have positive effect on IS/IT behaviour intents and ultimately behaviour (Venkatesh *et al.*, 2003). UTAUT also provides a foundation for the current study. It discusses in details on how innovative technologies in banking sector is adopted and used by the employees of the bank as well as the clients of the bank. The model sought to discuss the intension of the user to adopt ICT and the succeeding behaviour of user. UTAUT offers the managers with decision-making tools that they can adopt to comprehend the introduction of new technology for prediction and elaboration of the behaviour of users in accepting IT.

Conceptual Framework

The conceptual framework shows the interplay of the primary variables of the study. The conceptual framework exemplifies the association of dependent and explanatory variable of the study. In this particular study, the independent variable was electronic banking (m-banking, card banking, agency banking, ATM banking and online banking), the dependent variable was the financial performance of listed commercial banks in Kenya.

Electronic banking

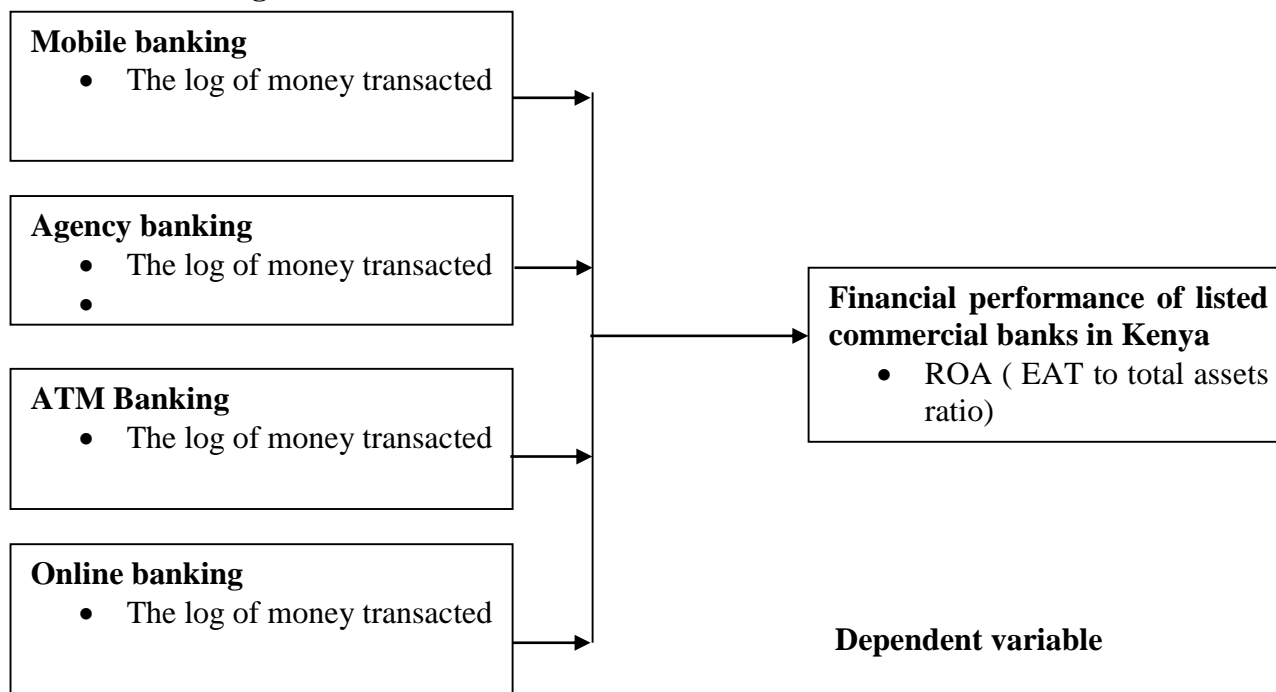


Figure 1: Conceptual framework

Research Methodology

This research used quantitative descriptive research design while employing panel data analysis technique. The targeted population for the current study involved all the eleven listed commercial banks in Kenya that operated between 2013 and 2017. The study relied entirely on secondary data hence data collection sheets was used for recording information extracted from the annual banking supervisory reports of CBK and audited financial reports of the listed commercial banks in Kenya for the study period. Data was entered in Excel 2016 and then exported to STATA software version 14. The panel data was analysed with the aid of STATA. The panel data was analysed by use of descriptive statistics, correlation analysis, and multiple regression analysis. Descriptive statistics were used to summarize and explain the study variables as observed in the banks. Inferential statistics included bivariate Pearson correlation, multiple regressions, ANOVA and coefficient of determination. This analysis enabled testing the effect of e-banking on financial performance of listed commercial banks in Kenya.

Results and Findings

Secondary data was collected from 11 commercial banks listed in the NSE over a 5-year period from year 2013 to 2017 and analyzed using STATA and presented in frequency tables. Descriptive and inferential statistics have been used to discuss the findings of the study.

Descriptive Statistics

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Performance	55	7272495	5235016	55298	1.98e+07
ATM	55	81.6	75.08479	8	236
Mobile	55	83623.62	72976.57	19462	328448
Agency	55	97.41818	117.8365	1	412
Online	55	1633.749	1245.726	651.81	9985.6

From the findings, the study found that there was mean of Ksh 7,272,495 Million on performance of commercial banks listed in the NSE, there was a mean of 81.6 ATM banking among commercial banks listed in the NSE. The mean of mobile banking was found to be 83623.62, the mean for agency banking was found to be 97.41818, and finally the mean for online banking was found to be 1633.749.

Correlation Analysis

Table 2: Correlation Analysis

	Performance	ATM	Mobile	Agency	Online
Performance	1.0000				
ATM	0.7217 0.0000	1.0000			
Mobile	0.6902 0.0000	0.8781 0.0000	1.0000		
Agency	0.6696 0.0000	0.9808 0.0000	0.9025 0.0000	1.0000	
Online	0.0233 0.8659	0.0375 0.7858	0.1004 0.4660	0.0408 0.7676	1.0000

The study carried out Spearman correlation analysis. From the findings, it was established that financial performance of individual commercial banks and various variables, were strongly and

positively correlated ATM banking and financial performance as shown by correlation factor of 0.7217. Financial performance of commercial banks and mobile banking were found to be positively correlated as shown by correlation coefficient of 0.6902. The study also established that financial performance of individual commercial bank and agency banking were strongly and positively correlated as shown by correlation coefficient of 0.6696. Finally, it was established that there was a weak positive correlation between financial performance of individual commercial bank and online banking as shown by correlation coefficient of 0.0233.

Panel Regression Analysis

Hypothesis One

H₀₁: Mobile banking has no significant effect on financial performance of listed commercial banks in Kenya

Table 3: Performance and Mobile Banking

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. regress Performance Mobile
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Source	SS	df	MS	Number of obs = 55		
Model	7.0504e+14	1	7.0504e+14	F(1, 53) =	48.22	
Residual	7.7485e+14	53	1.4620e+13	Prob > F	= 0.0000	
Total	1.4799e+15	54	2.7405e+13	R-squared	= 0.4764	
				Adj R-squared	= 0.4665	
				Root MSE	= 3.8e+06	

Performance	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Mobile	49.5138	7.130028	6.94	0.000	35.21277	63.81482
_cons	3131972	788236.1	3.97	0.000	1550971	4712973

From the ANOVA statistics it is evident that-banking and financial performance of the bank are significantly associated s shown by a significance value of 0.000. Also, mobile banking and financial performance of the bank were significantly associated since the F critical value was found to be less than F calculated (2.434<48.22). since the p value was less than 0.05 it indicates that financial performance of individual banks are significantly influenced by mobile banking significantly (Critical value = 2.434). From the findings it was seen that R² was 0.4822, which is an indication that at 95% confidence interval, there was 52% variation in the way commercial banks performed due to changes in mobile banking. This shows that changes in m-banking could account for 48.22% in variation of the way commercial banks perform. Therefore it was concluded on the null hypothesis that m-banking does not significantly affect performance of listed commercial banks in Kenya.

From the finding of the study the established equation was between financial performance and mobile banking was;

$$Y = 33131972 + 49.5138 X_1$$

The regression equation established that by holding m-banking constant it leads to change in the performance of commercial banks by 33131972. By increasing m-banking by a single unit it leads to the increase of financial performance of commercial banks by 49.5138 units.

Hypothesis Two

H₀₂: Agency banking has no significant effect on financial performance of listed commercial banks in Kenya

Table 4: Performance and Agency Banking

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. regress Performance Agency
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Source	SS	df	MS			
Model	6.6362e+14	1	6.6362e+14	Number of obs =	55	
Residual	8.1627e+14	53	1.5401e+13	F(1, 53) =	43.09	
Total	1.4799e+15	54	2.7405e+13	Prob > F =	0.0000	
				R-squared =	0.4484	
				Adj R-squared =	0.4380	
				Root MSE =	3.9e+06	

Performance	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
Agency	29749.79	4532.128	6.56	0.000	20659.49 38840.08
_cons	4374325	689170.6	6.35	0.000	2992024 5756626

ANOVA statistics revealed that the regression model had a significance level of 0.000, indicating significant association between agency banking and financial performance of the bank. F critical value was found to be less than F calculated (2.434<43.09), this is an indication that agency banking and financial performance of commercial banks listed in the NSE are significantly associated. The p value which was less than 0.05 an indication that agency banking significantly influences financial performance of individual banks (Critical value = 2.434). R² was 0.4484, which indicates that at 95% confidence interval changes in agency banking leads to 52% variation on how commercial banks perform. This means that changes in agency banking can only explain 44.84% variation in financial performance of commercial banks. Therefore the null hypothesis is rejected that agency banking does not significantly affect financial performance of listed commercial banks in Kenya

From the finding of the study the established equation was between financial performance and Agency banking was;

$$Y = 4374325 + 29749.79 X_1$$

As shown in the regression equation, financial performance of commercial banks would be at 4374325 if agency banking is held to a constant of zero. Increasing agency banking by a single unit will lead to increase in how commercial banks perform by 29749.79 units. Agency banking

financial model is supposed to better accessibility of financial services by permitting SMEs to operate satellite branches for the benefits of banks. As shown by early experiences, the agency banking has largely contributed to financial inclusiveness in developing countries like Kenya.

Hypothesis Three

H₀₃: ATM banking has no significant effect on financial performance of listed commercial banks in Kenya

Table 5: Performance and ATM banking

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. regress Performance ATM
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Source	SS	df	MS	Number of obs =	55
Model	7.7077e+14	1	7.7077e+14	F(1, 53) =	57.61
Residual	7.0912e+14	53	1.3380e+13	Prob > F =	0.0000
Total	1.4799e+15	54	2.7405e+13	R-squared =	0.5208
				Adj R-squared =	0.5118
				Root MSE =	3.7e+06

Performance	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ATM	50316.87	6629.386	7.59	0.000	37020.01 63613.74
_cons	3166638	732053	4.33	0.000	1698326 4634951

From the findings of ANOVA statistics ATM banking and financial performance of the bank are significantly associated since their level of significance is 0.000. F critical value was found to be less than F calculated (2.434<57.61), this is an indication that ATM banking and financial performance of commercial banks listed in the NSE were significantly associated. The p value which was less than 0.05 an indication that ATM banking significantly influence financial performance of individual banks (Critical value = 2.434). The value of R square was 0.5208, this is an indication that at 95% confidence interval, changes in ATM banking leads to variation of 52% on how commercial banks perform financially. This shows that only 52% of the changes on financial performance of commercial banks could be accounted for by changes in ATM banking. This led to rejection of the null hypothesis that ATM banking has no significant effect on financial performance of listed commercial banks in Kenya

From the finding of the study the established equation was between financial performance and ATM banking was;

$$Y = 3166638 + 50316.87 X_1$$

The regression equation shows that financial performance of commercial banks will be at 3166638 if ATM banking is held to a constant zero. Increasing ATM banking by a single unit will lead to change in how commercial bans perform financially by 50316.87 units.

Hypothesis Four

H₀₄: Online banking has no significant effect on financial performance of listed commercial banks in Kenya.

Table 6: Performance and Online banking

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. regress Performance Online
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Source	SS	df	MS			
Model	8.0380e+11	1	8.0380e+11	Number of obs =	55	
Residual	1.4791e+15	53	2.7907e+13	F(1, 53) =	0.03	
Total	1.4799e+15	54	2.7405e+13	Prob > F =	0.8659	
				R-squared =	0.0005	
				Adj R-squared =	-0.0183	
				Root MSE =	5.3e+06	

Performance	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Online	97.9387	577.0849	0.17	0.866	-1059.547	1255.424
_cons	7112488	1181651	6.02	0.000	4742395	9482580

ANOVA statistics revealed that online banking and financial performance of the bank were not significantly associated since it had a significance value of 0.8659. the F critical value was greater than the F calculated ($0.03 < 2.434$), indicating that there is no significant association between online banking and how commercial banks listed in the NSE performed financially. The p value which was greater than 0.05 an indication that online banking does not significantly influence financial performance of individual banks (Critical value = 2.434). The value of R^2 was 0.0005; this indicates that at 95% confidence interval, there were 0.005% changes in financial performance of commercial banks due to changes in online banking. This implies that online banking can explain 0.05% changes in how commercial banks perform. Therefore the null hypothesis is accepted that online banking does not significantly affect financial performance of listed commercial banks in Kenya

From the finding of the study the established equation was between financial performance and Agency banking was;

$$Y = 7112488 + 97.9387 X_1$$

From the above regression equation, if online banking is held to a constant of zero, financial performance of commercial banks would be at 7112488. Increasing online banking by a single unit results to an increase in how commercial banks perform financially by 97.9387.

Conclusion

The study established that m-banking has a positive effect on how listed commercial banks in Kenya perform financially. The study further established that mobile banking and financial performance of listed commercial banks in Kenya were strongly and positively related. Based on the study's findings, the study concludes that m-banking strongly and positively affect financial performance of listed commercial banks in Kenya. From the findings the study concludes that agency banking has a positive effect on financial performance of listed commercial banks in Kenya, as the study established that agency banking and financial performance of listed commercial banks in Kenya were strongly and positively related. The study also established that a unit increase in agency banking would lead to increase in financial performance of listed commercial banks in Kenya.

The study established that a unit increase in ATM banking would lead to increase in financial performance of commercial banks listed in the NSE. The study further established that financials performance of individual commercial bank and agency banking were strongly and positively correlated. Based on the findings, the study concludes that ATM banking strongly and positively affects financial performance of listed commercial banks in Kenya. The study found that financial performance of individual commercial bank and online banking was weakly but positively correlated. The study further established that online banking and financial performance of commercial banks listed in the NSE were positively related. From the findings, the study concludes that online banking has a positive effect on financial performance of listed commercial banks in Kenya

Recommendations

The study recommends commercial banks to expand their electronic services in a planned and well-articulated strategy for the long run; this will increase clients' satisfaction and also increase the institutions profits. The banks are also requested to carry out awareness and promotional campaigns to ensure that their customers are aware of the benefits of using e-banking. The study revealed that the use of e-banking leads to an increase in performance of the bank. The study recommends that the banks must be focused in terms of their needs and using the right technology to achieve goals, rather, than acquiring technology of internet banking because other banks have it; this will help the bank to steer its vision in the right direction which is growing the trends of ICT.

The study recommends banks management which aren't fast when it comes to adopting new innovations, to step up and embrace the different kinds of innovation in their banking operations this will boost their profitability. In Kenya, the highly profitable banks are the ones that are fast in terms of adopting new technologies, therefore this recommendation is worth. The study recommends for policy makers to review those policies that are related with promoting the adoption of innovation and transferring of technology. The government needs to encourage the

adoption of innovations this will boost profits of organizations and the government will convert to better tax revenues.

Areas for Further Study

The study sought to examine the effect of e-banking on financial performance of listed commercial banks in Kenya. The study recommends replication of the study should on commercial banks not listed in the NSE. The study also recommends a study to be done on challenges faced by commercial banks in Kenya in adopting e-banking.

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