International Journal of Economics, Commerce and Management
United Kingdom ISSN 2348 0386 Vol. 11, Issue 8, Aug 2023

https://ijecm.co.uk/

FINANCIAL INNOVATIONS AND FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

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Abstract

Monetary innovations are used by commercial banks to enhance their competitiveness in financial markets hence improve their performance and market efficiency. Financial experts and academicians have focused on reviewing the relationship between financial innovations and bank performance but no consensus has been reached yet. Commercial banks in Kenya have widely embraced financial innovations. Research sought to establish the effect of financial innovations on financial performance of commercial banks in Kenya. The research established the effect of agency banking, mobile banking, ATMs and internet banking on financial performance among banks in Kenya. Bank size, capital adequacy and credit risk were the control variables. Descriptive research design was used. The target population was the banks in Kenya. There were 38 banks in Kenya as at 2020. Research variables data was derived from CBK and audited bank's annual financial statements from 2016 to 2020 a period within which most commercial banks embraced innovation. Regression and correlation analysis were used to test study hypotheses by establishing the relationship between financial innovations and ROA. The results indicated R^2 of 0.448 indicating that the selected independent variables contributed 44.8% to variations in ROA. The study further found that agency banking (β=0.106, p=0.008), mobile banking (β=0.113, p=0.000), internet banking (β=0.133, p=0.000), and bank size (β=0.411, p=0.000) had a positive and significant relationship with ROA. Credit risk has a significant negative effect on ROA (β=-0.506,

p=0.000), ATMs and capital adequacy were not statistically significant. The study recommends that policy makers provide a conducive environment for banks to undertake financial innovations as this enhances their financial performance.

Keywords: Bank size, Capital adequacy, Credit Risk, Return on assets, Return on Equity, Return on sales

INTRODUCTION

Financial innovation is essential for directing money to efficient purposes and allocation of risk to people who can utilize them, and this boosts financial performance (Neaime & Gaysset, 2018). Boot and Thakor (2014) asserted that in general, invention have a substantial influence in increasing monetary performance of firms. Innovation efforts require monitoring, allocating and controlling, since they are vital and limited resources that are to be utilized in a wise manner. A perfect understanding of the nature of inventions might help organizations to prioritize their marketing, production and technology strategies followed by suitable consequent action plan.

There are various theories, which have tried to elaborate the linkages between financial innovations and financial performance. “This study drew support from the diffusion of innovation, the technology adoption model, and the financial intermediation theory. Mises (1912) was the first to advance the financial intermediation theory, which claims that financial institutions must invest in financial intermediation which makes it convenient for clients to trade in order to maximize their performance. The mechanism via which a new thought is disseminated to a particular societal system relies on utilizing a specific preference channel (Rogers, 1995). The Technology Acceptance Model (TAM) provides clarity on how customers incorporate and exploit an innovative concept (Davis, 1989). To learn how financial institutions in Kenya absorb new technologies, TAM was used in this study.

Tufano (2014) asserted that financial innovation involves establishing and making popular new financial tools in addition to new financial techniques and markets. Lawrence (2013) opined that financial invention consists of the plan, progress, and the execution of inventive monetary tools, procedures and the invention of resolutions to challenges in finance institutions. Financial innovations, according to Freytag and Fricke (2017), are innovative technology that supports financial services. Banks are expected to offer social network platforms in the future, allowing clients to utilize their mobile devices to exploit financial innovations-enabled investing opportunities.

Almajali, Alamro, and Al-Soub (2012) describe financial performance as a company's capacity to meet a set of financial objectives, like profitability. The degree to which a company's financial standards have been fulfilled is referred to as financial performance. It displays how well financial goals have been met (Nzuve, 2016). According to Baba and Nasieku (2016), financial performance demonstrates how a company uses assets to generate income and hence guides stakeholders in their decision-making. The current research defines financial position as a company's ability to earn income from its assets.

Financial performance is vital to shareholders, investors, and, by extension, the entire economy. The return on investment is completely worthwhile to investors and having a good firm can provide greater and long-term revenue to individuals who invest (Fatihudin & Mochklas, 2018). A company's financial performance is critical to its health as well as existence. A company's excellent performance demonstrates its efficiency and effectiveness in managing its assets during operations, investments, and financial transactions (Karajeh & Ibrahim, 2017).

A bank is defined as a company that conducts or plans to undertake banking activities in Kenya, according to the CBK. Commercial banking includes the activities of accepting deposits, extending credit, processing money transactions, and providing other financial services. The industry plays an important role in the financial sector, with a particular emphasis on the mobilization of savings and the supply of credit in the economy. According to the Annual Report on Bank Supervision (2018), the CBK is the regulatory body for the banking sector in the Czech Republic. There are also 1 mortgage finance company, 42 commercial banks, and 13 microfinance companies in the industry. A significant portion of the country's 42 commercial banks are held by residents, but a significant portion is controlled by international corporations. There are 11 of the 42 NSE-listed stocks on the exchange (CBK, 2020).

Statement of the Problem

The use of financial innovations by the financial sector has increased dramatically around the world. Bank processes including trading stocks, offering new products, handling the internet and electronic payments, and incurring costs have all benefited from the enhancement. As a result, the quality of services provided by banks around the world has improved (Babajide et al., 2015). In the growth process, finances are just as essential as creativity (Kim, Yu & Hassan, 2018). According to evidence, innovation experts are consistently convinced that the financial innovations promotion will result in increased revenue for banks. Banks, on the other hand, are likely to miss out on the benefits of enhanced performance if access to financial innovations is restricted (Neaime & Gaysset, 2018).

The banking sector has witnessed continuous increase in financial innovations in the past five years and there is a necessity to establish the association amongst the developing financial innovations and financial institutions monetary performance in Kenya. Njoroge (2016) noted that there are a variety of banking and financial innovations that include emergence of EFT, RTGS, mobile banking, internet banking, telephone banking and servicing of utility bills among others. The current study seeks to contribute knowledge on the effect of financial innovations on performance of commercial banks in Kenya.

Locally, Mugodo (2016) investigated how electronic banking affects commercial bank performance in and found that it has a beneficial impact on the financial performance of Kenyan commercial banks. Chirah (2018) investigated how alternative banking channels affect bank operational efficiency in Kenya, concluding that online banking has no substantial impact on bank operational efficiency. Abdulkadir (2019) studied the financial performance of commercial banks in Kenya due to the use of financial innovations, concluding that technology in the financial sector has a favorable impact on performance. It is obvious from the preceding that, while there is similar local research in this area, their conclusions are inconsistent. Furthermore, most previous research has operationalized financial innovations in different ways, with the majority choosing for a restricted definition, which was the knowledge gap that the current study aims to fill. “This research answered the research question: What is the effect of financial innovations on financial performance of commercial banks in Kenya?

LITERATURE REVIEW

Theoretical Review

Financial Intermediation Theory

Mises (1912) developed the theory of financial intermediation, which asserts that banks are key participants in financial intermediation. Banks mobilize clients' money and provide it to those who are short on funds at a rate known as interest. An arrangement like this allows the banks to give the financial system a condition of liquidity, since short-term client money is taken and used to provide longer-term money for their customers (Dewatripont, Tirole & Rochet, 2010). According to the Austrian economist Ludwig von Mises (1912), banks have a central function as debt negotiators, as they lend money borrowed from the public.

Borrowing and lending money are the two major roles played by banks when it comes to financial intermediation. According to Austrian economist Ludwig von Mises (1912), participation in financial intermediation by banks curtails their ability to create money while concurrently exposing them to the chance to do so. Critics such as Allen and Santomero (1997) say that the concept of participation costs has been front and centre when it comes to risk management in

the financial industry, and it posits risk management as an evolving concept. This idea is relevant to the research since boosting the financial performance of banks can be accomplished by implementing innovative financial innovations that enables simple and convenient banking activities for consumers.

Empirical Review

A research study was carried by Daneshvar and Ramesh (2012) on data from public financial institutions for the period of 1998 – 2009 to survey the impact of IT investment on profitableness in Indian public financial institutions. Major statistical tools that were used included correlation and regression analysis. The outcome showed that investment on IT lead to improved amount of clients payment and Return on Assets, turnover per workers as productivity gauge and reduction in net non-performing assets ratio and staff cost. The research exhibited that public financial institutions tried to embrace discount and assets worth approaches to compete in the Indian financial market. The study focused on two banks which might have affected the reliability of the outcomes. The current study will focus on 43 financial institutions in Kenya and also test the reliability of the monetary reports to ensure that the findings will be valid and reliable.

Abor (2013) in assessing the relationships between effect of technological innovations on banking services in Ghana. The dependent variables were financial products and facilities such as Automated Teller Machines (ATMs), Telephone lending, PC-Banking, and Electronic Funds Transfer at Point of Sale (EFTPoS) and the independent variable was the banks performance. The research was dedicated on clienteles with financial institutions that have at least one form of technological invention. The outcome of the research indicated that technological invention has contributed immensely to the facilitation of financial facilities and the development of the Ghanaian financial institution. This study focused on effect of technological innovation on growth of the banking industry but did not reveal whether the innovations have an effect on performance of the banks. The current researchers therefore aims at assessing whether Automated Teller Machines (ATMs), Telephone Banking, PC-Banking, and Electronic Funds Transfer have an effect on the return on assets of commercial banks.

The study by Wadhe and Saluja (2015) investigated the profitability of Indian banks from 2006 to 2014, focusing on the effects of electronic banking. Data pertaining to the commercial banks in India was used in the study. Multiple regression analysis was performed to determine how banking services and profitability are interconnected. E-banking was shown to be related to increased profitability for both private and public sector banks. This research showed that increasing the number of ATMs increases profitability. While the connections were few,

however, some might be established between the financial institutions' profit and the number of branches.

Dawood et al. (2019) studied the influence of mobile lending on alleviation of household poverty in Indonesia. Using the Binary Logistic model and data from 300.000 families from the 2017 Indonesian National Social and Economic Survey, the study found that mobile lending decreases absolute poverty amongst households. Additionally, mobile lending can be a compensation for limited assets, reduced non-agricultural occupations in rural areas, and little education for family heads. Additionally, it will reduce incentives for poor, to reduce rural-urban migration for low-skilled rural people who seek non-agricultural job opportunities.

The research interests of Wanalo (2018) were focused on investigating whether the use of technical financial innovations (TFT) had a significant impact on financial performance, and to do so, examined the performance of commercial banks in Kenya. The three theories used in this research were financial intermediation theory, innovation diffusion theory, and Silber's financial innovations limitations. To do this project, the methodology involved in descriptive research was used. This study took into consideration all commercial banks. This research included a total sample size of 15 individuals and included banks from both the commercial and non-commercial sectors. Additional data was sourced from annual reports provided by commercial banks between 2012 and 2016, along with data gathered from the CBK and from the bank's website. The research utilized panel data analysis. The findings were found using the Prais Winstein regression model. Despite the increased use of ATMs and agency banking, they have little impact on a bank's overall financial health.

Chirah (2018) attempted to identify how alternative banking channels affect the operational efficiency of commercial banks in Kenya. “A set of all commercial banks in Kenya that have 42 locations was utilized. In this study, the independent variable was alternative banking channels, which included transactions carried out using the internet, a smartphone, automated teller machines, and agency banking. The ratio of operating expenses to total revenue assessed operational efficiency. Additional data has been collected on an annual basis since January 2013 up to December 2017 for a period of five years. In this investigation, liquidity demonstrated a positive and considerable value. Studying the connection between ATM, agency banking, mobile banking, internet banking, and firm size and capital structure, it was discovered that ATMs, agency banking, mobile banking, internet banking, and firm size were insignificant factors in determining operational efficiency in commercial banks.

Sindani, Muturi and Ngumi (2019) examined the impact of financial channels of distribution evolution on financial inclusion in in Kenya over a period of six years beginning from 2012 to 2017. The specific objectives guiding this study include; examine how internet banking

affects financial inclusion in Kenya and to examine how ATM banking affect financial inclusion in Kenya. Secondary data was collected for subsequent analysis. For analysis of the data collected, frequency tables, percentages and means were used to demonstrate the findings of this study. Use of descriptive statistics in this study was meant to present the category sets formed by this research. The mean, standard deviation and variance on the dependent and independent variables function was to describe the variables used for the study. The conclusion from this study is that internet banking has had a beneficial effect on Kenya's financial industry in Kenya because it promotes productivity and efficiency. Also, ATM banking has enhanced financial inclusion in Kenya.

Conceptual Framework

The model that follows depicts the expected relationship between the variables. Financial innovations, as defined by agency banking, ATMs, mobile banking, and internet banking, were the predictor variable. Bank size, capital sufficiency, and credit risk were the control variables. Financial performance, as assessed by ROA, was the dependent variable.

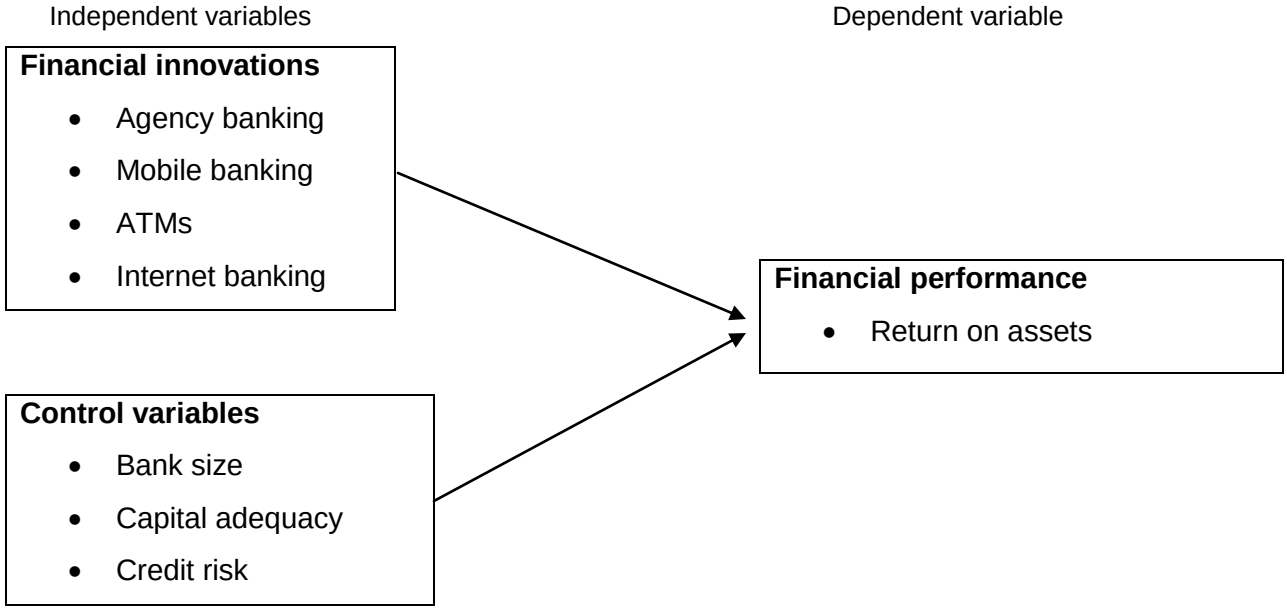

Figure 1: Conceptual Framework

RESEARCH METHODOLOGY

A descriptive research design was used to evaluate the impact of financial innovations on the development of the financial sector in Kenya in this investigation. The descriptive research design was used in this study since it allowed for the collection of information on the current state of affairs (Khan, 2008).

Observations from a collection of occurrences of interest, such as those outlined in an investigation, are referred to as a population (Burns & Burns, 2008). The 42 commercial banks in Kenya as of December 31, 2020 formed the basis of this study's participant population.

The information was gathered solely from a secondary source of information. The secondary data was gathered from the financial reports of commercial banks and the Central Bank of Kenya, as it is a requirement for commercial banks to submit their reports to the regulator. The data was collected on an annual basis for a period of five years from January 2016 to December 2020.

After the various data sources have been surveyed, the data was organized to serve the goal of the study. The version 23 SPSS computer program was used for the analysis. Central tendency measurements (such as mean and median) as well as measures of dispersion (such as standard deviation) were calculated using descriptive statistics. Correlation and regression analysis were required in the context of inferential statistics.

A multivariate regression model was used to assess the relative importance of each of the explanatory factors for financial performance in Kenya. The study employed the following multivariate regression model;

$Y= ß_0+ \beta_1X_1+\beta_2X_2+\beta_3X_3+ \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7+\varepsilon$

Where:

Y financial performance

$ß_0$ regression constant (parameter of the function)

$ß_1$, $ß_2$, $ß_3$, $ß_4$, $ß_5$, $ß_6$ and $ß_7$ are the coefficients of independent variables

X_1 agency banking , X_2 mobile banking, X_3 ATMs, X_4 internet banking, X_5 bank size, X_6 capital adequacy, X_7 credit risk ε error term

Table 1: Operationalization of Study Variables

Variables	Measurement
Financial performance	Total income to its total assets
Agency banking	Log total value of agency banking transactions
Mobile banking	Log total value of mobile banking transactions
ATMs	Log total value of ATM transactions
Internet banking	Log total value of internet banking transactions
Bank size	Log of total assets
Capital adequacy	Core capital to risk weighted assets
Credit risk	Non-performing loans to total loans

FINDINGS AND DISCUSSION

Descriptive Statistics

The research sought to describe the data in terms of their mean and standard deviations. The descriptive analysis was necessary as it helps in understanding the characteristics of the collected data before conducting inferential analysis. The results are displayed in table 1.

Table 2: Descriptive Results

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	185	-.244	.070	.00644	.038379
Agency banking	185	8.473	17.293	14.31379	1.647710
Mobile banking	185	4.323	5.588	5.09096	.319403
ATMs	185	5.087	9.407	7.97377	.555799
Internet banking	185	8.473	17.293	14.32992	1.605652
Bank size	185	14.7750	20.6163	17.725991	1.3648773
Capital adequacy	185	.0280	2.1258	.237358	.2113328
Credit risk	185	.0008	38.5539	.355127	2.8284459

Table 2 shows the descriptive analysis. The dependent variable was ROA whereas the independent variable was financial innovations (agency banking, mobile banking ATMs and internet banking). Eventually, capital adequacy, credit risk as well as bank size served as the control variables.

Correlation Results

Correlation analysis was carried out to establish the strength and direction of association between each predictor variable and the response variable. The results in table 3 show the nature of relationships between the study variables in terms of magnitude and direction.

The Correlation results reveal that agency banking and ROA are positively and significantly correlated (r=0.183**) at 5 % significance level. This implies that agency banking and ROA change in the same direction. In addition, the results show that mobile banking and ROA are positively and significantly correlated (r=0.189**) at 5 % significance level. This implies that both mobile banking and ROA change in the same direction. Further, results show that ATMs and ROA are positively but significantly correlated (r=0.005) at 5 % significance level and this also apples for internet banking (r=0.037) at 5 % significance level. For the control variables, bank size exhibited a positive and substantial relationship with ROA. Capital

adequacy did not have a significant relationship with ROA while credit risk had a significant negative relationship with ROA.

Table 3: Correlation Results

		ROA	Agency banking	Mobile banking	ATMs	Internet banking	Bank size	Capital adequacy	Credit risk
ROA	Pearson Correlation	1							
	Sig. (2-tailed)								
Agency banking	Pearson Correlation	.183*	1						
	Sig. (2-tailed)	.013							
Mobile banking	Pearson Correlation	.189**	.060	1					
	Sig. (2-tailed)	.010	.419						
ATMs	Pearson Correlation	.005	.041	.070	1				
	Sig. (2-tailed)	.949	.580	.345					
Internet banking	Pearson Correlation	.037	.061	.066	.040	1			
	Sig. (2-tailed)	.619	.412	.373	.592				
Bank size	Pearson Correlation	.495**	.163*	.137	.069	.043	1		
	Sig. (2-tailed)	.000	.026	.062	.353	.560			
Capital adequacy	Pearson Correlation	.057	.000	.081	.099	.003	.034	1	
	Sig. (2-tailed)	.438	.995	.272	.181	.972	.643		
Credit risk	Pearson Correlation	.479**	-.022	-.063	-.025	-.096	-.174*	.155*	1
	Sig. (2-tailed)	.000	.764	.393	.737	.191	.018	.036	

*. Correlation is significant at the 0.05 level (2-tailed).

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

c. Listwise N=185

Regression Analysis

Regression analysis was carried out to establish the extent to which ROA is explained by the selected variables. The regression results were presented in table 4 to table 6.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.669[a]	.448	.426	.029082

a. Predictors: (Constant), Credit risk, Agency banking, ATMs, Mobile banking, Internet banking, Capital adequacy, Bank size

From the findings as represented by the adjusted R^2, the independent variables that were studied explained 44.8% of the variations in ROA among commercial banks in Kenya. This therefore means the seven variables contributed 44.8% of the variations in ROA among commercial banks in Kenya while other factors not studied in this research contribute 55.2%.

Table 5: ANOVA Analysis

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.121	7	.017	20.491	.000[b]
	Residual	.150	177	.001		
	Total	.271	184			

a. Dependent Variable: ROA

b. Predictors: (Constant), Credit risk, Agency banking, ATMs, Mobile banking, Internet banking, Capital adequacy, Bank size

ANOVA statistics in table 6 show that the data had a 0.000 level of significance hence this indicates that the data is ideal for making conclusions on the variables.

Table 6: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.543	.033		-7.423	.000
	Agency banking	.106	.004	.126	3.362	.008
	Mobile banking	.113	.011	.108	4.178	.000
	ATMs	.001	.004	021	.370	.712
	Internet banking	.133	.078	121	4.704	.000
	Bank size	.411	.002	.395	6.823	.000
	Capital adequacy	.002	.001	.104	1.830	.069
	Credit risk	-.506	.001	-.421	-7.304	.000

a. Dependent Variable: ROA

The coefficient of regression model was as below;

$$\mathbf{Y = -0.543 + 0.106X_1 + 0.113X_2 + 0.133X_3 + 0.411X_4 - 0.506X_5}$$

Where:

Y = ROA; X_1 = Agency banking; X_2 = Mobile banking; X_3 = Internet banking; X_4 = Bank size; X_5= Credit risk

DISCUSSIONS

The objective of this study was to establish the effect of financial innovations on ROA. The study utilized a descriptive design while population was the 42 banks in Kenya. Data was obtained from 37 banks. The study relied on secondary data which was obtained from CBK and individual banks annual reports. The specific attributes of financial innovations considered were; mobile banking, internet banking, ATMs and agency banking. The control variables were capital adequacy, bank size and credit risk. Data was analyzed using both descriptive and inferential statistics. The results are discussed below.

The regression results show that agency banking was positively and significantly related with ROA of banks (β=0.106, p=0.008). These findings agree with those of Abdulkadir (2019) who found a positive connection between agency banking and ROA. These findings are also consistent with those of King'ang'ai et al. (2016) who studied the impact of agency banking on performance of banks in Kenya and established a positive and significant effect.

Regression results further revealed that mobile banking was positively and significantly related with ROA of banks in Kenya (β=0.113, p=0.000). These findings agree with those of Muli (2018) who found positive and significant impact of mobile banking on efficiency. However, these findings were inconsistent with those of Kamande (2018) who found that mobile banking does not significantly influence ROA.

In addition, results reveal that internet banking was positively and significantly related with ROA of banks in Kenya (β=0.133, p=0.000). These findings agree with those of Kim et al. (2019) who indicated that internet banking affects the performance of banks. These findings were however inconsistent with those of Ogweno (2019) who found that there was no significant relationship between internet banking and ROA of MFIs.

For the control variables, capital adequacy exhibited a not significant positive effect, bank size exhibited a significant positive effect while credit risk exhibited a significant negative effect. The R squared was 0.448. This implies that the selected predictor variables contributed 44.8% to variations in ROA. This study concluded that financial innovations have a significant effect on ROA as the overall model was significant.

CONCLUSION

The study purpose of the research was to find out the association between financial innovations and ROA. The study results showed that agency banking had a positive and significant effect on ROA. This may imply that banks which have adopted agency banking in a large scale are likely to record a high level of ROA compared with banks with less agency banking adoption. The study concludes that agency banking enhances ROA among banks in Kenya.

The findings further indicated that mobile banking had a positive as well as significant effect on ROA. This may imply that banks which have adopted mobile banking in a large scale are likely to record a high level of ROA compared with banks with less mobile banking adoption.

The study results further indicated that internet banking had a positive and significant effect on ROA. This may imply that banks which have adopted internet banking in a large scale are likely to record a high level of ROA compared with banks with less agency banking adoption. The study concludes that internet banking enhances ROA among banks in Kenya.

In addition, the results revealed that credit risk has a significant negative effect on ROA. This implies that banks with high levels of NPLs in their books end up having a lower ROA. Further, the study revealed that bank size has a significant positive effect on ROA. This might be explained by availability of better governance mechanisms in large banks as compared to small banks.

RECOMMENDATIONS

From the study findings, agency banking had a significant effect on ROA. Therefore, the study recommends that the CBK which is the regulator should come with policy guidelines on how banks should adopt agency banking. They should also create a conducive environment making it easy for banks to adopt agency banking. Furthermore, management and directors of banks in Kenya should work on ensuring they have agency banking outlets in the different parts of the country.

The study findings reveal that mobile banking had a positive and significant effect on ROA. The study therefore recommends that the management of banks in Kenya should work on increasing their scale of mobile banking as this will contribute to enhancement of ROA. The policy makers such as the CBK should create a conducive environment for banks to conduct mobile banking activities.

Further, internet banking was found to have a significant and positive impact on ROA. The study therefore recommends that management and directors of commercial banks in Kenya should ensure that clients are able to transact through internet banking without security risks as this will lead to higher levels of ROA. The government should work on enhancing internet coverage to make this a reality.

LIMITATIONS OF THE STUDY

The focus was on some of the elements that are thought to affect the ROA of banks in Kenya. The study focused on seven explanatory variables in particular. However, there are

other factors that are likely to influence a firm's ROA. Some are controlled by the bank, such as management efficiency and corporate governance, while others are not.

The research used secondary quantitative data. The study also ignored qualitative data that could explain other factors that influence the relationship between financial innovations and banks' ROA. Qualitative methods like focus groups, open-ended surveys, and interviews can aid in the development of more definite outcomes.

The study focused on a five-year period (2016 to 2020). It's unclear whether the results will last for a longer period of time. It is also unclear whether similar results will be achieved after 2020. In order to account for key economic events, the study should have been conducted over a longer period of time.

The researchers utilized an ordinary least square regression model to analyze the data. Because of the limitations of employing regression models, such as erroneous and deceptive outcomes that cause the value of the variable to change, it was not possible to generalize the conclusions of the research with accuracy. More so the result could be different if more data was added in the regression. Thus, the model being another limitation of the study.

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