DIGITAL CREDIT AND FINANCIAL PERFORMANCE OF SELECTED COMMERCIAL BANKS IN KENYA

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ABSTRACT

With the dynamism being experienced in the business environment globally, performance is a major factor in the survival of a business entity. Businesses have adopted strategies to enhance their performance. In Kenya, the financial sector has endeavored to introduce and embrace technology in order to realize and sustain performance through credit offering. The players within the financial sectors with the role of offering credit facilities include commercial banks, microfinances, and digital lenders among others. In order to increase credit penetration and acquisition, most of these players have introduced digital credit as one of those technological interventions whose potential is to increase credit penetration and acquisition within the market. With this technological advancement, there has been mixed reactions and outcomes with different consequences to commercial banks performance. The research intention was to determine the impact of digital credit on banking financial performance, with a focus on Kenyan commercial banks. The specific objective was to determine the impact of mobile network based loans, website based loans and app based loans on the financial performance of selected commercial banks and to investigate the moderating role of bank size on the association between digital credit and financial performance. This research was based on financial intermediation theory, which was supported by finance growth theory and information asymmetry theory. The theory of positivism was used, as well as longitudinal and explanatory non–experimental study designs. The study's target population was 10 of Kenya's 38 commercial banks that had adopted from 2012 their own digital credit solutions. The sample size was the 5 largest banks in relation to digitization. Secondary data for this research was gathered from Kenyan commercial banks' financial statements, the Kenyan Central Bank, as well as reports of economic assessment report. Descriptive statistics and panel multiple regression analysis were used in analyzing the results. The correlation results revealed a positive and significant relationship between the independent variables mobile network operator based loans website based loans and app based loans was positive and significant. The regression analysis also revealed a positive significant relationship between mobile network operator based loans and website based loans and financial performance while app based loans did not have a significant relationship. Ban size was however found to negatively and insignificantly moderate the relationship between digital credit and financial performance. The study recommended commercial banks to come up with strategies that will see an increased use of mobile network operator loans and website based loans. More so the central bank was recommended to formulate polices that will help commercial bans realize the benefits of digital credit and an improved financial performance.

Key words: Mobile Network Based Loans, Website Based Loans and App Based Loans, Financial Performance

INTRODUCTION

Volatility has characterized today's market environment, uncertainty, complexity and ambiguity and as such, businesses are finding it difficult to confidently predict their future. Economic alterations, political change, technological changes, social changes, and legal changes have all been predicted to contribute to the dynamism of the business environment. These alterations are causing business entities to be concerned about their stability and sustainability in their performance, consequently developing a need for strategy development in order to continue maintaining competitive capacity in order to perform in such a changing environment (Baei, Ahmadi, Sharifi, Malafeh, & Baee, 2017).

According to Kinyanzui (2018), financial sector is one of the sectors that has not been spared from the effects of change. One of the major players within the financial sector are banks. Banks have various products which contribute to their overall performance. Credit and loans stand out as some of the major contributors towards performance in the banking sector. Wainaina (2017) observed that over the years, a loan book increase of the commercial banks has significantly contributed to overall commercial banks performance. With the increase in the players offering credit solutions to the market, banks have been forced to develop creative and intrusive solutions to enhance customer acquisition and interaction with credit facility. This has been seen in the form of technological advancements in order to ease and to increase credit acquisition among customers. Digital credit has come in as one of the technological tools that has been embraced by the commercial banks in order to increase the dispensation of loans to the customers (Wainaina, 2017).

Banks have been projected to contribute to the operation and growth of economies by bringing together borrowers and lenders. Banks, on the other hand, have built mechanisms to facilitate the funds transfer in their capacity as an intermediary, to factor in speed and security. They have done this through development and deployment of technology which include digital platforms (Musau, 2015).

Initially, commercial banks would issue loans to their customers from their physical space which included banking halls where customer would be required to officially apply for credit through filling in a loan requisition form and consequently wait for days for an award or rejection (Gubbins and Totolo, 2018). This proved difficult and slow to customers who had pressing financial need until in 2015, when banks decided to embrace digital credit. This includes the ability to advance credit in form of loans to customers through mobile phones as a tool for competitive advantage and financial inclusion (Mckinsey, 2018). As a consequence, thousands of previously underprivileged bank clients have moved from purely cash transactions to structured financial services such as purchases, deposits, investments, loans, insurance, and even bonds through their mobile phones (GPFI, 2017).

Globally, by 2015, digital credit, as a banking product emerging from mobile banking, gave rise to Mshwari, KCB MPESA and M-co-op Cash in Kenya, M-Jara in Ivory coast,

Tanzanian M-Pawa, and Mexican Kubo, are a few examples but several deployments expected to emerge in Asia and Latin America as well (Chen and Mazer, 2017).As of 2017, Sub Saharan Africa takes the lead with over 100 million active mobile banking customers followed by South Asia at 40 million, Latin America and Caribbean at 10.8 million, East Asia and Pacific at 7.1,while 13.9 million for Middle East and North Africa and lastly, Europe and Central Asia at 1.4 million (Mckinsey, 2017).

Today, digital credit facility can be positioned as a 'must have' technology for credit lenders and as such, its penetration has grown in the entire financial sector and specifically banking. Nearly all commercial banks in Kenya have invested or are seeking to invest in this system in order to enable their competitiveness and enhance their performance. Commercial banks, like Kenya Commercial Bank, Kenyan Equity Bank, NCBA(a recent merger between Commercial Bank of Africa Limited and NIC Group), Cooperative Bank of Kenya and Diamond Trust Bank among others, have launched digital lending to their customers as from 2012, or by forming a partnership with Safaricom (e.g., KCB in 2015 and CBA in 2012), Tangaza by Barclays Bank, starting an virtual mobile network operator which is independent (like Equity's Equitel) or creating a stand-alone smartphone application (for instance, Cooperative Bank M-Coop Cash in a bid to keep up with technology and customer tastes and preferences (CNBCAFRICA, 2019).

Statement of the Problem

Commercial banks have increased their digitization, placing digital credit at the frontline, in order to improve their network base, reduce personnel costs, compete favorably with their peers, and improve their financial performance. Nevertheless, with all of this increased digitization, some banks have shown a drop in performance, others have been placed under statutory management, and still others have been placed under voluntary management. Apart from the competition for customers amongst commercial banks in Kenya, they are also facing competition for the same customers against increased digital lenders in the Kenyan market (Kinyanzui, 2018).

For the bank, efficient transformations result in increased sales and cost savings. However, in the 38 Kenyan commercial banks, only 10 have successfully employed mobile phone lending to their customers (CNBCAFRICA, 2019). The challenges of this , is seen in the study done by Boyd and Nicolo (2005) , who previously found that lower loan rates resulting from bank competition made it easier for borrowers to repay loans, lowering the risk of default. Contrary, if banks introduced new technologies in providing financial services in a fiercely competitive environment, they appeared to acquire less knowledge rentals in effort to achieve borrowers, which resulted in moral hazards and adverse selection, resulting in poor commercial bank results (Allen & Gale, 2004).

Several studies have been done on digital credit. Kaffenberger, Totolo, and Soursourian (2018) researched on the digital credit revolution in Kenya and Tanzania. Their main focus was on the segments of borrowers, what they spend these borrowed funds on and their default

rate with other digital credit providers such as MSHWARI other than the commercial banks. Their findings showed that 31% of Kenyans and 12% of Tanzanian borrowers defaulted on their loans. Francis, Blumenstock and Robbinson (2017) did a study on Digital Credit in Emerging Markets. In their study, they concluded that these easy access high interest digital credit are likely to have adverse consequences to borrowers.

Although there exist studies in this area, the way this digital credit advanced by selected commercial banks affects the financial performance of these selected commercial banks in terms of loan book growth, liquidity risk profile and credit risk profile is not clear. This study therefore sought to analyze how digital credit affects commercial banks financial performance in Kenya in three perspectives. The first perspective was the loan book growth, the second perspective was liquidity risk profile and the third perspective was the credit risk profile of these selected commercial banks.

General Objective

To assess the effect of digital credit on financial performance of selected commercial banks in Kenya.

Specific Objectives

i. To assess the effects of mobile network operator facilitated loans on financial performance of selected commercial banks in Kenya.
ii. To see how website-based loans affect selected commercial banks financial performance in Kenya.
iii. To evaluate the effect of App based loans affect commercial banks financial performance in Kenya.
iv. To establish the moderation effect of bank size on the association between digital credit and selected commercial banks financial performance in Kenya.

LITERATURE REVIEW

Theoretical Review

The basis of this research was founded on financial intermediation theory, finance growth theory as well as information asymmetry theory.

Financial -Growth Theory

The impact of digital credit in creating an all-inclusive finance system as a social and productive venture will be determined using finance growth. Bagehot (1873) proposed the theory. Better designed financial structures, according to theory and facts, help firms overcome external financing constraints, highlighting one process by which financial development influences economic growth. During twentieth century first half, Schumpeter

and Keynes' ideas dominated. Schumpeter argued, among other things, that creativity (new combinations) is the central engine of economic growth in his economic development theory. According to him, such a new mix can take the form of modern manufacturing methods, modern means of processing existing products, new business developments, such as the recent introduction of digital credit, raw material innovation, and sectoral shifts (Stolbov, 2012).

In the case of an open economy, however, Stolbov (2012) claims that such a new combination can be achieved through two channels: administrative control and banking loans (Stolbov, 2012). In summary, Schumpeter views banks as well as other financial institutions as middlemen between visionaries and owners of capital. As a result, if the bank advances loans, it allows the introduction of latest mix of "innovative ideas," boosting economic growth and support community as a whole. He continued his research by stating that bank loans are essential in the development of modern combination early stages. The revenue generated from production can be used to fund the subsequent new combination at an enterprise's growth advanced stage "at steady state." Finance plays a supporting role at this stage.

As a consequence, it is possible to argue that finance facilitates economic growth, at least in the early stages. The theory includes the research variables that make up the dependent variable bank performance; that is a situation in which financial institutions are able to conduct their financial intermediary procedure roles without difficulty. It too offers a description of in what manner independent variable digital credit aids in the formation of a rising economy in a region.

Financial Intermediation Theory

The theory of financial intermediation founded in the 1960s of the twentieth century, with Gurley and Shaw's work as initial point. The principle will be applied to the position of banks in channelizing resources by advancing digital credit to their customers. Financial intermediaries, according to Leland and Pyle (1977), are a group dealing with information distribution. As Diamond (1984) demonstrates that financial mediators serve as designated agents of savers and can attain economies of scale. As a result, those who save entrust their funds to these intermediaries to be invested in whatever ventures they deem viable, such as digital credit, with investors possessing the ability of fund withdrawals any time via pre-determined circumstances.

The main function of banks can thus be defined as financial intermediation by borrowing and money lending capita. As per Diamond (1984), banks' participation in financial intermediation prevents them the opportunity to create capital, while withdrawing from the mechanism allows them to do so. Allen and Santomero (2001) cast doubt on the theory since it considers management of risk management as a new factor in the financial sector and places a premium on the concept of participation costs.

Financial intermediation theory, according to Ndebbio (2004), explains the mandate of commercial banks linking deficit as well as clients with excess in the sector. As a result, this principle anchors the dependent variable commercial bank performance through intermediation, as banks may develop and supply customized financial products like digital loans to meet the needs of a wide range of customers. When banks determine their ability to provide monetary products with advanced yields that offset all expenses, this occurs.

Information Asymmetry Theory

When one party in a debt contract appears to be more experienced or educated about the subject than the other, this is known as information asymmetry. In 1970, Akerlof proposed the theory, which notes that distinguishing between good and poor borrowers can be difficult in financial services marketing.

To investigate how important information asymmetry is for the bank as well as moral hazard problem, Diamond (1984) included in his model moral hazard and adverse selection. The theory goes on to say that when taking financial deal, the individual who has more knowledge about the item under trade is in a better position to negotiate better transaction terms than the opponent. As a consequence, the individual with less knowledge about the related transaction specific item is at a disadvantage when making contract decisions that are right or wrong.

Due to asymmetry in knowledge between borrowers and lenders, moral hazard and adverse selection, according to Bofondi and Gobbi (2003), may lead to unsupervised digital credit, negatively affecting commercial bank performance. The danger of transaction party providing false information in relation to its obligations(liabilities) assets, or credit ability is known as moral hazard. This is thought to be a factor in NPLs. Adverse selection assumes that lenders are unable to differentiate between different risk levels among borrowers and limited loan contracts. As a result, creditors settle their loans once in possession of the financial resources to, resulting in a large accumulation of nonperforming loans (NPLs). This theory applies to this research since it notes that loan seekers as well as lending institution tend to hold important information about the borrowing as well as lending contract in their heads. Financial institutions place a premium on accurate information about borrowers and the services to which funds are allocated (Bloem & Gorte, 2001).

Entrance of various clients who are inexperienced and new into the formal financial system, inclusive of commercial banks, is characterized by digital credit (Hansen & Jansen, 2010). This poses a problem in the loan market since financiers have trouble deciding if a client is less risk; as a result, financial efficiency and, as a result, loan repayment rates are compromised. As a result, it's problematic for banks to determine if digital credit is a low-risk, high-reward investment.

Empirical Review

As per the literature, digital credit has been shown to have an effect on commercial bank efficiency. Commercial banks' output (dependent variable) is calculated using loan book growth, according to the conceptual framework and literature reviewed. MNO facilitated loans, website-based loans, and app based loans are the three dimensions of digital credit (independent variable). There is general agreement among regulators, inclusive of the IMF, CGAP, as well as GPFI, as well as the literature, which digital credit can be calculated in three ways. These three are covered in greater depth further down.

MNO Facilitated Loans and Financial Performance

MNO facilitated loans are advanced by commercial banks who have partnered with telecommunication network companies. The eligible customers are all the telecommunication network customers. Bharadwaj, Jack and Suri (2016) conducted a research on effects of Digital Credit on Kenyan Households' Financial Resilience. The study focused on Mshwari, which is a digital credit offered by CBA partnering with MNO Safaricom. The results showed M-Shwari increasing credit access from any source. The study further concluded that digital credit policy issue by banks enabled the banks to issue these mobile phone loans to their customers after assessing their creditworthiness through existing mobile phone platforms making them advance loans to those who may not have received credit otherwise.

Borrowers' Perspectives on the Digital Credit Revolution in Kenya and Tanzania was also studied by (Kaffenberger, Totolo, & Soursourian 2018. They found that digital borrowers are double as likely as the average Kenyan or Tanzanian adult to possess more than a single bank account other than those affiliated with a digital credit service, as digital credit is only one loan source amongst several. The study further noted that banks are currently granting short term loans based on a customers' existing access to a mobile phone. The study concluded that requirements for credit reporting as well as role of credit bureau may require updating and extended to cover all lenders of digital credit, since lenders' usual monthly practice of monthly reporting is incompatible with the pace of digital credit.

Additionally, Wamalwa, Rugiri and Lauler (2019) study on the digital credit uptake impact on indebtedness of household, which focused more on the consumers of digital credit repayment patterns in Kenya, showed the telecommunication company like Safaricom partnerships with the three commercial banks in Kenya. That is, KCB in 2015 with a digital credit product KCB-MPESA, NCBA in 2012 with a digital credit product M-shwari and lately, Barclays in 2018 with a digital credit product Timiza. The study inferred that the eligible bank customers were all the active MPESA customers, and they would sell their household belongings to pay digital loans, is predominant with lesser income in comparison with those utilizing traditional credit mechanism. According to the findings, there is a strong connection between digital credit customers' financial literacy and their repayment of credit. As a result, commercial banks should keep track of and evaluate their clients, identifying those who are less likely to default.

This dimension tried to bring out the steps that the commercial banks follow before coming to the approved or denied decision of granting these mobile phones acquired credit to their customers, and whether they are satisfactory. Therefore, commercial banks performance can be measured using the MNO facilitated loans. The study employed panel multiple regression to determine the impact of the independent variable digital credit on the performance of commercial banks in five different banks.

Website Based Loans and Financial Performance

Website based loans are loans advanced through commercial banks through internet as well as telecommunication networks to distribute credit products and services remotely to bank customers, through online banking (Okiro and Ndungu, 2013). Ngango (2015) study on the impact of electronic banking to commercial banks' performance in Rwanda, as cited by Wainaina (2017) defined website based loans as a product of electronic banking. The research employed a descriptive research design that combined qualitative as well as quantitative methods. The research used data in the form of figures collected from workforce on e-banking and financial institution findings in a quantitative approach, while in a qualitative approach, interviews were used to collect qualitative data in order to understand e-banking activities and their effect on financial institution performance. As per the research conclusions there would be failures as a result of inefficiency in the system's use; network failures, insufficient expertise, and security-related issues.

Wainaina (2017) set out to analyze and describe the literature on mobile based loans practices and commercial banks financial performance. He concluded that, both credit score and default patterns are catalysts for financial performance. The study was anchored on debt deflation theory which depicts how bad debts negatively affect commercial banks profitability. The study used secondary sources of data as well as primary sources in the form of structured questionnaires. The study fulfilled its objectives, recommending that Kenyan commercial banks over invest in the good credit rating systems development, deliberate changing the normal period of repayment for mobile-based loans, and improve strategies to reduce default rates.

According to Totolo (2018), these digital credits by banks are complements rather than replacements of existing traditional bank and Sacco loans held by their customers. A bank customer can be juggling more than one digital credit from multiple digital credit providers at the same time. This study goes ahead to state that most of these digital credit borrowers are struggling to make repayments to the lenders while leaving out the possible reasons. The positive or negative effect of issuing this digital credit to the lender is still inconclusive. The level of penetration was determined by counting the number of digital credit and cell phone accounts among 1000 adult members of the population.

App Based Loans and Financial Performance

App based loans are credit advanced by Kenyan commercial banks to their clients in the banking apps installed from the Kenya Google Play Store (Gubbins and Totolo, 2018). Letting (2019) article on commercial banks' lending to small business owners through mobile phones quoted a lender revealing that he can borrow these short term loans, up to Ksh.400, 000 from four different lending apps at ago, this is after the set limits and creditworthiness analysis has been done, what initially was not possible. It goes on to show how these numbers translated into an overall annual lending by commercial banks of Ksh.2.42 trillion and Ksh.2.3 trillion in 2018 and 2017 respectively. It concluded that the growth in lending figures helps the small business owners spread their risks and avoid backlash if it was just from a single bank.

In 2019, Kenyan government, via the central bank, teamed up with five commercial banks to start a digital product dubbed "Stawi loan app" whose focus is on the small and micro-enterprises sector. It offers them unsecured loans of at least Kes.30,000 to Kes.250,000 at 9 percent per annum. This saw a surge in commercial bank's credit to the private sector of 2.4% marginal growth to Kes.2.42 trillion in 2018 as compared to 3.9% marginal growth in 2017 to Kes.2.3 trillion (Letting, 2019).

Knowing bank customers and building specific digital personas for personalized interactions requires precise data. Financial tools and transaction processing, on the other hand, often necessitate the sharing of vast amounts of data from a variety of sources. According to reports, data processing accounts for 92 percent of the cost of doing business in the financial services industry (Cognizant, 2014). The question whether the commercial banks have the correct credit score information of their individual customers comes into play, as this will determine the amount that each lender qualifies for at any given time.

Koki Kinyanzui (2018) study on mobile credit impact on banks performance: Proof from Kenyan commercial banks, inferred that customer satisfaction was driven by cost effectiveness of the mobile phone loans, ease of access of mobile phone loans, empathy considerations in accessing loans, adequacy of the loan sizes, ease of borrowing, security levels, lack of errors and systems failures, and customer support services. The study further concluded that digital credit accessibility on commercial banks performance was significantly influenced by transaction costs as well as knowledge on use of mobile applications to access mobile loans.

Digital Credit, Bank Size and Financial Performance

Ogweno (2019) aimed at finding out how financial innovations influences financial performance of Kenyan licensed MFIs. The population of the research was 13 licensed MFIs as of December 31, 2018. On an annual basis, secondary data was collected for 5 years (January 2014 to December 2018). The study used a descriptive cross-sectional design, with a multiple linear regression model used to evaluate the relationship between variables. The

findings revealed that savings accounts, mortgage accounts, and bank size are all important factors to consider. The research found that agency banking, number of ATMs as well as capital adequacy have a statistically insignificant impact on financial performance of licensed MFIs.

Kamande (2018) investigated how electronic banking affects commercial banks' financial results in Kenya. He took samples from each of Kenya's 42 commercial banks. Electronic banking was chosen as the predictor variable, as assessed by the value of transactions made via mobile banking, internet banking, agency banking, as well as ATMs. The return on assets was used to assess financial performance, which was chosen as the study's response variable. From January 2013 to December 2017, secondary data was gathered over five years period. The results of the study revealed that agency banking, ATMs, liquidity, capital adequacy and bank size all had a significant positive effect. Mobile banking and internet banking were also discovered to be statistically insignificant commercial bank financial performance determinants.

Chirah (2018) sought to determine the impact of alternative banking channels on commercial banks in Kenya operational efficiency. The population was drawn from a total of 42 commercial banks in Kenya. Alternative banking platforms were the study's independent variable, as evaluated by the value of transactions made by mobile banking, internet banking, ATMs, as well as banking through agents. The response variable was operational efficiency, which was calculated as the ratio of operating expenses to total revenue. Secondary data was gathered annually for 5 years, starting in January 2013 and ending in December 2017. The results revealing a positive and significant value of liquidity in this study. ATMs, agency banking, mobile banking, internet banking, firm scale, and capital structure are statistically insignificant determinants of commercial bank operational performance, according to the research.

Conceptual Framework

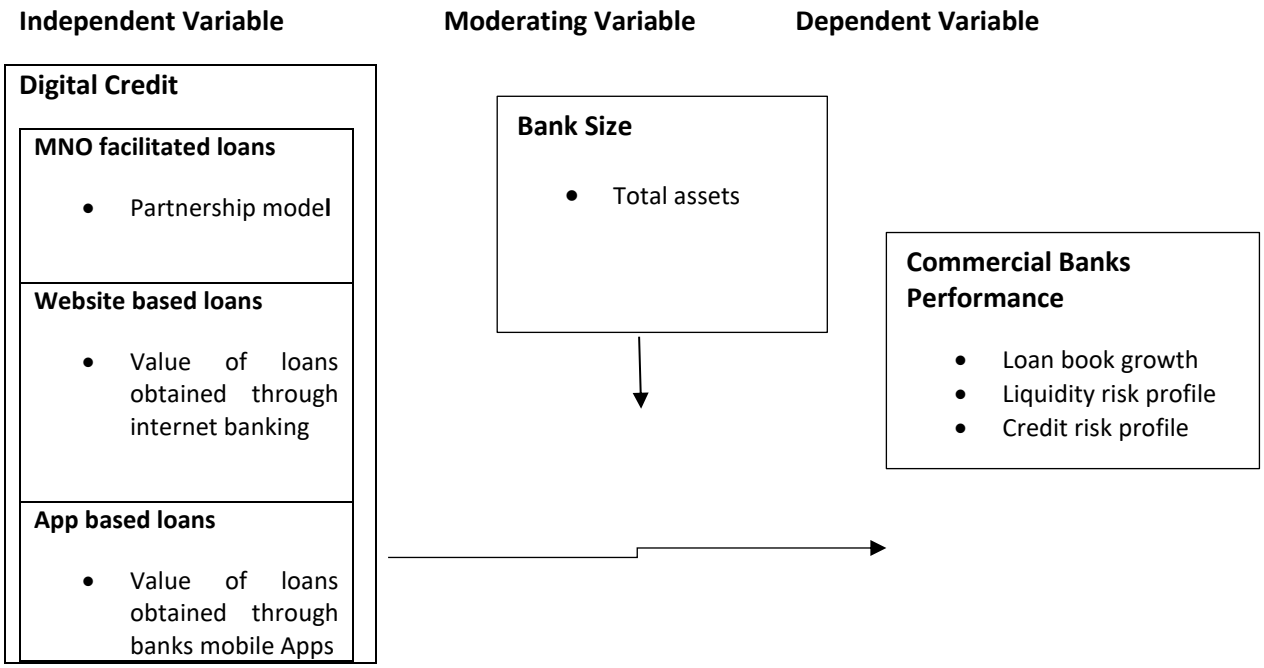

Figure 1: Conceptual Framework

Source: Researcher (2020)

RESEARCH METHODOLOGY

The longitudinal descriptive design was used for this study because it allows for time variation in data collection for commercial banks from 2012 to 2020. This study was anchored on positivism philosophy because measures of concern are objective, external as well as researcher independent. The target population of this research consisted of all the Kenyan 38 commercial banks for the period 2012- 2019. There are 10 banks in the 38 Kenyan Commercial banks which have adopted digital credit but the study only focused on the five largest banks in terms of digitization strategy and growth in loans, that is, NCBA, Equity bank, KCB, Cooperative bank and Barclays bank (currently known as Absa) constituting 13% of all the banks. Secondary panel data covering the period 2012 to 2020 was used. Descriptive as well as panel multiple regression analysis was utilized in analyzing the results. To summarize and profile the state of digital credit, commercial bank performance, and bank size, descriptive statistics were used. The essence of the relationship between digital credit and commercial bank performance in Kenya, as well as the moderating effect of bank size, was investigated using panel multiple regression analysis.

RESEARCH FINDINGS AND DISCUSSIONS

Descriptive Results

In Table 1 the results or the descriptive analysis were provided.

Table 1: Descriptive Results

	N	Minimum	Maximum	Mean	Std. Deviation
Value of MNO based loans (shs)	45.00	6,094,202	102,329,299	44,469,422.59	23,876,967.85
Value of Website based loans (shs)	45.00	2,436,280	78,174,794	30,090,745.56	17,373,945.54
Value of App based loans (shs)	45.00	2,391,706	63,795,521	24,606,795.37	15,500,738.32
Total assets	45.00	116,193,905	752,284,680	363,242,055.82	145,775,164.53
Liquid assets	45.00	2,193,000	24,335,332	7,169,934.78	3,395,713.47
NPL	45.00	3,579,909	101,516,538	29,172,945.54	26,852,981.67
Total loans	45.00	36,667,386	504,848,628	209,920,811.97	100,620,867.86

The descriptive analysis results showed that the value of Mobile Network Operator loans for the five banks in the 9 years period ranged from Shs 6 million to Shs 102 million. The mean MNO based loan was Shs 44,469,422.59 with a standard deviation of Shs 23,876,967.85. This meant that there were some banks which registered way above the mean MNO loans and those that registered way below the mean for some years.

Regarding the value of website based loans form the five banks analyzed it was shown that the minimum was slightly above 2 million and the maximum was Shs 78 million. The mean of website based loans was shs 30,090,745.56 and the standard deviation was Shs

17,373,945.54. The value of website based loans was however seen to be lower than for the mobile network operator based.

The results also revealed that the over the 9 year period the five banks registered a minimum of Shs 2 million and a maximum of Shs 63 million in app based loans. The average value of app based loans was Shs 24,606,795.37 and the standard deviation was Shs 15,500,738.32. The value for app based loans was lowest among all the loans. This implied that among the five banks most customers use the mobile network operator to access loans more than they do for website and apps.

The amount of total assets ranged between 116,193,905 and 752,284,680 averaging at 363,242,055.82 with a standard deviation of 145,775,164.53. Liquid assets ranged from 2,193,000 to 24,335,332 with a mean of 7,169,934.78 and a standard deviation of 3,395,713.47. More over the value of non-performing loans ranged from 3,579,909 to 101,516,538 and averaged at 29,172,945.54. Total loans on their part were ranging between 36,667,386 and 504,848,628 and averaged at 209,920,811.97.

Inferential results

The inferential statistics that were analyzed included the correlation and multiple regression analysis.

Correlation analysis

The matrix in Table 2 show the correlation analysis results

Table 2: Correlation Matrix

		Financial Performance	Mobile Network Operator	Website-Based Loans	App Based Loans
Financial Performance	Pearson Correlation				
	Sig. (2-tailed)				
Mobile Network Operator	Pearson Correlation	.609**			
	Sig. (2-tailed)	0.000			
Website-Based Loans	Pearson Correlation	.731**	.477**		
	Sig. (2-tailed)	0.000	0.001		
App Based Loans	Pearson Correlation	.496**	.537**	.405**	
	Sig. (2-tailed)	0.001	0.000	0.006	

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

As in Table 2 the correlation between mobile network based loans and financial performance was positive and also significant revealing that a positive change in mobile network operator based loans would bring about a positive change in the financial performance of commercial banks. Further according to the results website based loans positively correlate with financial performance further implying that a positive change in website based loans would results in a positive change in the financial performance of commercial banks. Additionally app based loans have a positive correlation with financial performance which also imply that positively changing the app based loans will result in subsequent positive change financial performance of commercial banks.

Multiple Regression Analysis

To assess the objective of the study, a multiple regression analysis was conducted. The findings were as in Table 3, 4 and 5.

Table 3: Model of Fitness

R	R Square	Adjusted R Square	Std. Error of the Estimate
.796a	0.633	0.606	0.158156

The coefficient of determination (R square) was 0.633. This means that the independent variables mobile network operator based loans website based loans and app based loans accounted for 63.3% of the variability of the dependent variable financial performance. The remaining 36.7% could be accounted for by other variables not investigated in this study.

Table 4: Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.769	3	0.59	23.576	.000b
Residual	1.026	41	0.025		
Total	2.795	44			

From the results in Table 4 the independent variables statistically and significantly predict the dependent variable ($F(3\ 41) = 23.576$ $p < 0.05$). It was therefore deduced that the overall regression model was a good fit.

Table 5: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.304	0.633		5.218	0.000
Mobile Network Operator	0.142	0.06	0.283	2.375	0.022
Website-Based Loans	0.458	0.092	0.547	4.978	0.000
App Based Loans	0.056	0.052	0.122	1.068	0.292

From the results in Table 5 the Beta coefficient for the variable mobile network operator based loans was 0.142 and the p value was $0.022<0.05$ revealing that the statistical

relationship between mobile network operator based loans is significant. It was therefore deduced that all other variables held constant the variable mobile network operator based loans leads to a 0.142 variability n financial performance. This was also true for the variable website based loans which had a beta coefficient of 0.458 and the p value was 0.000<0.05 hence the relationship was significant. It was therefore revealed that the variable website based loans leads to a 0. 458 change in financial performance. The findings however contrasted with those by Kamande (2018) who found that mobile banking and internet banking were also discovered to be statistically insignificant commercial bank financial performance determinants. The findings did not also agree with those by Chirah (2018) who established that mobile banking, internet banking, firm scale, and capital structure are statistically insignificant determinants of commercial bank operational performance, according to the research. However the variable app based loans showed a positive coefficient but a p value less than 0.05 (0.292). This implied that although the variable app based loans leads to a positive change in the financial performance the relationship was not significant. The study findings were connected with the findings by Koki Kinyanzui (2018) who established that customer satisfaction was driven by cost effectiveness of the mobile phone loans, ease of access of mobile phone loans, empathy considerations in accessing loans, adequacy of the loan sizes, ease of borrowing, security levels, lack of errors and systems failures, and customer support services.

Moderation Effect of Bank Size

Table 6: Model Fitness after Moderation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.677a	0.458	0.419	0.192139

The results showed that after moderation the R square reduced to 0. 458. This mpled that the moderating variable reduces the prediction of the dependent variable.

Table 7: ANOVA after Moderation

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1.281	3	0.427	11.567	.000b
Residual	1.514	41	0.037		
Total	2.795	44			

The overall model was also significant after moderation (p=0.000).

Table 8: Regression Coefficients after Moderation

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	8.624	0.035		242.95	0.000
MNO×Bank Size	-0.053	0.036	-0.205	-1.458	0.152
WBL ×Bank Size	-0.035	0.025	-0.189	-1.408	0.167
ABL×Bank Size	-0.18	0.045	-0.491	-4.022	0.000

On the moderating effect of the moderating variable on the relationship between the individual modes of digital credits the results showed that with the introduction of the moderating variable the relationship between mobile network operator variables and financial performance was negative and insignificant. The relationship between the website based loans and financial performance in the presence of the moderating variable was also negative and insignificant. More so the relationship between the apps based loans and the financial performance was also negative and not significant. This implied that ban size negatively but insignificantly moderates the relationship between digital credit and financial performance of commercial banks. Findings disagreed with those by Kamande (2018) whose results revealed that agency banking, ATMs, liquidity, capital adequacy and bank size all had a significant positive effect.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of the Study

The purpose of the study was to establish the effect of digital credit on financial performance of selected commercial banks in Kenya. The specific objectives were: to assess the effects of mobile network operator facilitated loans on financial performance of selected commercial banks in Kenya; to see how website-based loans affect selected commercial banks financial performance in Kenya; to evaluate the effect of App based loans affect commercial banks financial performance in Kenya and ; to establish the moderation effect of bank size on the association between digital credit and selected commercial banks financial performance in Kenya. The study was based on a descriptive survey and a positivism philosophy.

Thirty eight commercial banks were targeted where only five were sampled for the study. Secondary data was obtained from the five bans websites the central bank and the Nairobi Securities exchange for a period of 9 years from 2012 to 2020. To analyze the data descriptive analysis was conducted as well as correlation and regression analysis. The diagnostics tests for the assumptions of regression analysis were also assessed. All the assumptions were fully met and the data was fit for multiple regression analysis.

The results revealed that mobile network operator based loans were the highest in terms of the values for the 9 years among the five banks followed by loans based on the website and finally the app based loans. The correlation results revealed a positive and significant relationship between the independent variables mobile network operator based loans website based loans and app based loans was positive and significant. The regression analysis also revealed a positive significant relationship between mobile network operator based loans and website based loans and financial performance while app based loans did not have a significant relationship. Ban size was however found to negatively and significantly moderate the relationship between digital credit and financial performance.

Conclusion

The conclusions of this study were based on the findings of the study.

Mobile Network Operator Facilitated Loans and Financial Performance

The study concluded that mobile network operator from commercial banks is the most adopted form of loan access among other digital loans. More so a positive change in the value for mobile network operator based loans will result in a positive change in the financial performance of commercial banks as depicted in the correlation analyses. The study also concluded that the relationship between mobile network operator loans and financial performance is also positive and significant. Therefore increasing the use of mobile network operator to access loans form commercial banks will result in increased financial performance of bans as a result n increased loans liquidity rips profile and credit risk profile.

Website-Based Loans and Financial Performance

Based on the findings it was concluded that the consumption of website based loans form commercial bans s lower than that of mobile network operator but higher than app based loans. It was also concluded that positive change in website based loans from commercial bans will lead to a positive change in the financial performance of commercial banks in Kenya. Moreover website based loans have a positive and also significant relationship with commercial bans financial performance. The study further concludes that increasing the consumption of website based loans form commercial banks will result in an increased financial performance by the bans.

App Based Loans and Financial Performance

According to the findings this study concludes that for most commercial banks the use of app based loans by customers is lowest compared with mobile based network operator and websites which means that customers make less use of apps for loans. More so the study concludes that with a positive change in app based loans financial performance of commercial banks also changes. However the relationship between app based loans and financial performance is not significant. Hence and increased ape based loans use by customers may not result in a significant improvement in commercial banks financial performance."

Moderation Effect of Bank Size on the Association between Digital Credit and Financial Performance

From the results on the moderating effect of bank sizes the study concludes that ban size moderates the relationship between digital credit and financial performance by commercial banks. The study concluded that an increase in the bank size as measured by the total assets will negatively impact the relationship between digital credit and financial performance.

However as per the result it can be concluded that though the bank size moderates the relationship the impact may not be large enough to be felt.

Recommendations

It is recommended that commercial banks should adopt strategies that will aim at increasing the consumption of digital credit. This can be harnessed by lowering the charges involved as well as the interest rates for such loans. The central banks is also recommended to formulate polices regarding the use of digital loans that will positively impact the banks on the issue of loans. The central banks should also provide guidelines regarding the lending through digital networks which will guide the commercial banks on the same.

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