

Effect of Bank's Lending Behaviour on Loan Losses of Listed Commercial Banks in Kenya

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Abstract: This examined the effect of bank's lending behaviour on loan losses of listed commercial banks in Kenya. The study employed descriptive research survey design. The target population encompassed 11 listed commercial banks in Kenya. The study was a census of listed commercial banks in Kenya. The data was extracted from CBK Annual reports and Audited financial statements of individual commercial bank in Kenya. Descriptive analysis involved mean, standard deviation, minimum and maximum while for inferential analysis; correlation analysis was used to test the relationship between banks' lending behaviour and loan losses of commercial banks in Kenya. Simple OLS model was used to establish the causal effect relationship between lending behaviour and loan losses of listed commercial banks in Kenya. The findings showed that total customer loans and quality of loans had a statistically significant effect on loan losses. However the effect of lending rate, loan growth and loan portfolio diversification on loan losses was not statistically significant. The study thus concluded that banks' lending behaviour has a significant effect on loan losses as shown by p value less than significance level in the ANOVA. The study recommends to the management of listed commercial banks to take into consideration their total customers loans and quality of loans when setting loan loss provisions to cover any eventual loan losses.

Keywords: Lending behaviour, Loan losses and commercial banks.

I. INTRODUCTION

A. Background of Study:

Lending institutions play a major role in economic growth and development through provision of credit to execute economic activities. The major concern of any lender while advancing credit is how they will get their money back (Fleisig, 1995), and this implies that the engagement between lenders and borrower is accompanied by certain level of risk. The major types of risks faced by lending institutions globally include market risk, operational risk, and performance and credit risks (Pyle, 1997). In the Kenyan banking sector for instance, while market risk is a great business concern for all institutions, credit risk is cited as a major concern by 95 per cent of the banking institutions (CBK, 2011). The overall observation of risks facing the banking sector is that while market risk can be easily managed through hedging activities, credit risk has emerged as a new management challenge to financial institutions (Gonzalez-Paramo, 2010). Loan losses is by far the most significant risk faced by banks and the success of their business depends on accurate measurement and efficient management of this risk to a greater extent than any other risks (Giesecke, 2004). Coyle (2000) defines loan losses as losses from the refusal or inability of credit customers to pay what is owed in full and on time. Loan losses is the exposure faced by banks when a borrower defaults in honouring debt obligations on due date or at maturity. Banks' lending behaviour describes the lending activities of a bank in terms of loans growth, total credit advanced, the lending rate, quality of loans advanced and loan portfolio diversification (Foos et al.2010; Altunbas et al., 2011).To measure banks' lending behaviour, bank's loan growth rate has used by most researchers which is defined similarly to Foos et al. (2010) and Altunbas et al. (2011) as the a bank's loan growth rate in a year. This takes account of the fact that high rates of loan growth reflect excessive risk-taking if all other banks have lower growth rates. If banks raise lending by lowering their lending standards, relaxing collateral requirements or a combination of both, higher rates of loan growth are

associated with greater risk (Foos et al., 2010). Furthermore, banks which exhibit significantly higher loan growth rates than their competitors may attract customers which have not been given a loan by other banks because they asked for too low loan rates or provided not sufficient collateral relative to their credit quality (Foos et al., 2010). Loan losses can be defined as inability of individuals or households to repay all debts fully and on time (Haas, 2006). First of all, a household or an individual is over-indebted if they cannot cover all payment obligations arising from all debt contracts in a given period by the excess cash, i.e. periodic cash income not used to cover all periodic expenses of the debtor, during that period (Wisniewski, 2010). It should be noted that this definition still misses a dynamic perspective. Loan losses only occur if this situation occurs chronically, i.e. in several periods in a row (Wisniewski, 2010) and against the borrowers' will (Schicks, 2010). Haas (2006) also states a dynamic relationship between loan losses and characteristics of borrowers and credit markets, similarly Gonzalez (2008) and Vogelsang (2003). Both the static one-period and the more dynamic multi-period definition immediately lead to the most direct way of measuring of loan losses.

B. Statement of the Problem:

Financial institutions particularly commercial banks are very important in providing financial assistance to the economic units in the society. However, just like other financial institutions, commercial banks experience numerous cases of loan losses. The loan losses negates the profitability of the commercial banks. Additionally, Loan losses are not only argued to harmfully affect the financial performance of commercial banks, but they also have other far reaching repercussions. This is due to the fact that, other potential borrowers may be denied to access credit facilities since part of the funds that could be extended as loans by the commercial banks are lost due to failure by past customers to pay back loans borrowed. The loan losses also affect the economy of a country which explains the rationale behind the setting of guidelines by the central bank for enabling financial institutions to alleviate loan losses. Kenyan banks are not an exception on the problem of loan losses. Statistical information from CBK annual bank supervisory report of 2015, 2014 and 2013 showed that loan losses category accounted for 1.5 % of the loan book in 2015 compared to 1.3 % in 2014 and 1.2 % in 2013. The increases were occasioned by deteriorating asset quality, challenges in the business environment and increased interest rates. Indeed, the Central bank of Kenya put two banks on receivership as of April 2016 that is Chase Bank and Imperial Bank of Kenya due to poor performance majorly brought by NPLs leading to rising loan losses. This current study goes one step further by analysing the effect of a bank's lending behaviour on loan losses of individual banks listed by Nairobi stock exchange (NSE). To the best of my knowledge, there is no existing study in Kenya that has looked into effect of bank's lending behaviour on loan losses of listed commercial banks in Kenya.

B. Objectives of the Study:

The purpose of this study is to establish the effect banks' lending behaviour on loan losses of listed commercial banks in Kenya.

C. Hypotheses of the Study:

The study tested the following hypotheses:

H₀₁: Loan growth has no significant effect on loan losses of listed commercial banks in Kenya.

H₀₂: Lending rate has no significant effect on loan losses of listed commercial banks in Kenya.

H₀₃: Quality of credit advanced has no significant effect on loan losses of listed commercial banks in Kenya.

H₀₄: Total credit advanced has no significant effect on loan losses of listed commercial banks in Kenya.

H₀₅: Loan portfolio diversification has no significant effect on loan losses of listed commercial banks in Kenya.

II. LITERATURE REVIEW

A. Theoretical Review:

This study was underpinned by three theories including Information Asymmetry Theory, Institutional Memory Hypothesis and Modern Portfolio Theory. Information Asymmetry Theory was proposed by Akerlof (1970) and Stiglitz & Weiss (1981) is based on the notion that the borrower is likely to have more information than the lender about the risks of the project for which they receive funds hence they are in a position to negotiate optimal term for the transaction than the banks. The theory of asymmetric information tells us that it may be difficult to distinguish good borrowers from bad

borrowers (Auronen, 2003 & Richard, 2011), which may result into adverse selection and moral hazards problems (Matthews & Thompson, 2008). Information asymmetry theory is considered relevant in this study on the effect of banks' lending behaviour on loan losses of commercial banks in Kenya. The problem of moral hazard associated with the theory leads to borrowers concealing material information concerning their ability to pay and risks associated with the investment and the bank lending out credit without having complete information about borrower (Bester, 1994). The banks end up giving low quality loans that result to increase in loan losses. At the same time due to the problem of adverse selection associated with information asymmetry, the banks end up charging high interest rates to covers for increased risk of default due to opaqueness of customer credit history thereby leading to even more default as borrowers cannot afford rising interest rates therefore increased non-performing loans that further leads to rising loan losses of the commercial banks in Kenya.

The second theory Modern Portfolio Theory (MPT) is highly associated with Markowitz (1952). Modern portfolio theory measures the benefits of diversification. MPT is an investment theory which tries to explain how investors could maximize their returns and minimize their risks by diversification in different assets by carefully choosing the proportions of various assets. Tobin (1958) expanded the theory of Markowitz's (portfolio theory) by adding the analysis of risk-free assets which made it possible to influence portfolios on the efficient frontier. The centerpiece of this theory is the capital asset pricing model (CAPM) devised by Markowitz (1952). By combining different assets whose returns are not perfectly positively correlated, MPT seeks to reduce the total variance of the portfolio return. MPT also assumes that investors are rational and markets are efficient. Modern portfolio theory approach underpins current study and is relevant for analyzing the effect of banks' lending behaviour on loan losses of commercial banks in Kenya. MPT implies portfolio diversification and the desired portfolio composition of commercial banks are results of decisions taken by the management of commercial banks. Commercial Banks should consider diversifying loan portfolio to minimize risk of credit takers defaulting in loans repayments and causing loans losses. Finally, Institutional Memory Hypothesis. The institutional memory hypothesis was first articulated by Butlin and Boyce (1985). Under the institutional memory hypothesis, the capacity of loan departments to evaluate risk and identify potential future problems deteriorates as time passes since their last "learning experience" with problem loans. Early in a bank's lending cycle immediately after a loan bust, the lessons of the bank's last bust are still fresh in the memory of loan officers who have just witnessed the ex post realization of their prior loan decisions. Thus, as the bank starts its rebound from its most recent experience with problem loans, the reservoir of lending knowledge is at its peak because these lessons are fresh in the minds of those loan officers who survived the experience. As time passes since the bank's last loan bust, the level of loan officer skill tends to deteriorate. The officers do a worse job of screening, analyzing, and structuring their loans as they are originated, monitoring them after origination, and designing and implementing work-out strategies when these loans become distressed. This deterioration in loan officer ability may result in an easing of credit standards as officers become less able to recognize potential loan problems and lower-quality borrowers as a consequence, banks may pool loan applicants that might otherwise be rejected with acceptable credits and extend credit to additional borrowers (Office of the Comptroller et al., 2001) Eventually, a bank's loan boom turns to a bust and its loan officers turn more of their attention to managing their distressed credits.

B. Empirical Review:

This section of the study examines relevant empirical literature on the relationship between study variables that is banks' lending behaviour and loan losses. Igan & Pinheiro (2011) explored the risks posed by rapid credit growth recognizing the two-way causality between credit growth and bank soundness. The dataset covers banks from 90 countries from 1995 to 2005 in OECD area. The authors show that rapid credit growth during the last decade weakened banks and it became less dependent on bank soundness. Pakhchanyan & Sahakyan (2014) examined how progressive credit intermediation in the Armenian banking sector affects financial stability of the banking sector. Particularly, the study analysed the impact of abnormal loan growth on banks' solvency, profitability and riskiness. The study used GMM technique to a panel of 22 Armenian banks covering the 2003–2014 period. The study finds that favourable macroeconomic performance and abnormal loan growth positively affect subsequent loan losses. These findings support the view that, in the case of economic boom and aggressive loan growth strategy, in order to attract new customers, banks ease their credit standards and lend to weaker borrowers which further translates into increased loan losses. Further, their findings support their hypothesis regarding abnormal loan growth, suggesting that banks with aggressive risk taking behaviour suffer more from loan losses. In a paper by Köhler (2011), the researcher analysed the impact of loan growth and business model on bank

risk in 15 EU countries. Results indicate considerable heterogeneity in risk-taking across banks and countries. Researcher show that banks with high rates of loan growth are more risky. The effect, however, decreases with bank size possibly because large banks are more active in volatile trading and off-balance sheet activities such as securitization that allow them to increase their leverage. Results further indicate that banks become more risky if aggregate credit growth is excessive. This even affects those banks that do not exhibit high rates of individual loan growth compared to their competitors. Foos & Norden (2009) provides new comprehensive evidence on the inter-temporal relation between abnormal loan growth and the riskiness of individual banks. Using Bankscope data on more than 16,000 individual banks from 16 major countries during 1997-2007. The study finds that past abnormal loan growth has a positive and highly significant influence on subsequent loan losses with a lag of two to four years. The positive relation between past abnormal loan growth and contemporaneous losses is robust.

Pinho & Martins (2009) studied the determinants of generic and specific provisions in Portuguese banking. They tested the model using a comprehensive panel of all financial institutions operating in Portugal between 1990 and 2000. The study finds that specific provisions are mainly determined by the amount of non-performing loans, loan write-offs and recoveries. The study also find that generic provisions are mainly explained by the amount of loans outstanding. Isa & Yaziz, (2011) carried out a study to derive the determinants of loan loss provisions of commercial banks in Malaysia. A single stage panel data multiple regression model that contains a mixture of quantitative and qualitative elements is employed. The loan loss provisions is a dependent variable and the independent variables are non-performing loan (NPL), interest income, net profit, loans & advances; and the Gross Domestic Product (GDP). This paper suggests in loan loss provisions; non-performing loans, interest income, loans & advances, net profit, and the Gross Domestic Product. Lim et.al (2013) did a study whose main purpose was to analyse the determinants of bank loan provisions in Malaysia. This study investigates that what variables that will affect and how to affect the loan loss provision of the banks in order for the banks to take note on these variables' movement in managing their loan loss provision more effectively to reduce losses. This paper is a quantitative research that obtaining data from secondary source. In this 9 years of data was included from 2003 till 2011. The log method is used since the data that collected from annual report of 9 banks in Malaysia is too huge. In this research, the target population is the licensed local commercial banks in Malaysia. Researchers found that GDP and market lending rate are insignificant variables while the other five variables (total loan, earnings before tax and provision (EBTP), bank size, non-performing loan (NPL) and equity ratio) were significant in determining the bank loan provision in Malaysia. Kanagaretnam et al. (2008) investigated that total loan is positively related to loan loss provision. Therefore, it is expected that total loans of the banks are positively related to loan loss provision in Malaysia. Kanagaretnam, Krishnan, and Lobo (2010) found that total loan of the banks is positively correlated to loan loss provision. When the total loans of the bank increase, loan loss provision will increase too. The increase of total loans may lead to higher defaults of the loans. Thus, banks normally will set high loan loss provision in order to prevent the banks from being bankrupt. However, the study of Craigwell & Elliott (2011) is inconsistent with the study of Kanagaretnam et al. (2010). Based on the result of the study of Craigwell and Elliott (2011), they found that there exists significant negatively relationship between total loan and loan loss provision. When the total loan of banks increases, loan loss provision moves in opposite direction. Some banks, for example, larger banks in Barbados that have largest loan portfolios normally able to forecast the possibility of default of the loans. Thus, banks will expect that loan loss provision should decrease when total loans increase. Murira (2010) sought to determine the relationship between loan portfolio and financial performance of commercial banks in Kenya. The researcher used causal research design. The target population composed of 43 commercial banks in Kenya. The study concludes that there exists a relationship between loan portfolio and financial performance of commercial banks in Kenya as loan portfolios are the major asset of banks and other lending institutions. Maina (2003) carried out a research on the risk based capital standards and the riskiness of bank portfolios in Kenya. The study established that the challenges include taxes, investor preferences, portfolio constraints, lack of knowledge from consultants and cultural hurdles. Ndung'u (2003), sound asset and liability management have significant influence on profitability. Among the external factors, high market interest rate was found to have an adverse effect on financial institution's profitability in Kenya. The study also found that the prerequisites to operational efficiency include the adaptation of an effective service delivery methodology and significant institutional competence in such areas as delinquency control, information management, and staff development.

Study by Okoye & Eze (2013) examined the impact of bank lending rate on the performance of 11 Nigerian Deposit Money Banks between 2000 and 2010. The study utilized secondary data econometrics in a regression, where time-series

and quantitative design were combined and estimated. The result confirmed that the lending rate has significant and positive effects on the performance of Nigerian deposit money banks. Glen and Mondragon-Velez (2011), loan loss provision is positively related to lending rate. This is due to there is higher probability that firms and individuals may not be able to service on their debt during recession. Pain (2003) and Arpa, Giulini, Ittner and Pauer (2001) investigated the influence of the business cycle on loan loss provision in UK and Austrian banks respectively. They showed that, banks set a higher provision when GDP reduces. Provision gets a boost during the time when the fall in GDP was concluded. Also, raise of banks' profitability in good time can encourage banks to have a lower provision. However, there are some journals stated that loan loss provision is positively related to GDP. Anandarajan, Hasan and McCarthy (2007) stated that when GDP increases, firms or companies tend to increase their borrowing to expand activities. This may improve the risk of borrowing. Banks need to increase loan loss provision to absorb the additional risk. Therefore the relationship between loan loss provision and GDP is treated as positive.

III. RESEARCH METHODOLOGY

A. Research Design, Population and Collection:

In this study, the researcher used descriptive survey and empirical research design. According to Saunders, Lewis and Thornhill (2009), descriptive survey research design is meant to give an output of statistical information about an aspect of a study that is of interest to policy makers in a bid to aid them in making informed decisions. The study described the effect of banks' lending behaviour on loan losses of listed commercial banks in Kenya. The target population for this study was all the 11 listed commercial banks in Kenya. According to NSE, there are 11 registered commercial banks that have shares trading in NSE (NSE, 2016). A census was done in order to provide a true measure of population. As result, no sampling technique was necessary because the research utilized the entire population. The period of study was five years 2011, 2012, 2013, 2014 and 2015. Due to the nature of financial studies, the researcher used secondary data sources. Secondary data was sourced from statistics maintained by the central bank of Kenya and audited financial statement of individual banks covering five years (2011-2015). The data extracted was recorded on data collection sheets. Reliability and validity of test instrument was also important concept for this study. For the purpose of this study, data reliability and validity was ensured by collecting data from official sources such as annual audited accounts and corporate websites.

B. Data Analysis Techniques and Procedures:

The data collected was examined before analysis commenced for completeness and consistency. The data was analyzed using descriptive and inferential. The panel methodology was aided by Excel 2013 and STATA software Version 14 software. Descriptive statistics included measures of central tendencies and dispersion. Bivariate Pearson correlation, multiple regressions and ANOVA were used to test the significance of the effect of banks' lending behaviour on loan losses of listed commercial banks in Kenya. The study used empirical model represented by the regression formulae below.

$$LNLLP_{it} = \beta_0 + \beta_1 LG_{it} + \beta_2 NPLTCL_{it} + \beta_3 LNTCL_{it} + \beta_4 LENDR_{it} + \beta_5 PORTDIV_{it} + \beta_6 GDP_{it} + \epsilon_i \dots \dots \dots \text{Equation (1)}$$

Where *LNLLP*: Natural logarithm of Loan Loss Provision of bank, *LG*: Loan Growth as a percentage *LNTCL*: Natural Logarithm of total customer loans, *GDP*: Gross Domestic Product, *LENDR*: Lending rate, *PORTDIV*: Portfolio diversification, *NPLTCL*: Non-performing Loans to Total loans, β_0 = intercept term, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and β_6 : are the coefficients of the independent variables respectively, *i* : 1, 2, 11: Number of banks *t* = 2011, 2012, 2013, 2014 and 2015 and ϵ_i = Error term

IV. RESEARCH FINDINGS AND DISCUSSION

A. Correlation Analysis:

The researcher carried out pair wise correlations analysis to assist explains the association between banks' Lending and loan losses of listed commercial banks in Kenya. The researcher used pairwise Pearson Correlation to establish the relationship as shown in table 1

Table 1: Pairwise Pearson Correlation Coefficients

. pwcorr LENDR PORTDIV LNTCL NPLTCL LG GDP LNLLP, obs sig star(5)

	LENDR	PORTDIV	LNTCL	NPLTCL	LG	GDP	LNLLP
LENDR	1.0000						
	55						
PORTDIV	0.2658*	1.0000					
	0.0498						
	55	55					
LNTCL	-0.1715	-0.2086	1.0000				
	0.2106	0.1264					
	55	55	55				
NPLTCL	0.0302	0.1800	0.0287	1.0000			
	0.8269	0.1884	0.8351				
	55	55	55	55			
LG	-0.3942*	-0.5793*	0.0559	-0.2405	1.0000		
	0.0029	0.0000	0.6853	0.0769			
	55	55	55	55	55		
GDP	-0.1269	-0.0510	0.3925*	0.2562	0.1025	1.0000	
	0.3560	0.7115	0.0030	0.0591	0.4567		
	55	55	55	55	55	55	
LNLLP	-0.0430	-0.0329	0.6083*	0.6986*	-0.1400	0.4562*	1.0000
	0.7552	0.8114	0.0000	0.0000	0.3080	0.0005	
	55	55	55	55	55	55	55

Table 1 presents the following :- **Loan growth (LG) and loan losses:** The researcher wanted to establish the relationship between loan growth and loan losses (LNLLP) of the 11 listed commercial banks in Kenya. Pairwise Pearson correlation coefficient was calculated at 0.05 level of significance. Pearson's correlation (r) indicated that there was a statistically insignificant negative correlation between loan Losses and loan growth ($r = -0.1400$, $p = 0.3080$ and $\alpha = 0.05$). With loan growth being negatively correlated with loan losses; it suggests that an increase in Loan growth leads to reduction in loan losses. This negative association could be explained by the fact that loan growth in the listed commercial banks may does not necessarily be positively associated with loan losses as the listed banks are usually tire one banks with strict control from CBK and NSE **Lending rate (LENDR) and loan losses:** There was a statistically insignificant moderate negative correlation between lending rate and loan losses ($r = -0.0430$, $p = 0.7552$ and $\alpha = 0.05$). The negatively correlation suggests that an increase in lending rate leads to an reduction in loan losses .This negative correlation could be explained by the fact the positive correlation between lending rate and loan losses is only possible during period of stagnated economic growth but the period under study was accompanied by increasing economic growth throughout the study period.

Quality of loans (NPLTCL) and loan losses: There was a strong positive statistically significant correlation between quality loans and loan losses ($r = 0.6986$, $p = 0.000$ and $\alpha = 0.05$). Quality of loans being positively correlated with loan losses, suggests that an increase in the stock of poor quality loans leads to an increase in loan losses. This positive correlation could be explained by the fact that increase in the stock of poor quality loans is associated with banks not recovering loans which become toxic or impaired assets hence increases in loan losses and such banks must increase loan loss provision with increase in stock of poor quality loans.

Total loans (LNTCL) and loan losses: Pearson's correlation coefficient indicated a statistically significant positive correlation between total customer loans and loan losses ($r = 0.6083$, $p = 0.000$ and $\alpha = 0.05$). Total loans being strongly and positively correlated with loan losses, suggests that an increase in total loans could be associated with increasing loan losses. This positive correlation could be explained by the fact that banks with large total customer loans must may also experience large volume of loan losses hence must set a side big chunk of profits as provision for loan losses.

Loan portfolio diversification (PORTDIV) and loan losses: There was a statistically insignificant negative correlation between loan portfolio diversification and loan losses ($r = -0.0329$, $p = 0.8114$ and $\alpha = 0.05$). The negatively correlation suggests that an increase in loan portfolio diversification is associated with reduction in loan losses. This could be explained by the fact that by diversifying loan portfolio book, the unsystematic risks are spread over the less risky financial assets like government bonds and bills with almost zero default hence overall loan losses is expected to decline.

Gross Domestic Product (GDP) and loan losses: There was a statistically significant positive correlation between Gross Domestic Product and loan losses ($r = 0.4562$, $p = 0.0005$ and $\alpha = 0.05$). Gross domestic product being positively correlated with loan losses, suggests that an increase in Gross Domestic Product is associated with an increase in loan losses. This positive correlation could be explained by the fact that increasing gross domestic product means increasing positive business climate, this could make banks to offer more loans which will eventually lead to increasing loan losses in absolute figures as banks increase loan loss provisions to cover the expected loan losses before they are experienced.

B. Regression Analysis:

Simple OLS Regression analysis was multiple in natures as there were five independent variables and one control variable. The independent variables were: Loan growth, total customer loans, loan portfolio diversification, lending rate, quality of loans and gross domestic product. The dependent variable was loan losses proxied by natural logarithm of loan loss provision. The findings are presented in table 2

Table 2: Summary of Simple OLS Regression Results

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. regress LNLLP LENDR PORTDIV LNTCL LG GDP NPLTCL
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Source	SS	df	MS	Number of obs	=	55
Model	43.4166955	6	7.23611592	F(6, 48)	=	42.72
Residual	8.13045906	48	.169384564	Prob > F	=	0.0000
				R-squared	=	0.8423
				Adj R-squared	=	0.8226
Total	51.5471546	54	.954576937	Root MSE	=	.41156

LNLLP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
LENDR	1.220905	1.777048	0.69	0.495	-2.35209 4.793899
PORTDIV	-.691394	.7337727	-0.94	0.351	-2.166743 .7839548
LNTCL	.9330523	.1090407	8.56	0.000	.7138113 1.152293
LG	-.4498123	.8389841	-0.54	0.594	-2.136703 1.237078
GDP	15.81567	14.05253	1.13	0.266	-12.43884 44.07018
NPLTCL	62.36685	5.822996	10.71	0.000	50.65893 74.07477
_cons	-4.835193	2.0941	-2.31	0.025	-9.045663 -.6247227

Tables 2 indicate that the model explains 84.23 % of the total variations in loan losses as shown by the coefficient of determination (R^2) value of 0.8423. The remaining 15.77% Variations in loan losses is explained by other factors not included in the model as captured by error terms. It is therefore clear that lending behaviour explains 84.23 % variations in loan losses. The overall significance of the model was 0.000 with an F value of 42.72. The level of significance was lower than 0.05 and this means that lending behaviour do show statistically significant effect on loan losses. Table 2 further shows the coefficients of independent variables (Lending rate, loan growth, loan portfolio diversification, total customer loans and economic growth) the values of p and values of t. The estimated model is shown in equation 2

$$LNLLP_t = -4.8351 + -0.45LG_{it} + 62.36NPLTCL_{it} + 0.93LNTCL_{it} + 1.22LENDR_{it} - 0.69PORTDIV_{it} + 15.8156GDP_t + \varepsilon_i \dots \dots \dots \text{Equation (2)}$$

Effect of Loan growth on loan losses: The researcher wanted to test the null hypothesis that loans growth has no significant effect on loan losses of listed commercial banks in Kenya using simple OLS model. It was established that loan growth had a negative statistically insignificant effect on loan losses ($\beta_1 = -0.4498$, $t = -.54$, $p = .594$ and $\alpha = 0.05$). Hence null hypothesis was accepted. The value β_1 was negative showing that loan growth has a negative effect on loan losses of listed commercial banks in Kenya hence when loan growth changes by one unit, loan losses changes by 0.4498

in the reverse direction.

Effect of Lending Rate on Loan Losses: The researcher tested the null hypothesis that lending rate has no significant effect on loan losses in listed commercial banks in Kenya. Results show that lending rate had a statistically insignificant positive effect on loan losses ($\beta_2 = 1.2209$, $t = 0.690$, $p = .495$ and $\alpha = 0.05$). The null hypothesis was thus accepted. The value β_2 was positive showing that lending rate has a positive effect on loan losses among the 11 listed commercial banks in Kenya. Any unit increase in lending rate leads to increase in loan losses by 1.2209 units. However the insignificant effect could be attributed to that fact that the study used listed commercial banks that contains most of the tier 1 banks that boast of well-trained credit management teams that ensures that borrowers are clients are financially stable and have high repayment chances for the loans taken.

Effect of quality of loans on loan losses: The study tested null hypothesis that Quality of loans has no significant effect on loan losses of listed commercial banks in Kenya. The findings show that Quality of loans had a statistically significant positive effect on loan losses ($\beta_3 = 62$, $t = 10.71$, $p = .000$ and $\alpha = 0.05$). The null hypothesis was thus rejected and. The value β_3 was positive showing that quality of loans has a positive effect on loan losses of listed commercial banks in Kenya. Any increase in the stock of toxic loans by one in the bank leads to increase in loan losses by 62 units. The possible explanation for this significant positive effect is that when stock of non-performing loans increases as a ratio total loans, the chances of loan losses increases as some of the non-performing loans will eventually turn into loan losses hence banks must increase loan loss provisions in anticipation. Empirical review also agrees with this result. Bank increases their provisions in response to an increase in credit risk. (Eng & Nabar, 2007).

Effect of total customer loans on loan losses: The researcher tested the null hypothesis that total customer loans has no significant effect on loan losses of listed commercial banks in Kenya. It was established that total customer loans had a statistically significant positive effect on loan losses ($\beta_4 = 0.9330$, $t = 6.56$, $p = .000$ and $\alpha = 0.05$). The null hypothesis was thus rejected. The value β_4 was positive showing that total customer loans has a positive effect on loan losses hence any unit increase in total customer loans leads to 0.933 units increase in loan losses. The positive effect can be attributed to the fact that when banks offer more absolute loans at any particular time, they are required to increase loan loss provision to cover for any expected loan losses before they actually incurred. Study by Krishnan and Lobo (2010) agrees with this study as they also found that total loan of the banks is positively correlated to loan loss provision. However, Craigwell & Elliott (2011), found that there exists significant negatively relationship between total loan and loan loss provision.

Effect of loan portfolio diversification on loan losses: The null hypothesis that loan portfolio diversification has no significant effect on loan losses of listed commercial banks in Kenya was also tested. Study results established that loan portfolio diversification had a statistically insignificant negative effect on loan losses ($\beta_5 = -0.6913$, $t = -0.94$, $p = .351$ and $\alpha = 0.05$). The null hypothesis was thus accepted and alternative hypothesis rejected showing that loan portfolio diversification has no significant effect on loan losses of listed commercial banks in Kenya. The value β_5 was negative showing that a unitary increase in loan portfolio diversification leads to 0.6913 units reduction in loan losses. The negative effect can be explained by the theory of portfolio that states that a firm can reduce risks of loan default by spreading the risk in less risky treasury bills and bonds hence the more the diversification the lower the loan losses.

III. CONCLUSION

The study was carried out to establish the effect of banks' lending behaviour on loan losses of listed commercial banks in Kenya. The results of the study were as follows: Total customer loans and Quality of loans had statistically significant effect on loan losses of listed commercial banks in Kenya. However loan portfolio diversification, lending rate and loan growth had a statistically insignificant effect on loan losses. The study recommends the following: Firstly, basing on this study, Management of commercial banks will able to make business policy changes regarding their lending behaviour to reduce loan losses. One of key policy issue could be to increase loan loss provision with increase in total customer loans as their prepare for eventual loan losses that may result. Other areas of business policy change involve diversifying loan portfolio book by taking up more government financial assets to spread loan losses. Secondly, the board of CBK will be able fine tune loan loss provision policies by basing it on lending activities of individual commercial banks. There should be portion of loan loss provision for individual banks that should be adjusted based on lending behaviour of individual banks. The risk weighted minimum capital requirements should also be based on the exposure of individual banks to loan losses that eat into capital of a banks. The minimum capital requirements should be adjusted depending on lending

activities of individual banks. Finally, Future researchers will find the finished report an invaluable document as it will provide base literature on topics touching on the relationship between lending activities and loan losses of commercial banks. Concerning areas of further research, the current study was limited to effect of lending behavior on loans losses of listed commercial banks in Kenya. The study was restricted to listed commercial banks and the data was restricted to five years. Another study should be carried out that looks at effect of lending behavior on loan losses in all commercial banks in Kenya to establish if results hold also in other commercial banks. Another study should also be carried out using long term data covering over twenty years since some variables can be best observed in a long period of time. Future studies can also relate lagged values of loan growth with contemporaneous loan losses of commercial banks.

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