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# Assessment of Loan Portfolio Quality on Financial Performance of Commercial Banks in Kenya

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## Authors' contributions

*This research work was carried out in collaboration between both authors. Author TSM designed the study, performed statistical analysis, wrote the protocol, wrote the first draft of the manuscript, edited and made all the corrections. Author COO supervised all the processes involved in preparing the manuscript. Both authors read and approved the final manuscript.*

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## ABSTRACT

Deteriorating loan portfolio quality is negatively impacting the financial performance of commercial banks in Kenya. Though, Kenya's banking sector is well established and plays key part in developing county's economy, it is facing constraints in terms of absolute growth due to this declining loan portfolio quality. Consequently, stakeholders of these commercial banks especially creditors, depositors and shareholders are incurring huge financial losses in absolute terms on their deterioration. Although, there are studies that have established the factors that affect commercial banks' financial performance, until the time of the study there were unresolved issues. This calls for commercial banks need to be proactive like modernizing their risk mitigation measures to more precise measures to deal with expected credit losses. Banks need to change in this time of enhanced financial information, computing power and data analytics for best-in-class fair projection of credit risk for tangible competitive benefits. Study has demonstrated need for robust approach to commercial banks' lending in dynamic financial markets for sustainable commercial banking financial performance in Kenya. Study aimed at assessing loan portfolio quality on financial performance of commercial banks in Kenya. Study objectives were to: determine significance of loan loss provision on financial performance of commercial banks in Kenya, evaluate allowance for loan loss impact on financial performance of commercial banks in Kenya and gauge bearing of gross

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impaired loans and advances on financial performance of commercial banks in Kenya. Researcher classified loan portfolio quality indicators as independent variables, regulatory frameworks, market and infrastructural dynamics as intervening variables, and measures of financial performance of return on assets and equity of commercial banks in Kenya as dependent variables. Research utilized descriptive design using percentages, mean, standard deviation, correlations, and panel data regression model. Researcher narrowed down targeted population to 38 fully operational commercial banks in Kenya by end of year 2020. Study applied census approach and relied on published audited financial reports. Researcher used document review secondary data collection tool and analysed data using SPSS program Version 24.0 supported by Microsoft excel windows 2010. Tables and figures were used to present study outcome. There was largely positive significant correlation between each independent and dependent variable proxies. Although on contrary, allowance for loan loss and gross impaired loans and advances association with return on equity were positive and negative insignificant correspondingly. Study general conclusion was that loan portfolio quality largely had positive significant association with Kenya's commercial banks' financial performance. Coefficient of determination of return on assets and return on equity were 0.1620 and 0.0363 respectively. That meant loan portfolio quality was responsible for 16.20% and 3.63% change in Kenya's commercial banks' financial performance in terms of return on assets and equity respectively. Overall, it is resolved, loan portfolio quality parameters; loan loss provision, allowance for loan loss and gross impaired loans and advances are determinants of financial performance (return on assets return on equity) of Commercial banks in Kenya. The study recommends management of these banks need to vigorously pursue measures to effectively manage loan portfolio quality to realise rising returns on assets and equity.

*Keywords: Allowance for loan loss; financial performance; gross impaired loans; loan loss provision; return on assets; return on equity.*

## 1. INTRODUCTION

### 1.1 Background to the Study

A commercial bank is considered as a liaison that generates money from savers with excess supply for onward lending to investors and consumers in need [1,2]. Therefore, commercial banks bridges disproportionate information gaps amongst players in the financial market [3]. Various scholars and experts have averred that decisions on monetary policies are conveyed through various monetary policy transmission channels like lending concurrently to the economy [4-6].

Short [7] and Bourke [8] are among the first scholars who attempted to uncover the factors that affect commercial banks financial performance by grouping them as either internal or external. To make it easy to apply and compare the study's outcome, Return On Assets (ROA) and Equity (ROE) were adopted. The financial performance of commercial banks in Kenya proxied as ROA and ROE has been analyzed from the perspective of Loan Loss Provision (LLP), Allowance for Loan Loss (ALL) and Gross Impaired Loans and Advances (GILA), all having been previously analyzed in differentiated arrangements as shown under

literature review. Lugman & Sugianto [9] found out that starting from July, 2008, financial markets in most economies experienced unfavorable economic environment caused mainly by the housing credit crisis in USA expanding to investment and commodity markets.

Canada though being a developed nation and near USA did outlive 2007- '09 world financial turmoil comparatively safe Meeks et al. [10]; Moreira & Savov [11] recommended leveling regulatory framework for commercial banks. This scenario in Canada is no different from that in Kenya, for during the 2007-'09 global financial crisis, the Kenyan commercial banking industry was less affected for little existed of shadow banking.

Commercial banking sector in India and Nigeria over the study period for instance, experienced worsening loan portfolio quality reaching respectively ALL highs of 10.0% and 14.8% in 2017 up from 4.3% and 3.0% in 2014 [12]. At the world level, EU, North America and Australia shown an average trend of greatly improving ALL. This trend if not curtailed early enough, may only lead to unmanageable ALL like those recorded in comparatively poorly performing banking sectors in struggling East European

countries like Greece, Ukraine and San Marino that have recorded over the study period ALL highs of over 40% [13,14]. Also, East Asia and the Pacific, South Asia and Latin America are having relatively low and stable ALL. But Kenya just like most Sub-Saharan Africa are experiencing exponential rise in ALL which is worrying.

As a country, Kenya can learn a lot from countries in better performing jurisdictions like Monaco, Estonia, Canada, USA, Sweden and Hong Kong that have consistently maintained a low ALL of below 1% over the study period. Closer home, we have good examples in countries such as Uganda, Rwanda, Namibia and South Africa that are recording stable ALL that are below 5% [12]. The poor-quality loan portfolios environment was largely blamed on ineffective management of credit exposure, lapses in governance at corporate level and loans and advances default by government agencies [1].

To realize study objectives, the researcher did believe that the Independent Variables (IVs) of LLP, ALL and GILA considered within a stable environment of moderating factors of regulatory frameworks, market and infrastructural dynamics could explain the changes in the Dependent Variable (DV) of financial performance indicated by the two ratios of ROA and ROE. Factor analysis using the five variables has been performed on the 38 fully operational commercial banks in Kenya as from years 2014 to 2020 audited financial statements.

## 1.2 Statement of the Problem

There is deteriorating loan portfolio quality, which is negatively impacting financial performance of commercial banks in Kenya. For instance, the ALL increased by 5.38%, LLP by 142% and GILA by 144% between 2014 and 2017 [1,15] in comparison with decreased rate of growth in actual financial performance indicators of ROA of (1.08%) and ROE (7.45) over the same period. The deteriorating loan portfolio quality is widely associated with banks' failures and financial distress as has happened in recent times with the three banks; two under receivership while one under statutory management [16]. Remarkably, the declining rate of growth in financial performance of these banks has been majorly linked to factors such as poor loan portfolio quality indicators of LLP, ALL and GILA [17]. Although, there are numerous research

papers done on how loan portfolio quality relates to financial performance of commercial banks, until now there are unresolved issues. For example, Gabriel et al. [18] paper considered the effect of loans that were not performing on financial performance of Nigerian commercial banks for financial years 1985 to 2016. Therefore, this research project aimed at producing findings which would address the unresolved issues. Researcher has shown an enhanced approach to commercial banks loan portfolio quality assessment that is anchored in managing level of loan provisioning to achieve better financial performance for good return on assets and equity. Commercial banks being leading financial institutions are expected to deliver high-quality loan portfolios despite facing increasing competition from non-commercial banking lenders like Saccos and from technology firms like Safaricom (K) Ltd and other fin-tech entities like Tala. This calls for commercial banks need to be proactive like modernizing their risk mitigation measures to more precise measures to deal with expected credit losses. This study show the need for banks to change in this time of enhanced financial information, computing power and data analytics for a best-in-class fair projection of credit risk for tangible competitive benefits. By developing a best-in-class framework for loan portfolio quality management, commercial banks will be well positioned to succeed in a dynamic transaction marketplace and respond accordingly to expected factors that affect their loan portfolio quality affecting their financial performance. The study, therefore, has demonstrated the need for robust approach to commercial banks' lending in dynamic financial markets for sustainable commercial banking financial performance in Kenya.

## 1.3 Objective of the Study

The study aimed at assessment of loan portfolio quality on financial performance of commercial banks in Kenya and specifically, ed:

- i. To determine the significance of loan loss provision on financial performance of commercial banks in Kenya.
- ii. To evaluate the impact of allowance for loan loss on financial performance of commercial banks in Kenya
- iii. To gauge the bearing of gross impaired loans and advances on financial performance of commercial banks in Kenya.

## 1.4 Research Hypotheses

The researcher's formulated null hypotheses being as stated below:

- H<sub>01</sub>:** There is no significance statistically of loan loss provision on financial performance of Commercial banks in Kenya.
- H<sub>02</sub>:** There is no impact statistically of allowance for loan loss on financial performance of Commercial banks in Kenya.
- H<sub>03</sub>:** There is no bearing statistically of gross impaired loans and advances on financial performance of Commercial banks in Kenya.

## 2. LITERATURE REVIEW

### 2.1 Empirical Literature

Kadioglu et al. [19] argued that to stem out this problem of deteriorating quality of outstanding loans leading to inferior banks' financial results, the central banks in various jurisdictions including Kenya have continued to develop frameworks to manage inherent risks in the banking industry. By analyzing a range of financial performance indicators like ROE and ROA, is crucial in stakeholder decisioning based on models of mathematics that bring to the fore these relationships.

While Alhadab & Alsahawneh [20] revealed that bank may use LLP in the wrong way from that it was intended for of say having build-up of reserves as a cushion against eminent credit risk resulting from default of loans, Magomere & Otinga [21] found out that loan loss provisioning was significant and positively associated with return on investment of MFIs in Kenya's Kakamega County and Obwocha [22] revealed a significant and positive correlation between IVs; loan loss provisioning ratio, asset quality, capital adequacy and management efficiency and DV; commercial banks' financial performance. Fernando and Ekanayake [23] conclude that loan loss provisioning and profits before tax are positively related.

Hurka [24] showed that ALL had significant inverse relationship with profitability of banks (proxied ROA and ROE) as Gathaiya [16] pointed to factors of feeble governance at corporate level, unreliable tactics in risk management, inadequate in-house controls, flawed regulatory and supervisory frameworks, excessive insider loans, ineffectual rules, modest

financial sector supervision, a dishonorable sector philosophy and conflict of interest as to blame for continued bank failures.

Isanzu et al. [25] found out that impaired loan reserve and loan impairment charges as a measure of credit risk had mixed results with ROA. Impaired loan reserve to gross loan ratio association with ROA was inverse. Ratio of impairment charges associated positively with ROA. Tahir et al. [26] established an inverse correlation between loan provisioning and Pakistan banks' financial performance as Gabriel et al. [18] found out that ratio of NPLs to loan book and that of Cash Reserve unfavorably impacted ROA. Gizaw et al. [27] also revealed presence of potential earning management activities by bank managers while Mitai [28] recognized that NPLs ratio has bad bearing on ROA. In addition, ownership structure was partly contributing to rise in NPLs in such entities and Bloem & Gorter [29] concluded that large volumes of bad loans do adversely affect the loaning capacity of banking institutions. He further asserted that colossal NPLs could lead to market uncertainty resulting to a bank run that could trigger liquidity snags.

### 2.2 Theoretical Literature

The research reviewed Banking Theory of Shiftability, Anticipated Income Theory of Banking and Pecking Order Theory. The Banking Theory of Shiftability focused on investing in liquid assets while anticipated income theory favours investment in non-liquid assets. It suggests that if banks do not have liquidity and depositors come and demand their money and if they do not get money back in time then there is a danger of run on the bank [30,31]. So, the presence of liquidity is a must for a commercial bank to maintain the public confidence which is central to bank profitability and stability [30,31]. The theory recommended that banks should hold 60% of the assets structure as discounted bills (Gupta, 2019). This therefore ensures banks invests in stable lending which helps in lowering LLP leading to improved ROA and ROE. Shiftability theory can explain the rise in quality loan portfolios of banks given good relationships they maintain with enterprises who always approach them to fill their liquidity gaps (Ndwegwa, 2020). Based on the theory, the loan portfolios shrink as loan loss provisioning, allowance and GILA were skyrocketing reducing banks' profitability, assets and equity. This in turn lower ROA and ROE to unsustainable levels.

The Anticipated Income Theory of Banking is premised on developing of long-term lending away from short run credits. It advocates for the commercial banks should shift their investment portfolio. Therefore, anticipated income theory states that banks should invest in long term assets that is, long term loans and investments. As a result, returns will come over a long period of time. Now, it means if commercial banks are going for non-liquid assets or long-term assets, it would result in their liquidity going down [32]. A high return on long term loans enhances profitability and mostly such facilities are known to have lower levels of default than short-term ones. This is mostly because they are issued to reputable enterprises and individuals with good credit scores coupled with good security margins. These factors combined ensure that even in the event of default the bank doesn't lose by liquidating the security or easily selling off the debt to factors or credit administrators. This makes commercial banks to have lower LLPs for such loans which results in higher profits and better returns on assets and equity. The anticipated income theory supports investment in non-liquid assets to set a tradeoff between both profitability and stability. These measures realize low provisioning leading to higher profits, ROA and ROE as expounded above.

The Pecking order theory, invented by Donaldson [33] and enhanced by Myers & Majluf [34] suggests that entities prefer internal financing to external financing due to information asymmetry which causes the cost of capital for external financing to increase. Firms therefore prioritize their sources of financing according to the law of least effort, or of least resistance: internal funds are used first, and when that is depleted, debt is issued, and when it is not sensible to issue any more debt, equity is issued. This could explain why some firms end up with over-indebtedness resulting into delinquency leading to deteriorating loan portfolios in terms of GILA of lending commercial banks which eventually lead to reduced returns on assets and equity Homapour, [35]. Moreover, this theory seems to clarify why profitable companies have low debt ratios. This might end up compromising loan portfolio quality in terms of GILA of debt issuing commercial banks, negatively impacting ROA and ROE. According to theory, risky borrowers and tend to attract higher cost of financing for fear of higher monitoring costs. This results in relatively higher rates of LLP and ALL which adversely affects ROA and ROE due to reduced profitability that lower ROA and ROE.

### 3. RESEARCH METHODOLOGY

The analysis was done using quantitative methodology producing important statistics that explained the variables relation through a derived study model This did involve the process of systematic unbiased relevant raw-data gathering, organization and processing [36].

The research adopted descriptive Research Design where the research described and summarized quantitative features of loan portfolio quality in terms of LLP, GILA, ALL and commercial banks financial performance as depicted in their achieved ROA and ROE for the period 2014 to 2020.

All 38 CBK licensed fully operational commercial banks in Kenya were considered in the study as the target population where census was used for sampling.

The researcher developed a document review secondary data collection tool that was used tested for validity using content validity and reliability tests using Cronbach's alpha approach. Afterwards, researcher improved the instrument to fully align it to the study objectives.

Derived raw data was analysed using quantitative analysis to yield descriptive statistics on tables to presented summaries of financial data and analyzing the data for realizing study purpose.

The measures of association (correlation) were used to confirm whether the IVs were associated with DV [37]. Correlation coefficient of Pearson product moment correlation has been performed on the financial data depicting the linear relationship intensity between determined and self-determining variables [36]. Multiple regression analysis was performed using SPSS version 24.0 program to analyze collected data. Study's regression equation model:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \epsilon_{it} \quad (i)$$

Where,

$Y_{it}$  = Commercial bank's financial performance in terms of ROA or ROE  
 $\beta_0$  = Constant being intervening variables (the other factors assumed to have remained constant during the time of study).

$\beta_1, \beta_2, \beta_3$  = Regression coefficients of independent variables.

$X_1, X_2, X_3$  = Loan portfolio quality measured by LLP, GILA & ALL.

$\ell$  = error term

$i$  = Commercial Bank(s) at given time

$Y_{iat}$  = ROA representing ROA for Commercial Bank(s)  $i$  at time  $t$ .

$Y_{iet}$  = ROE representing ROE for Commercial Bank(s)  $i$  at time  $t$ .

$X_{1it}$  = (Provision for loan loss) LLP/TLA represents ratio of Average provision for non-impaired & Impaired loans and advances to Total Loan Book for bank  $i$  at time  $t$

$X_{2it}$  = (Allowance for loan loss) IL/TLA represents ratio of GILA to Loan book for bank  $i$  at time  $t$

$X_{3it}$  = (Gross impaired loans/advances - GILA) represent GILA for bank  $i$  at time  $t$

$\ell_{it}$  = Error term for Commercial Bank(s)  $i$  at time  $t$ .

$$Y_{t3}ROA = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 \quad (ii)$$

$$YROA = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 \quad (iii)$$

$$Y_{t1}ROE = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 \quad (iv)$$

$$YROE = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 \quad (v)$$

Where,

YROA = Financial performance in terms of ROA for all 38 fully operational commercial banks in Kenya

YROE = Financial performance in terms of ROE for all 38 fully operational commercial banks in Kenya

## 4. RESEARCH FINDINGS, ANALYSIS AND PRESENTATION

### 4.1 Validity and Reliability Tests Results

In this research, results from reliability testing were captured Table 1 results.

The test results depict  $\alpha=0.722 \geq 0.7$  qualifying the tool to be reliable as it has high consistency as submitted by Kothari & Gaurav [37]. As such, the researcher did retain all objects in the tool and embraced it for collecting data.

The researcher engaged two experts in finance, the project supervisor and a financial practitioner

to establish the validity of the tool in assessing these concepts of loan portfolio quality; LLP, ALL, GILA and financial performance; ROA, ROE. The work of supervisor was to ascertain the concept of the content in the instrument while financial practitioner was to establish suitability of the tool in assessing these concepts. The specialists shared with researcher their comments and suggestions, which were taken into consideration when editing the tool. The authenticity of the data collected was improved through expending the suggestions and comment.

### 4.2 Descriptive Analysis

This section of the chapter contains results on analysing the study variables over the period between the year 2014 and year 2020. It contains summaries of descriptive statistics which includes frequency, mean, standard deviation, variance, correlation, and regression.

#### 4.2.1 Properties of variable used in analysis

These properties of study variables were analysed using descriptive statistics as captured in Table 2.

Founded on the results in Table 2, number of observations,  $N$  was to be maximum of  $N=244$ , for each variable given the periods and number of commercial banks under consideration. But on the results obtained, there was over 95% for each variable data collection success rate. It comprised of data collected on; LLP,  $N=239$ , ALL,  $N=234$  and GILA,  $N=234$  as proxies of loan portfolio quality as well as ROA,  $N=236$  and ROE,  $N=243$  as proxies of financial performance of commercial banks in Kenya for the period 2014 to 2020.

ROA results within this study period, ranged from a low of negative 24.79% to a positive value of 7.40%. The lower limit results of ROA being negative is a sign of adverse outcome in utilizing the assets of the given commercial bank and vice versa for the maximum positive value bank. From the results, the mean ROA was 0.44%, meaning, on average, Kenyan commercial banks' assets were generating 0.45 cents for every Kes.100.00 invested in them. There was low deviance of 4.25% from the mean ROA of these banks.

**Table 1. Reliability statistics of the tool**

Item	Cronbach's Alpha if Item Deleted
Financial performance in terms of ROA	.739
Financial performance in terms of ROE	.515
Provision for loan loss	.719
Allowance for loan loss	.687
Gross impaired loans and advances	.539
Cronbach's Alpha ( $\alpha$ ) = 0.722; N = 5	

Source: Researcher (2022)

**Table 1. Descriptive statistics**

Statistics	ROE (%)	ROA (%)	LLP(%)	GILA (Ksh.M)	ALL (%)
N	243	236	239	234	234
MAX	43.17%	7.40%	77.59%	66810.00	121.98%
MIN	-264.43%	-24.79%	0.03%	8	0.34%
SD	34.24%	4.25%	11.04%	9737.04	20.88%
MEAN	4.07%	0.44%	7.00%	7015.18	18.58%

Source: Researcher (2022)

The results, indicates minimum earning potential of invested equity in these banks being negative 264.43% while the maximum was 43.17%. On average, these banks earned on equity investment 4.07% considered unacceptable for according to Dang, U. [38], ROE value below 15% is seen as unfavourable earning capacity while Babar & Zeb [39] and Rozzani & Rahman [40] puts it at any value below 6.99%. These figures deviated from the mean by 34.24%.

The study found that the loan portfolio quality, measured as a loan loss provision as being (Min=0.03%; Max=77.59%). The commercial bank with minimum LLP did perform extremely well, comparable to the best performing institutions in developed jurisdictions like Western Europe and North America. But that bank with maximum LLP faired very poorly like banks in Eastern European countries like Greece and Ukraine at their lowest performance as discussed elsewhere in this study. The average LLP was relatively low (M=7.00% being a fair rating) but falling short of meeting the threshold of a high of 3.50% as recommend by Capital adequacy, Asset quality, Management efficiency, Earnings ability, Liquidity management and Sensitivity to market risk (CAMELS) rating as good [38,41]. The standard deviation was 11.04% which implies that there was relatively

little deviation by most of the banks from the average LLP which is good for the industry.

This was further justified by the results of ALL being on average 18.58% with (Min=0.34% - satisfactory; Max=121.98% - worrying; SD= 20.88% - reasonable deviation). CAMELS rating provides that banks NPLs ratio (ALL) need to be below 15% [41].

With regards to the gross impaired loans/advances, the results (Min= 8.00m. Max = 66,810.00m; M = 7,015.18; SD = 9,737.04).

### 4.3 Inferential Analysis

Research proceeded to assess if IVs; LLP, ALL and GILA are suitable estimators of the DV; financial performance proxied ROA and ROE of commercial banks in Kenya, using inferential analysis. This was succeeded by a regression analysis for predicting model to explain this association between financial performance (ROA and ROE) of commercial banks in Kenya and the IVs (LLP, GILA and ALL).

To test if there was for every IV statistically significant association with each DV, Pearson's correlation was carried out. Outcome is set out in Table 3.

**Table 3. Analysis by correlation analysis**

		<b>Correlations</b>				
		<b>Financial performance in terms of ROA</b>	<b>Financial performance in terms of ROE</b>	<b>Provision for loan loss</b>	<b>Allowance for loan loss</b>	<b>Gross impaired loans/ advances</b>
Financial performance in terms of ROA	Pearson Correlation	1	.243**	.193**	.317**	.173**
	Sig. (2-tailed)		.000	.002	.000	.007
	N	244	244	244	244	244
Financial performance in terms of ROE	Pearson Correlation	.243**	1	.186**	.041	-.051
	Sig. (2-tailed)	.000		.004	.524	.425
	N	244	244	244	244	244
Provision for loan loss	Pearson Correlation	.193**	.186**	1	.092	-.102
	Sig. (2-tailed)	.002	.004		.151	.113
	N	244	244	244	244	244
Allowance for loan loss	Pearson Correlation	.317**	.041	.092	1	.022
	Sig. (2-tailed)	.000	.524	.151		.734
	N	244	244	244	244	244
Gross impaired loans/advances	Pearson Correlation	.173**	-.051	-.102	.022	1
	Sig. (2-tailed)	.007	.425	.113	.734	
	N	244	244	244	244	244

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

Source: Researcher (2022)

Table 3 results showed that relationships between ROA as DV and each IV; LLP, ALL and GILA are all significant since the p-value for each comparison was less than 0.05; LLP ( $p < 0.01$ ), ALL ( $p < 0.01$ ), GILA ( $p < 0.007$ ). ALL ( $r = 0.317$ ) had the highest relationship followed by LLP ( $r = 0.193$ ), and then GILA ( $r = 0.173$ ). The relationship between ALL and ROA ( $r = 0.317$ ) was a moderate positive association because ( $r$ ) fell in range 0.3 to 0.6 and that between LLP and ROA ( $r = 0.193$ ) and between GILA and ROA ( $r = 0.173$ ) were weak positive ones since correlation coefficients ( $r$ ) were both less than 0.3. Below is a brief discussion of these findings in relation to select previous studies: Isanzu et al. [25] showed that impaired loan reserve to gross loan ratio association with ROA was inverse, differing with this study on GILA – ROA positive association.

ROE had a positive significant relationship with LLP ( $p < 0.004$ ) but an insignificant relation with

ALL ( $p < 0.524$ ) and another insignificant relationship with GILA ( $p = 0.425$ ). LLP ( $r = 0.186$ ) had the highest relationship followed by GILA ( $r = -0.051$ ), and lowest being ALL ( $r = 0.041$ ). The relationship between LLP as well as ALL and ROE ( $r = 0.186$ ;  $0.041$ ) respectively, weak positive association because ( $r$ ) fell below 0.3 and GILA and ROE ( $r = -0.051$ ) had weak negative correlation. Following are discussions on how this study outcome compared with other related studies: Finding of LLP relation with ROE agrees with study by Magomere & Otinga [21] showed that loan loss provisioning positively and significantly influences MFIs return on investment in Kakamega County, Kenya. The results agree with Fernando & Ekanayake [23] concluded that loan provisioning and financial returns of banks in Sri Lanka are related positively. Alhadab & Alshahwneh [20] concluded that, LLP is inversely associated with bank profitability in contrast with current study outcome showing positive

significant relationship of LLP with both ROA and ROE. It agreed to a larger degree with Kaaya [42] found that Loan loss to gross loan, non-performing loan, loan loss to net loan, impaired loan to gross loan combined have 70% ability to influence the performance of the banks. Hurka [24] showed that ALL had significant inverse association with profitability of banks (proxied ROA and ROE) which differed with this study outcome showing ALL having positive significant relation with ROA and positive insignificant association with ROE. Obwocha [22]; and Gizaw et al. [27] had mixed results which have been discussed under summary of findings [43,44].

#### 4.4 Financial Performance in Terms of ROA

The research first tested the model hypothesis using ANOVA as shown in Table 4 to test for the best fit.

What directed the research in scanning the fitness were main hypothesis beta values as:

**H<sub>0</sub>:**  $\beta_1=\beta_2=\beta_3=0$  to hint at beta value for each coefficient of  $X_1, X_2,$  and  $X_3$  being zero to arrive at rejecting null hypothesis ( $H_{01}$ ); whereby as a minimum, one of the beta values:  $\beta_1 \neq 0$ .

Founded on the study outcome ( $p < 0.000, F = 15.468$ ), to signify that either all or at least one of the beta values is not zero. And as a result,  $H_1$  was allowed while  $H_0$  overruled for P-value was  $< 0.05$ . Therefore, these results show that there is enough proof that at  $\alpha < 0.05$ , at least one of the IVs; LLP, GILA, ALL are useful in approximating ROA of commercial banks in Kenya.

From Table 4, the regression model is significant with F statistic of 15.468,  $P < 0.000$  which indicates that the points lie moderately close to the line of best fit in the scatter diagram. This indicates that the model is relatively suitable in explaining the variance of levels of ROA as explained by the variance in LLP, ALL and GILA.

Table 5 demonstrates the outcome of regressing IVs; LLP, GILA, ALL and DV, ROA for estimation of the model.

Multiple Regression Analysis (MRA) result (significance and T-test values) was used to test Hypothesis One;

**H<sub>01</sub>:** There is no significance statistically of loan loss provision on financial performance (ROA) of Commercial banks in Kenya.

**Table 4. ANOVA Results**

ANOVA <sup>a</sup>					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	.161	3	.054	15.468	.000 <sup>b</sup>
Residual	.835	240	.003		
<b>Total</b>	<b>.996</b>	<b>243</b>			

a. Dependent Variable: financial performance in terms of ROA

b. Predictors: (Constant), allowance for loan loss, impaired loans/advances, provision for loan loss

Source: Researcher (2022)

**Table 5. Analysis by regression against Predictor Variables**

Coefficients <sup>a</sup>					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.090	.023		3.832	.000
Provision for loan loss	.184	.059	.185	3.101	.002
Gross impaired loans & advances	.158	.050	.186	3.125	.002
Allowance for loan loss	.236	.047	.296	4.990	.000

a. Dependent Variable: financial performance in terms of ROA

Source: Researcher (2022)

These results (p-value < 0.002 and T= 3.101) show a p-value less than 0.05, due to this, reject  $H_{01}$ . To conclude that at  $\alpha < 0.05$  significance level, there is enough proof to suggest that LLP is not zero and therefore, LLP is useful as an estimator of financial performance (in terms of ROA) of commercial banks in Kenya.

To evaluate the impact of allowance for loan loss on financial performance (in terms of ROA) of commercial banks in Kenya was realized through testing hypothesis two.

**H<sub>02</sub>:** There is no impact statistically of allowance for loan loss on financial performance (ROA) of Commercial banks in Kenya.

Based on Table 5 at 0.05 significance level, p-value < 0.000 and T= 4.990. So, reject  $H_{02}$  in that  $p < 0.05$ . As such, leads to concluding that at  $\alpha = 0.05$  significant level, there are enough facts to claim that ALL is not zero and therefore ALL is useful as an estimator of financial performance (in terms of ROA) of commercial banks in Kenya.

To gauge the bearing of gross impaired loans and advances on financial performance (in terms of ROA) of commercial banks in Kenya was established through testing hypothesis three.

**H<sub>03</sub>:** There is no bearing statistically of gross impaired loans and advances on financial performance (ROA) of Commercial banks in Kenya.

It was established at 0.05 significance level,  $p < 0.002$ , T=3.125 which means that p-value was much less than 0.05, reject  $H_{03}$ . This leads to conclusion that at  $\alpha = 0.05$  level of significance, it is evidence enough to claim that GILA is not zero and therefore GILA is useful as an estimator of financial performance (in terms of ROA) of Kenyan commercial banks. This agrees with Isanzu et al. [25] showed that impaired loan reserve to gross loan ratio association with ROA was inverse.

Grounded on these findings in terms of significance level, each explanatory variable; LLP (p-value < 0.002), ALL (p-value < 0.000), GILA (p-value < 0.002) are positive and statistically significant estimators of financial performance (in terms of ROA) of commercial banks in Kenya. This is because for each case, p-value of each predictor variable was less than 0.05, an implication of significant relationship between each IV and the DV; ROA. Therefore, all the predictor variables; LLP, GILA, ALL estimate the

response, financial performance (ROA) of commercial banks in Kenya.

The coefficient for LLP ( $\beta_1 = 0.184$ ), ALL ( $\beta_2 = 0.236$ ), and GILA ( $\beta_3 = 0.158$ ) while the constant was 0.090, so the fitted estimate is;

$$Y_{iat} = 0.090 + 0.184X_{1it} + 0.236X_{2it} + 0.158X_{3it} \quad (vi)$$

From the MRA for DV; ROA, the resultant fitted regression equation for the model is:  $ROA = 0.090 + 0.184(LLP) + 0.236(ALL) + 0.158(GILA)$ . Then, it deduced that the level of financial performance (in terms of ROA) of commercial banks in Kenya before incorporating, LLP, ALL and GILA is 0.090. On scrutinizing the factors LLP, ALL & GILA; had positive influence having coefficients of 0.184, 0.236 and 0.158 which implies one unit change in LLP, ALL & GILA can result to a change in ROA of commercial banks in Kenya at the rate of 0.184, 0.236 and 0.158 units in the same direction and vice versa is true in that order. Obtained model was shown in Table 6.

It can be gain said from this outcome in Table 6 that variables LLP, GILA and ALL can explain 16.20% variation in ROA of commercial banks in Kenya.

#### 4.5 Financial Performance in Terms of ROE

A multiple regression model was obtained for financial performance in terms of ROE using MRA. MRA was conducted to establish the model based on the equation.

$$Y_{iet} = \beta_0 + \beta_1X_{1it} + \beta_2X_{2it} + \beta_3X_{3it} + \epsilon_{it} \quad (vii)$$

Where,

$Y_{iet}$  = ROE representing ROE for bank i at time t.

The research first tested the model hypothesis using ANOVA which allowed testing model fitness (goodness of fit) to obtain results in Table 7.

Founded on the study outcome ( $p < 0.031$ , F = 3.016), to signify that either all or at least one of the beta values is not zero. And as a result,  $H_{01}$  was overruled for P-value < 0.05. Consequently, these results show that there is enough evidence that at  $\alpha < 0.05$ , at least one of the IVs; LLP, GILA and ALL are useful in approximating ROE of commercial banks in Kenya.

**Table 6. Model summary for ROA**

Model summary <sup>b</sup>			
R	R Square	Adjusted R Square	Std. Error of the Estimate
.403 <sup>a</sup>	.1620	.1516	.0589845

a. Predictors: (Constant), ALL, GILA, LLP

b. Dependent Variable: financial performance in terms of ROA

Source: Researcher (2022)

**Table 7. ANOVA results**

ANOVA <sup>a</sup>					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	.033	3	.011	3.016	.031 <sup>b</sup>
Residual	.879	240	.004		
<b>Total</b>	<b>.912</b>	<b>243</b>			

a. Dependent Variable: financial performance in terms of ROE

Source: Researcher (2022)

From Table 7, the regression model is significant with F statistic of 3.016 and  $P < 0.05$  which indicates that the points lie moderately close to the line of best fit in the scatter diagram. This indicates that the model is relatively suitable in explaining the variance of levels of financial performance (in terms of ROE) of Commercial banks in Kenya as explained by the variance in LLP, ALL & GILA.

Table 8 demonstrates the outcome of regressing IVs; LLP, GILA & ALL and DV, ROE for estimation of the model.

MRA result (significance and T-test values) were used to test Hypothesis One.

**H<sub>01</sub>:** There is no significance statistically of loan loss provision on financial performance (ROE) of Commercial banks in Kenya.

These results ( $p$ -value  $< 0.005$  and  $T = 2.819$ ) show a  $p$ -value less than 0.05. Due to this  $H_{01}$  is

rejected. Hence, concluding that at  $\alpha < 0.05$  significance level, there is enough facts to suggest that LLP is not zero. Therefore, LLP is useful as an estimator of financial performance (in terms of ROE) of commercial banks in Kenya.

To evaluate the impact of allowance for loan loss on financial performance (in terms of ROE) of commercial banks in Kenya was revealed through testing hypothesis two.

**H<sub>02</sub>:** There is no impact statistically of allowance for loan loss on financial performance (ROE) of Commercial banks in Kenya.

Based on Table 8 at 0.05 significance level,  $p$ -value  $< 0.694$  and  $T = 0.394$ . in this case the  $p$ -value is greater than 0.05. As such,  $H_{01}$  is accepted, in that  $p > 0.05$ . Consequently, leads to concluding that at  $\alpha < 0.05$  significant level, ALL is an insignificant estimator of financial performance (in terms of ROE) of commercial banks in Kenya.

**Table 8. Regression coefficients**

Coefficients <sup>a</sup>					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.204	.024		8.517	.000
Provision for loan loss	.171	.061	.180	2.819	.005
Impaired loans/advances	-.027	.052	-.034	-.526	.599
Allowance for loan loss	.019	.048	.025	.394	.694

a. Dependent Variable: financial performance in terms of ROE

Source: Researcher (2022)

**Table 9. Model summary for ROE**

<b>Model Summary<sup>b</sup></b>			
<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
.191 <sup>a</sup>	.0363	.0243	.0605048

a. Predictors: (Constant), allowance for loan loss, impaired loans/advances, provision for loan loss  
b. Dependent Variable: financial performance in terms of ROE

Source: Researcher (2022)

To gauge the bearing of gross impaired loans and advances on financial performance (in terms of ROE) of commercial banks in Kenya was established through testing hypothesis three.

**H<sub>03</sub>:** There is no bearing statistically of gross impaired loans and advances on financial performance (ROE) of Commercial banks in Kenya.

It was established that at 0.05 significance level, p-value < 0.599 and T= (0.526) which means that p-value was much greater than 0.05. As a result, H<sub>03</sub> is accepted in that p > 0.05. This leads to conclusion that at  $\alpha < 0.05$  level of significance, GILA is zero and therefore, GILA is an insignificant estimator of financial performance (in terms of ROA) of commercial banks in Kenya.

Grounded on these findings, LLP can significantly estimate ROE of Kenyan commercial banks while ALL and GILA are insignificant estimators of financial performance (in terms of ROE) of commercial banks in Kenya. This was because while p-value for the predictor variable LLP was less than 0.05, those of ALL and GILA were greater than 0.05.

The coefficients for LLP ( $\beta_1 = 0.171$ ), ALL ( $\beta_2 = 0.019$ ), and GILA ( $\beta_3 = -0.027$ ) while the constant was 0.204, so the fitted estimate is:

$$Y_{i,t} = 0.204 + 0.171X_{1,t} + 0.019X_{2,t} - 0.027X_{3,t} \quad (\text{viii})$$

Grounded on the findings of regressing IVs; LLP, ALL & GILA and DV; ROE, for estimation of the model,  $ROE = 0.204 + 0.171 (LLP) + 0.019 (ALL) - 0.027 (GILA)$ . Then it supposed, that the level of financial performance (in terms of ROE) of commercial banks in Kenya before including, LLP, ALL & GILA is 0.204. Initiated on these results, the coefficients of LLP and ALL, are positive, indicating that they are directly proportional to the financial performance (in terms of ROE) of commercial banks in Kenya. Therefore, an increase in any of these two variables leads to an increase at the given rates

in ROE of commercial banks in Kenya and vice versa. The results show that GILA has negative coefficient, therefore, it is indirectly proportional to the financial performance (in terms of ROE) of commercial banks in Kenya. Hence, any increase in GILA leads to a decrease of 2.7% in ROE of commercial banks in Kenya and a decrease in GILA leads to an increase of 2.7% in ROE of commercial banks in Kenya.

It can be gain said from this outcome in Table 9 that variables LLP, GILA and ALL can explain 3.63% variation in ROE of commercial banks in Kenya.

## 5. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusion

The study concluded that each of; LLP and ROA; LLP and ROE; ALL and ROA as well GILA and ROA had positive significant association while ALL and ROE had positive insignificant correlation while GILA and ROE had negative insignificant relation. The study generally concluded that, loan portfolio quality largely had positive significant influence on financial performance of commercial banks in Kenya.

The study established that LLP, GILA and ALL explain 16.20% variation of financial performance of commercial banks in Kenya in terms ROA as they explain 3.63% variation of ROE. Overall, it is resolved, loan portfolio parameters; LLP, ALL & GILA are determinants of financial performance (in terms of ROA & ROE) of Commercial banks in Kenya.

### 5.2 Recommendations

It is always better to attempt to prevent a crisis than to have to deal with its aftermath but the complete avoidance of bad debts and bank failure would be impossible in practice. So, there will always be a need for a strategy to deal with bad debts, even in the best run banking systems, as long as banks are involved in the risky

business of lending money which can arise due to unexpected economic interruptions like COVID 19 pandemic strike.

The study recommends that commercial banks in Kenya should vigorously pursue measures to effectively manage loan portfolio quality. This is because loan portfolio quality parameters of LLP, GILA & ALL are significant to the financial performance in terms of ROA & ROE as per the study results. The management of the banks should therefore, institute appropriate internal policies and procedures to ensure that there is constant review of the banks' approach to lending and collection of debts in accordance with the CBK's Guidance on bank supervision Notes on assets classification to ensure continued sustainable financial performance.

### 5.3 Areas for Further Research

The present study was confined to only fully operational commercial banks in Kenya as at end of 2020 FY. This meant that other money lending institutions; both banking and nonbanking entities like mortgage companies, MFIs, credit companies, fintechs and Saccos were left out. Yet these institutions still play a significant part in lending circle in Kenyan economic jurisdiction. Even though the researcher show that loan portfolio quality (proxied LLP, ALL & GILA) largely had positive significant relation with financial performance (proxied ROA & ROE) of commercial banks in Kenya, it is still unclear whether this is applicable to the other lenders in this market. The researcher leave this question to future research.

The chosen period of seven years spanning from 2014 to 2020 is intermediate, and so overlooked long-run consequences of the associations between loan portfolio quality parameters and financial performance indicators. Thus possibly the long-term effect of the relation of the IVs and the DV in this study should be high on the research agenda.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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