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**FINANCIAL RISK AND FINANCIAL PERFORMANCE OF COMMERCIAL BANKS
LISTED IN THE NAIROBI SECURITIES EXCHANGE IN KENYA**

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Abstract

Purpose: The objective was to determine the relationship between financial risk and financial performance of listed commercial banks in Kenya.

Methodology: Descriptive research design was adopted in the study. The target population of the study was formed by all the twelve listed commercial banks as at December 2021. Secondary data was utilized in the study. This secondary data was acquired from published financial statements of the listed commercial banks in Kenya for the period 2015 – 2020. Data obtained was analysed using descriptive and inferential statistics. Further, data analysis was conducted using STATA software. The results obtained were then summarized using tables and charts.

Findings: The study found that credit risk, liquidity risk, market risk and operational risk explain 31.42% of financial performance of the listed commercial banks. Credit risk has a positive significant effect on financial performance of the listed commercial banks, while market risk and operation risk have negative and significant effect on financial performance of the listed commercial banks. Liquidity risk was found have positive insignificant effect on financial performance of the listed commercial banks.

Unique contribution to Theory, Practice and Policy: The study recommends that the banks should increase their secured loans portfolio, manage the liabilities of the company and ensure sustainable growth of the company assets and finally, the listed commercial banks should manage their expenses to a level that is sustainable. The credit risk theory and liquidity preference theory may be used to anchor future studies in the listed commercial banks.

Keywords: *Financial Risk, Financial Performance, Listed Commercial Banks.*

INTRODUCTION

According to Pablo (2020) financial risk is described as the unanticipated fluctuation of returns. Pablo further states that the main types of financial risk are as market risk, credit risk, liquidity risk, operational risk and legal risk. These contributing factors are said to lead to fluctuation of the financial performance of financial institutions. The proposition is that lack of proper management of financial risk often leads to non-performance of financial institutions, Muriithi (2016). All institutions in the finance sector continue to be faced with financial risks such as; liquidity, credit, foreign exchange, interest rate, operational, market risks and other business risks, Zhongming, Frimpong and Guoping (2019).

The global economic performance has been significantly influenced by adverse occurrences such as the Covid-19 pandemic that resulted in a slowdown in multiple economies globally. In addition, the 2008-2009 financial crisis is another adverse occurrence that led to economic slowdown, and was as a result of high appetite for risk by financial institutions. Occurrence of the financial crisis translated to decrease in investor trust in public firms' ability of proper risk management; Onsongo, Muathe, and Mwangi (2020). The 2008-2009 financial crisis is said to have led to the great recession that lasted till 2012. This recession in turn led to the European debt crunch which was instigated by easy issuance of subprime loans and subprime mortgages; Zhongming, Frimpong and Guoping (2019).

Muriithi (2016) further gives examples of risks that are common to financial institutions as: liquidity, credit, operational, market, strategic and compliance risks. These risks are observed to be prevalent in banks and microfinance institutions as well. Proper understanding of how these financial risks affect financial performance is imperative. In addition, proper management of these risks ensures better performance of financial institutions through improved profitability.

According to the International Professional Practice Framework for internal auditors, inefficient systems of managing risk translate to minimal return on investment. Consequently, it is necessary that banks regularly assess efficiency of financial risk management measures to attain their objectives of financial performance; Zhongming, Frimpong and Guoping (2019). Risk management is the use of requisite tools with the aim of hedging against risk and preventing the risk from occurring; Kioko, Olweny and Ochieng (2019). Proper management of financial risk is important so as to safeguard stability in the banking sector despite growth that comes as a result of continued innovations.

Financial performance refers to the ability of an institution to attain its set financial objectives, for instance; profitability. Return on Assets, Return on Equity and profitability ratios are some of the indicators of financial performance of banks. Return on Equity is the net profit relative to the total assets of an institution while Return on Assets refers the ability of an institution to generate income using its assets, Omondi (2019).

With respect to the global financial allocation, the banking sector plays a vital function due to the intermediary role of transfer of funds from units with surplus to units with deficits. In the worldwide commercial banks industry, the banks that hold the biggest market share are Bank of

America Corporation, Industry and Commercial Bank of China Limited, JPMorgan Chase and Co. and Wells Fargo and Company; IBISWorld (2021).

Attempts have been made in sub-Saharan Africa to improve and formalise currency markets, local equity and interest rates. However, progress is slow-moving due to hindrances occasioned by regulatory, legal and other market factors. Further, lack of liquidity in the sub-Saharan market is aggravated by the unwillingness by banks to warehouse significant illiquid risks, also, there is lack of secondary markets to lay these off, Muriithi (2016). In addition, it is noted that in some African countries, the sovereign debt held by local banks is making it difficult for individuals to obtain credit and also causing a decline in correspondent bank relations, resulting in a slump in economic growth and complications in international transactions needed for international trade, European Investment Bank (2018).

The Acts governing the Kenyan banking sector are the CBK, the Banking, the Companies Acts. In addition, various prudential strategies formulated by the CBK also regulate the banking sector. Commercial banks in Kenya continue to face an array of risks from both internal and external operational environments. These risks pose a challenge to viability and sustainability of commercial banks. The most frequent risks are outlined as being: credit, liquidity, operational and market risks. Risks relating to reputation and dependence on subsidy are said to occur at very low incidence, Muriithi (2016).

Problem Statement

Muriithi (2016) describes financial risk as one of the main challenges that affects the banking sector in Kenya. Further, Omondi (2019) observes that credit risk, liquidity risk, exchange rate risk and interest rate risk still pose a major challenge despite development of the banking sector in Kenya. CBK (2015 – 2020) show a constant growth in gross NPLs as follows: Ksh 147.3billion in 2015, Ksh 214.3billion in 2016, Ksh 264.6billion in 2017, Ksh 316.7billion in 2018, Ksh 335.9billion in 2019 and Ksh 436billion in 2020. This has adversely affected the asset quality in the banking sector and denotes presence of credit risk. The reports also show steady increase in the overheads to earnings ratio from 2015 to 2020. That is, 41.60% in 2015, 43.50% in 2016, 45.90% in 2017, 43.25% in 2018, 44.76% in 2019 and 55.10% in 2020. This translates into an average increase in the overheads to earnings ratio of 2.33%, denoting presence of operational risk in the sector. Additionally, a continued decline in the interest margin on earning assets held by banks denoted the presence of market risk in the sector. This is corroborated by the figures from the CBK reports as 8.20% in 2015, 8.80% in 2016, 7.70% in 2017, 6.63% in 2018, 6.17% in 2019 and 6.00% in 2020, translating into an average decline in the interest margin on earning assets of 0.38%. Liquidity that commercial banks uphold shows how capable they are in funding additional assets and meeting financial commitments as they fall due. There has been placement under receivership of three banks by CBK, due to their inability to meet their financial commitments as they fell due as a result of exposure to liquidity risk. These banks are Chase Bank in April 2016, Dubai Bank in August 2015 and Imperial Bank in October 2015, Ndwiga (2015).

Furthermore, CBK (2015 – 2020) evidence an average decline in ROE of Kenyan banks from 2015 to 2020. The ROE for each year is as follows: 23.9% in 2015, 24.6% in 2016, 20.8% in 2017,

22.88% in 2018, 22.11% in 2019 and 14.2% in 2020. Hence necessitating research to find out whether the declining trend in ROE could be explained by exposure to financial risk. Additionally, various empirical studies have been conducted on financial risks and financial performance of commercial banks in Kenya. However, the findings obtained from these existing studies are conflicting. For instance, findings of Gathiga (2016) show existence of a significant adverse effect of financial risk on bank performance. Findings of Zhongming, Frimpong and Guoping (2019) indicate presence of a significant positive relationship between bank performance and financial risk. Other studies such as Maniagi (2018) depicted varied findings for the different measures of financial risk, such that; credit risk showed a significant negative relationship with bank financial performance while market risk and interest rate risk evidenced a significant positive relationship with bank financial performance. Moreover, the operationalization of financial risk measures as well as financial performance has been different in the existing empirical studies. Therefore, this study seeks to fill these knowledge gaps by evaluating the effect that measures of financial risk have on financial performance of listed commercial banks in Kenya. The research question to be answered by the study is: What is the relationship between financial risk and financial performance of commercial banks listed in the NSE in Kenya?

Credit Risk Theory

This theory was first hypothesized by Robert Merton in 1974. It presents the foundation efforts to measure and manage credit risk exposure. It views default as an embedded put option available to the borrower when circumstances are economically attractive for the borrower to exercise their option to default. This option-theoretic framework can be characterized for any type of borrower and used as the basis for empirical default modelling. Credit loss estimates are formed on the basis of combining the borrower's probability of default with their loss given default or loss severity. The Merton default model provides a way to conceptually determine both of these loss components, Rossi, Wiley and Sons (2014). In this research, the credit risk theory supports the credit risk variable.

There are three main quantitative approaches to analysing credit risk: Structural approach, Reduced form approach and Incomplete information approach. Merton (1974) created a model based on the capital structure of the firm, which became the basis of the structural approach. In his approach, the company defaults at the loan repayment time T if its value falls below some fixed barrier at time T . Therefore, the default time turns out to be a discrete random variable which picks T if the company defaults and infinity if the company does not default. Therefore, the equity of the company turns out to be a contingent claim of the assets of the company's assets value.

The theory describes how commercial banks understand the credit risk concept, how the loan defaulters fail to pay their loans leading to risk and thus the commercial banks should find strategies to recover the loans or set aside a provision to cater for credit impairment for non-performing loans. The limitation of the credit risk theory is that it addresses the causes and likelihood of credit risk, however, it does not give propositions on how to mitigate against credit risk.

Liquidity Preference Theory

This theory was postulated by Keynes in 1936. This theory assumes that an investor demands high interest on investment that have long-term maturities with greater risk, all other factors constant, since investors have a preference for cash or other highly liquid investments. This theory references money demand as measured through liquidity. Liquidity is attached to liquidity risk since investors prefer liquidity, Nikolaou (2009). In this study, the liquidity preference theory reinforces the liquidity risk variable.

Keynes outlines the liquidity preference theory with respect to three motives that ascertain the demand for liquidity. These three motives are transactions motive, precautionary motive and speculative motive. The transactions motive states that investors have a high demand for liquidity to ensure they have enough cash at hand to cover their short term financial obligations; such that higher living costs lead to higher demand for liquidity to ensure seamless meeting of recurrent short term financial obligations.

Further, Keynes states that according to the precautionary motive, investors have a preference for additional liquidity to act as a contingency to cater for unseen costs that require a substantial money outflow. The speculative motive on the other hand, assumes that investors tend to be reluctant to holding up investment capital in the present due to the fear of missing out on better opportunities in the future. For instance, in situations where there are low interest rates, the demand for cash tends to be relatively high and investors might tend to prefer to hold on investing till the interest rates rise to a level that they deem favourable.

This theory strives to explain the rationale for holding assets by investors. The theory implies that investors are likely to invest in highly liquid assets and in turn avoid banks with relatively high risk in liquidity by depositing their cash in banks that are highly liquid, which will in turn impact on the profitability of banks.

The limitations of the liquidity preference theory is that it assumes a constant employment rate yet in reality the rate of unemployment is always changing, that it assumes a specific income level, that it disregards the variability of interest rates in varying markets at the same time and it disregards individuals' savings.

Conceptual Framework

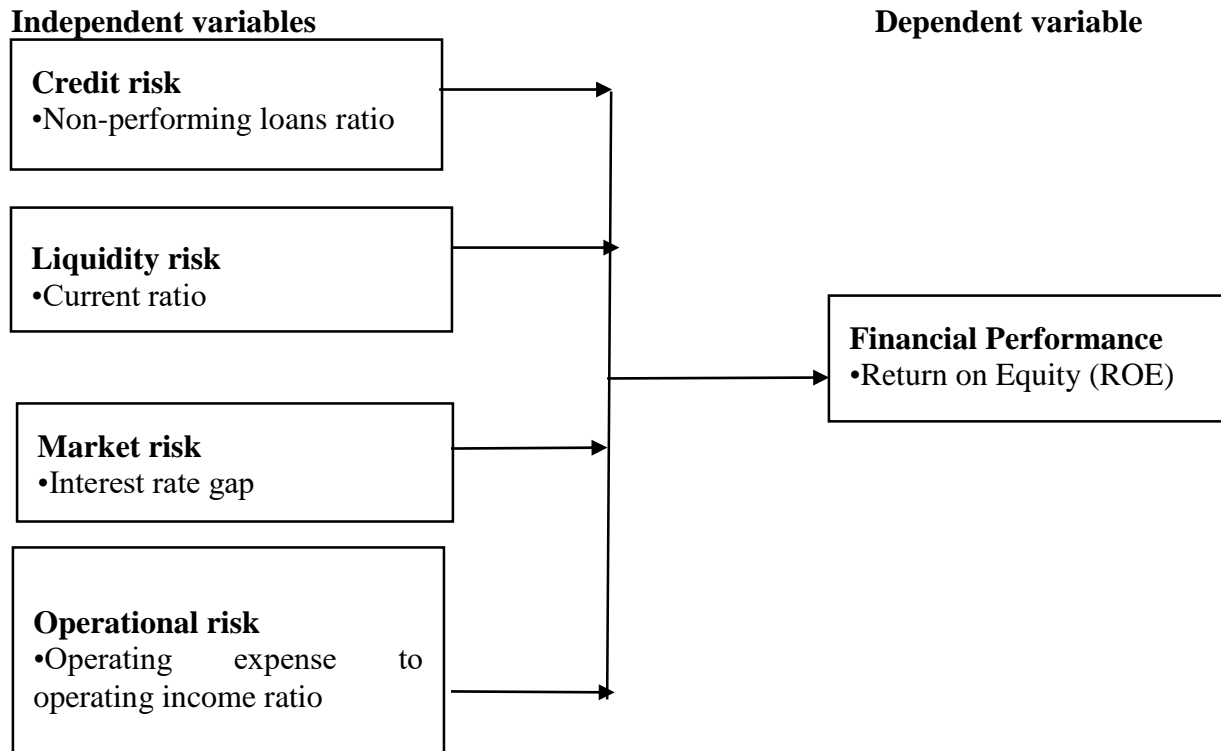


Figure 1: Conceptual Framework

Research Gap

Various preceding research has been conducted on financial risk and financial performance of commercial banks. However, a number of studies have only addressed the different components of financial risk on an individual basis. For instance, Abdallah (2016); Ekinici and Poyraz (2019) and Munangi and Sibindi (2020) researched on credit risk and financial performance. Al-Rdaydeh, Matar and Alghzwai (2017); Kindu (2019) and Otwoko and Maina (2021) researched on liquidity risk and financial performance. Kahihu, Wachira and Muathe (2021); Odubuasi, Uduak and Ifurueze (2020) and Chepkemoi, Ndung’u and Kahuthia (2019) researched on market risk and financial performance. Further, Muriithi and Muigai(2017); Onsongo, Muathe and Mwangi, (2020) and Simamora and Oswari, (2019) researched on operational risk and financial performance. By undertaking the studies of the risks individually, these studies do not recognize the effect that financial risk has on financial performance. Therefore this study intends to fill this gap by undertaking a comprehensive view by incorporating credit risk, liquidity risk, market risk and operational risk as explanatory variables of the study.

Moreover, several studies undertaken on financial risk and financial performance have evidenced incomplete and contradicting research findings. Such that some researchers such as Zhongming, Frimpong, and Guoping (2019) obtain a positive relation between financial risk and financial performance; Others such as Kioko, Olweny, and Ochieng (2019) obtain a negative relation

between financial risk and financial performance. Additionally, others such as Jelgo and Obwogi (2018) had mixed findings in the relation between financial risk and financial performance. Furthermore, operationalization of financial risk varies among studies.

As such, in all the above studies, there is not a satisfactory research done on the impact that financial risk has on financial performance of Kenyan commercial banks. Therefore, this study seeks to fill these research gaps by investigating the impact that financial risk indicators have on financial performance of listed commercial banks in Kenya.

METHODOLOGY

Descriptive research design was adopted in the study. The target population of the study was formed by all the twelve listed commercial banks as at December 2021. Secondary data was utilized in the study. This secondary data was acquired from published financial statements of the listed commercial banks in Kenya for the period 2015 – 2020. Data obtained was analysed using descriptive and inferential statistics. Further, data analysis was conducted using STATA software. The results obtained were then summarized using tables and charts.

RESULTS

Descriptive Statistics

This section analyzed descriptive statistics where each study variable gave mean and standard deviations.

Table 1: Descriptive Results

Variable	Observations	Mean	Std. Dev.	Min	Max
Return on Equity	72	0.132031	0.072536	0.001147	0.368045
Credit Risk	72	0.027023	0.012189	0.0007	0.061
Liquidity Risk	72	1.265942	0.236327	0.916667	2.029178
Market Risk	72	1.819952	1.428832	0.181221	8.292435
Operation Risk	72	0.56169	0.147336	0.035843	1.087275

From the results presented in Table 1, the mean of the return to equity (ROE) is 0.132. The minimum and the maximum of ROE are 0.0011 and 0.368 respectively. The standard deviation of ROE is 0.073. Return on Equity is the net profit relative to the total assets of an institution, Omondi (2019). The mean value of the credit risk is 0.027 with the standard deviation being 0.012. The standard deviation shows the deviation of the credit risk around the mean value. The minimum and the maximum values are 0.0007 and 0.061 respectively. Akidiva (2018) states that credit risk is the probability that a borrower will fail to honour a debt by not making the required payments.

The mean value of liquidity risk of the study is 1.266 with the standard deviation of 0.236 which indicates the deviation of the liquidity risk around the mean value. The minimum and the maximum values are 0.9167 and 2.0292 respectively. Liquidity is the likelihood that an entity will not be able to obtain cash necessary to meet its liabilities of short-term and intermediate-term nature (Otwoko and Maina, 2021). The mean value of market risk according to the study samples is 1.82 with a standard deviation of 1.4288. The minimum and the maximum values are 0.1812 and 8.8924

respectively. The mean for operation risk is 0.5617 with a standard deviation of 0.1473. The minimum and the maximum values are 0.0358 and 1.0873 respectively. Operation risk is the risk resulting from poor internal processes and procedures, system malfunction, human error or an external event, (Simamora and Oswari, 2019).

Correlation Analysis

This predicts the association between research variables. Correlation table was employed to establish the association between variables. Table 2 shows the findings of the correlation matrix.

Table 2: Correlation Results

Variable	Return on Equity	Credit Risk	Liquidity Risk	Market Risk	Operation Risk
Return on Equity	1.000				
Credit Risk	0.319	1.000			
	0.006				
Liquidity Risk	0.232	-0.027	1.000		
	0.050	0.824			
Market Risk	-0.265	0.194	-0.237	1.000	
	0.025	0.102	0.045		
Operation Risk	-0.406	-0.234	-0.183	0.097	1.000
	0.000	0.048	0.124	0.418	

From the correlation results presented in Table 2, the correlation between credit risk and Return on Equity is positive and statistically significant ($r=0.319$, $p=0.006<0.05$). The findings contrast with the findings of Ekinici and Poyraz (2019) in the study on impact of credit risk on financial performance of Turkish deposit banks who indicated that credit risk has an inverse and significant relationship with ROE. The correlation between liquidity risk and the return on equity revealed a positive and significant correlation with return on equity ($r=0.232$, $p=0.05=0.05$). The correlation results concur with the results of Otwoko and Maina (2021) who did a study on the effect of liquidity risk on financial performance of deposit-taking savings and credit cooperative organizations in Kenya and found out that liquidity has a positive and statistically significant relationship with ROE. However, a study by Al-Rdaydeh et al., (2017) on the impact that credit risk and liquidity risk has on profitability of both conventional and Islamic banks in Jordan found out that liquidity risk had an insignificant influence on ROE.

The correlation between market risk and the return on equity depicted a negative and significant relationship with the return on equity ($r=-0.265$, $p=0.025<0.05$). These correlation results are in tandem with the findings of Kassi et al., (2019) who did a study on market risk and financial performance of non-financial companies listed on the Moroccan Stock Exchange and found that the market risk measures have a substantial negative effect on financial performance. However, a study by Chepkemoi et al., (2019) on market risk and financial performance of listed non-bank financial institutions in Kenya indicated that interest risk has a significant effect financial performance of the listed Kenyan non-bank financial institutions.

The results of the correlation between operation risk and return on equity indicated a negative and significant correlation between operation risk and return on equity ($r=-0.406$, $p=0.000<0.05$). These results concur with the findings of Simamora and Oswari (2019) on a study to investigate the effect of operational risks on the financial performance of listed commercial banks in the Indonesian Stock Exchange. The findings of the study indicated that operational risk had a substantial negative impact on financial performance. However a study by Onsongo et al., (2019) on the impact of firm size and operational risk on financial performance of companies in the commercial and services sector listed at the NSE gave contrary results. The scholars found out a positive insignificant effect of operational risk on financial performance.

Diagnostic Tests

The diagnostic tests are conducted before estimating the regression mode. The diagnostic tests estimated in the research included normality test, multicollinearity test, autocorrelation, Heteroscedasticity, Hausman tests and pooled OLS model.

Normality test

In order to carry out any hypothesis tests, the normality assumption ($ut \sim N(0, \sigma^2)$) is required (Brooks, 2008). Table 3 shows the normality results using Skewness and Kurtosis test for the 12 listed commercial banks for the years 2015 to 2020. In this study the test for normality was performed. For the results, if the P value is >0.05 , then we reject the null hypothesis that data are not normally distributed and fail to reject the alternative hypothesis that the data is normally distributed. The results of this particular study indicate that the calculated p values for all the study variables are significant ($P=0.589>0.05$, $P=0.799>0.05$, $P=0.678>0.05$, $P=0.205>0.05$, $P=0.093>0.05$). Table 3 presents the normality test results.

Table 3: Normality test results.

	Obs	Pr(Skewness)	Pr(Kurtosis) adj	chi2(2)	Prob>chi2
Return on Equity	72	0.739	0.338	1.060	0.589
Credit Risk	72	0.584	0.706	0.450	0.799
Liquidity Risk	72	0.000	0.007	21.090	0.678
Market Risk	72	0.000	0.000	39.660	0.205
Operation Risk	72	0.072	0.001	11.920	0.093

Multicollinearity test

Multicollinearity is the presence of correlations between the study variables (William *et al.* 2013). Multicollinearity inflates the standard errors and confidence intervals leading to unstable estimates of the coefficients for individual predictors (Belsley *et al.*, 1980). To test multicollinearity of this study, the study employed variance inflation factors (VIF). Values greater than 10 indicates the presence of Multicollinearity (Field, 2009). Table 4 presents the multicollinearity results of the study.

Table 4: Multicollinearity Test Results

Variable	VIF	1/VIF
Credit Risk	1.11	0.897284
Market Risk	1.11	0.897855
Operation Risk	1.11	0.898814
Liquidity Risk	1.09	0.917506
Mean VIF	1.11	

The results presented in Table 4 show the absence of multicollinearity within the study variables. The variance inflation factor figures are less than 10 (1.11<10, 1.11<10, 1.11<10, 1.09<10).

Heteroscedasticity test

Heteroscedasticity refers to the tests on whether the variance of the errors from a regression is dependent on the values of the independent variables. Breusch-Pagan / Cook-Weisberg test for heteroscedasticity was used in this study. Large values of Chi square indicate the presence of heteroscedasticity (Islam, 2019). Table 5 shows the heteroscedasticity results.

Table 5: Heteroscedasticity Test Results

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity	
Ho: Constant variance	
Variables: fitted values of ROE	
chi2(1)	= 1.84
Prob > chi2	= 0.1751

From the results presented in Table 5, with a Chi square of 1.84, then the results imply that heteroscedasticity is not present. We fail to reject the null hypothesis of constant variance. The null hypothesis was accepted justifying the absence of heteroscedasticity in the data as indicated by (Poi and Wiggins, 2001).

Autocorrelation Test

Serial correlation test was conducted to check for correlation of error terms across time periods. This study used the Wooldridge test for serial correlation to test for the presence of autocorrelation in the linear panel data. Serial autocorrelation is a common problem experienced in panel data analysis. To test autocorrelation, the hypothesis tests below were done. The results are presented in Table 6

H₀: Residuals of this regression model does not have serial correlation

H₁: Residuals of this regression model have serial correlation

Table 6: Autocorrelation Results

Wooldridge test for autocorrelation in panel data

H₀: no first-order autocorrelation

F (1, 12) = 1.830

Prob andgt; F = 0.1601

The null hypothesis of this test was that there is no first order autocorrelation. When Serial Correlation tests were conducted, the test statistic from the results is F-test of 1.830 and a p= 0.1601>0.05. Therefore, we fail to reject the null hypothesis that no first autocorrelation exists. We then conclude that serial correlation does not exist.

Hausman Test

The choice on whether to run a random effects model or a fixed effects model, when performing panel data analysis must be determined (Baltagi, 2005). This is done by estimating the coefficients of both random and fixed effects. The study used Hausman’s specification test (1978) to choose between fixed and random effect models. Table 7 shows the results of Hausman test.

H₀: Random effect is appropriate

H_a: Fixed effect is appropriate

Table 7: Hausman Test Results

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fe	(B) re		
CR	.1343422	.9432345	-.8088923	.3564219
LR	-.0273333	.0066424	-.0339757	.0140037
MR	-.0047824	-.0088068	.0040244	.0036246
OR	-.0712634	-.1011863	.0299229	.0106137

b = consistent under H₀ and H_a; obtained from xtreg
 B = inconsistent under H_a, efficient under H₀; obtained from xtreg

Test: H₀: difference in coefficients not systematic

chi2(4) = (b-B)' [(V_b-V_B)^(-1)] (b-B)
 = 11.68
 Prob>chi2 = 0.0199

The results presented in table in Table 7 indicate that the calculated P value of the model is 0.0199. Since 0.0199<0.05, then the results imply that the fixed effect model is appropriate for this

particular study. We reject the null hypothesis that random effect is appropriate and fail to reject the alternative hypothesis that fixed effect is appropriate for the study.

Breusch and Pagan Lagrangian Multiplier Test for Random Effects

Breusch and Pagan Lagrangian multiplier was used to check whether random OLS or Pooled OLS is appropriate for the study. Table 8 presents the results.

Table 8: Breusch and Pagan Lagrangian Multiplier Test Results

$$\text{ROE}[\text{Bankcode},t] = Xb + u[\text{Bankcode}] + e[\text{Bankcode},t]$$

Estimated results:

Var sd = sqrt(Var)

-----+-----

ROE	.0052614	.0725358
e	.0024947	.0499472
u	.0012122	.0348167

Test: Var(u) = 0
chibar2(01) = 7.87
Prob > chibar2 = 0.1025

From the results presented in Table 8, the calculated P value 0.1025 > 0.05 and hence pooled OLS is the most appropriate to be used in the study.

Pooled OLS Model

Pooled OLS is employed when a different sample is selected for a specified period of time (Wooldridge, 2010). For this particular data, the panel data analysis is done for the samples drawn for the years 2015-2020 in the respective listed banks. Table 9 presents the results of the pooled OLS model analysis.

Table 9: Pooled OLS Model Results

Source	SS	df	MS	Number of obs	=	72
			F(4, 67)	=		7.67
Model	0.117364	4	.029340969	Prob > F	=	0.000
Residual	0.256198	67	.003823853	R-squared	=	0.3142
			Adj R-squared	=		0.2732
Total	0.373562	71	.005261437	Root MSE	=	0.06184
Return on Equity	Coefficients	Std. Err.	t	P>t	[95% Conf. Interval]	
Credit Risk	0.832749	0.2635605	3.16	0.005	[.5640764 1.101422]	
Liquidity Risk	0.038169	0.032419	1.18	0.243	[-.0265399 0.1028785]	
Market Risk	-0.01359	0.005421	-2.51	0.015	[-0.0244112 -0.02718]	
Operation Risk	-0.14059	0.052539	-2.68	0.009	[-.2454571 -0.035722]	
_constant	0.137888	0.061123	2.26	0.027	[.0158856 0.2598902]	

From the results presented in Table 9, the variables credit risk, market risk and operation risk are statistically significant. However, from the study findings, liquidity risk is found to be

insignificant. The pooled OLS model explain 31.42% ($R^2=0.3142$, $p=0.000<0.05$) of the total variations on the performance of the listed commercial banks measured by ROE. The results are statistically significant with a p value of $0.000<0.05$. Therefore, the study variables are important in explaining the variations in bank performance. According the results in Table 4.9, the predicted equation is;

$$Y = 0.1379 + 0.833X_1 + 0.038X_2 - 0.014X_3 - 0.141X_4$$

Where,

Y is Return on Equity

X_1 is Credit Risk

X_2 is Liquidity Risk

X_3 is Market Risk

X_4 is Operation Risk

From the regression results presented in Table 9, Credit risk is positively and significantly related to the performance of the listed banks ($\beta=0.8327$, $P=0.005<0.05$). This means that a unit increase in credit risk leads to .833 units increase in the performance of the listed commercial banks. The liquidity risk is positively and insignificantly related to the performance of the listed commercial banks measured by ROE ($\beta=0.038$, $P=0.243>0.05$). A unit increase in the liquidity risk leads 0.038 units increase in in the performance of the listed commercial banks.

The results of the market risk show that it is negatively and significantly related to the performance of the listed commercial banks ($\beta=-0.014$, $P=0.015<0.05$). A unit increase in the market risk leads to a 0.014 units decrease in the performance of the listed commercial banks. The model results indicate that operational risk is negatively and significantly related to the performance of the listed commercial banks ($\beta=-0.14059$, $P=0.009<0.05$). A unit increase in the operation risk leads to 0.141 units decrease in the performance of the listed commercial banks.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The study findings indicated that the mean value of the credit risk is 0.027 with the standard deviation being 0.012. The minimum and the maximum values are 0.0007 and 0.061 respectively. The correlation results indicated that the correlation between credit risk and Return on Equity is positive and statistically significant ($r=0.319$, $p=0.006<0.005$). The regression results indicate that Credit risk is positively and significantly related to the performance of the listed banks ($\beta=0.8327$, $P=0.005<0.05$). This means that a unit increase in credit risk leads to .833 units increase in the performance of the listed commercial banks.

The study results show that the mean value of liquidity risk of the study is 1.266 with the standard deviation of 0.236. The minimum and the maximum values are 0.9167 and 2.0292 respectively. The correlation analysis of the study shows that the correlation between liquidity risk and the return on equity revealed a positive and significant correlation with return on equity ($r=0.232$, $p=0.05=0.05$). The regression results indicate that liquidity risk is positively and insignificantly

related to the performance of the listed commercial banks measured by ROE ($\beta=0.038$, $P=0.243>0.05$). A unit increase in the liquidity risk leads 0.038 units increase in the performance of the listed commercial banks.

The mean value of market risk according to the study samples is 1.82 with a standard deviation of 1.4288. The minimum and the maximum values are 0.1812 and 8.8924 respectively. The correlation between market risk and the return on equity depicted a negative and significant relationship with the return on equity ($r=-0.265$, $p=0.025<0.05$). The regression results of the market risk show that it is negatively and significantly related to the performance of the listed commercial banks ($\beta=-0.014$, $P=0.015<0.05$). A unit increase in the market risk leads to a 0.014 units decrease in the performance of the listed commercial banks.

The mean for operation risk is 0.5617 with a standard deviation of 0.1473. The minimum and the maximum values are 0.0358 and 1.0873 respectively. The results of the correlation between operation risk and return on equity indicated a negative and significant correlation between operation risk and return on equity ($r=-0.406$, $p=0.000<0.05$). The OLS model results indicate that operation risk is negatively and significantly related to the performance of the listed commercial banks ($\beta=-0.14059$, $P=0.009<0.05$). A unit increase in the operation risk leads to 0.141 units decrease in the performance of the listed commercial banks.

Conclusions

From the study findings, a unit increase in the credit risk increases the performance of the listed commercial banks. Banks improve their performance by improving the quality of loans that is offered to its customers. Non-performing loans hurts the cash flows of the company together with its stock price. Commercial banks draw income from the interest accrued from the loans they sell. When the borrowers fail to repay the loan, the income of the commercial banks decrease and are left with a decreased amount that they can offer as loan to borrowers. Even though in lending, there is a risk of losing the money if the borrower fails to repay, lending is an act that banks cannot avoid because they draw income from it.

From the results of the study, it has been concluded that liquidity risk is positively related to the performance of the company but it is insignificant. Liquidity risk is used by analysts to determine whether they should invest in the business or lend money to a business. The financial performance of the commercial banks under study is desirable. Having a current ratio less than a unit, that is when the liabilities are more than the current assets, then the position is undesirable and the bank may be placed under receivership by the Central Bank of Kenya.

Market risk results indicate that it has positive and significant relationship with the performance of the commercial banks. A favourable position is achieved when the interest rates earned from the loans the bank lends to its customers is higher than the interest the bank is paying for its financial obligations to other lenders. When this is achieved, the listed commercial banks are able to generate income as a result of the interest rate differences. Sound analysis on the interest rate differences will affect the performance of the listed commercial banks.

The study results indicated that operational risk has a negative and significant relationship with the performance of the commercial banks. As the operational risk tends to 1, the performance of

the bank depreciates. This means the bank's expenses and its corresponding income tend to equal, zeroing in income. If the operational risk exceeds 1, then the bank will not be able to meet its expenses from its current assets. Operational risk measures the ability of the commercial banks to meet their regular expenses from the current assets.

Recommendations

The recommendations of this study are presented according to the study objectives. Because banks draw income from the interest on loans lent out, the study recommends that the banks increase their secured loans portfolio. In doing this, the loans they offer should have a security that will reduce the possibility of the loan being non-performing.

The study recommends that the banks maintain the current ratio above 1. This is achieved by managing the liabilities of the company and ensuring sustainable growth of assets. The study recommends that the banks should set the lending rates that are higher and competitive than the Central Bank Rates and the rates of the other bank's lenders. This will enable the bank obtain net income from the interest rate differences.

The study recommends that the listed commercial banks should manage their expenses to a level that is sustainable. At the same time, the banks should increase and widen their sources of income, so that their operating income is able to meet their operating expenses.

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