EFFECT OF FINANCIAL RISK ON CORPORATE PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA AND BOTSWANA.

Udoezika David [1] Prof. Ifurueze, M. S.[2] Onuora, Joshua K. J. (Ph.D.)[3]

[1]St Paul's Anglican Church, Oba Idemili North LGA, Anambra State
adaezenwayo@gmail.com *+2348033303125*

[2, 3]*Department of Accountancy Faculty of Management Sciences, Chukwuemeka Odumegwu Ojukwu University   Igbariam Campus, Anambra State, Nigeria*

Abstract

This study ascertained the effect of financial risk on corporate performance of Deposit Money Banks (DMBs) listed on Stock Exchanges of two selected African countries (Nigeria and Botswana) using a sample of twenty (20) Deposit Money Banks (DMBs). We covered 10 years period spanning from 2010 to 2019. Ex-Post Facto research design was employed while secondary data were collected and subjected to multiple regression and hausman effect tests in order to achieve the study objectives. Three (3) specific objectives and hypotheses were tested and analyzed using descriptive statistics, Pearson correlation analysis and panel regression analysis. Financial Risk, which is the independent variable, was measured by liquidity risk, operational risk, and loan loss provision while performance, which is the dependent variable, was measured by return on equity. Our result revealed that liquidity risk has negative and significant effect on performance of banks in both Nigeria and Botswana which was statistically significant at 1% level of significance while operational risk was seen to have positive and significant effect on return on equity of deposit money banks in Botswana alone which was statistically significant at 10% level of significance. Loan loss provision recorded negative and insignificant effect in both countries. The value of R- squared which is the coefficient of determination stood at 46% which implies that 46% of the systematic variations in individual dependent variables were explained in the model while about 54% were unexplained thereby captured by the stochastic error term. Based upon results, banks should fully concentrate on the loan assessment procedure, polices and quality of loans and liquidity management. In addition, Nigeria and Botswana banking industry should inculcate a balance risk management culture to mitigate risks and shocks.

Keywords: *Liquidity risks, operational risk, loan loss provision, return on equity, banking sector*

1.1   Introduction

The global financial crisis, experienced between 2007 and 2008 around the world in which banks, stock markets and large financial institutions collapsed made governments in even the wealthiest nations to come up with rescue packages to bail out their financial systems. Many financial institutions have either collapsed and or are facing near collapse because of badly functioned subprime mortgage lending to firms and people with bad and unreliable credit. Banking crises in Nigeria have shown that not only do banks often take excessive risks but the risks differ across banks (Onyefulu, Okoye & Orjinta; 2019). Financial risk can decide the success or failure of bank and during the global bank crisis ineffective risk management practices was a possible cause (Olaleka, Olumide & Irom; 2018). As a well-known fact that

financial institutions are exposed to a variety of risks among them; market risk, liquidity risk, operational risk, credit risk, interest rate risk, foreign exchange risk, equity risk, solvency risk, legal/regulatory risk, counterpart risk, reputational risk, strategy risk and political risk (Onyefulu, Okoye & Orjinta; 2020, Onyefulu, Okoye & Orjinta; 2019) among others. They are also germane to economic development through the financial services they provide.

The issue of impact of financial risk management on financial performance has seen an extensive amount of empirical investigation in the recent years (Ali, 2015; Duygun, Sena, Shaban & Schumpeterian, 2013; Fidanoski, Choudhry, Davidović & Sergi, 2018, Onyefulu, Okoye, & Orjinta, 2020; Onyefulu, Okoye, & Orjinta, 2019; Sufian & Habibullah 2009, Sufian, & Noor Mohamad, 2012). The subsequent myriad of such studies signify the important role played by the financial system of a country as a foundation of a functioning and efficient economy but none of them extended the study to cut across two countries and none used current data up to 2019 accounting year end. While the above research outcomes provide valuable insights on financial risk management, it is therefore evident that they have not induced and provided a clear cut relationship between financial risk and performance of deposit money banks. Some of these studies conducted have failed to establish a definite relationship between financial risk and performance in banks thereby creating another gap in literature. Therefore, the gaps that the current study has identified and which it hopes to fill include; period gap (2010-2019), variable segment gap of structural characteristics (liquidity risk, operational risk and loan loss provision) and geographical gap (Nigeria and Botswana). Given the gap poised by the above empirical studies, this study therefore aims at establishing the effect of financial risk on corporate performance of deposit money banks in Nigeria and Botswana. This is the void the present study intends to bridge therefore adding to the existing literature. Therefore, this research paper is subdivided into five sections including this introduction. Section 2 covers the review of the related literature, section 3 concentrates on the methodology adopted while in section 4 we present and discuss the results of the analysis. Lastly in section 5, we draw the conclusion and proffer our recommendation for policy implementation.

2.1: THEORETICAL CONSTRUCTS AND HYPOTHESIS DEVELOPMENT

2.1.1: Liquidity Risk and Bank Performance

Liquidity risk is the possibility of negative effects on the interests of owners, customers and other stakeholders of the financial institution resulting from the inability to meet current cash obligations in a timely and cost-efficient manner (Muriithi, 2016). Liquidity of bank may be defined as the ability to meet anticipated and contingent cash needs. Liquidity in banks refers to a situation where they can manage sufficient funds either by increasing liability or converting their assets to cash at a reasonable cost in a short span of time. It is the ability of banks to fund all short-term obligations when they fall due. These short-term obligations may include lending, deposit withdrawals, investment commitments, and liability matures. It is measured by the ratio of credit facility to total deposit.

Ogilo (2012) provided a comparative study of liquidity risk management on financial performance of commercial banks in Kenya using CAMEL variables. The study established that capital adequacy, asset quality, management efficiency and liquidity (CAMEL) had weak relationship with financial performance (ROE) whereas earnings had a strong relationship with financial performance. The study concluded that CAMEL model can be used as a proxy for credit risk management. The most common financial ratios that reflect the liquidity position of

a bank according to the above author are customer deposit to total asset and total loan to customer deposits. Other scholars use different financial ratio to measure liquidity. For instance, Ilhomovich (2009) used cash to deposit ratio to measure the liquidity level of banks in Malaysia. However, the study conducted in China and Malaysia found that liquidity level of banks has no relationship with the performances of banks (Said & Tumin, 2011). Khouri (2011) results showed that only risk that affects profitability when measured by return on equity is liquidity risk.

2.1.2: Operational Risk and Bank Performance

Operational risk becomes a major constraint since it involves taking appropriate measures to ensure the qualitative transactions without processing errors in order to deliver the best services to the customers. Although, operational risk is by itself not a new concept; it has by far not received the same amount of attention as credit and market risk until recent years. Fundamental changes in financial markets, increasing globalization and deregulation, as well as corporate restructuring had a large impact on the magnitude and nature of operational risks confronting banks. Following severe operational failures resulting in the restructuring of the affected financial institutions or in the sale of the entity, the emphasis on operational risk within banks has increased, leading regulators, auditors, and rating agencies to expand their focus to include operational risks as a separate entity besides market and credit risk (Onyefulu, Okoye & Orjinta; 2019). Tanveer, Muhammad and Sadaf (2017) demonstrated the underlying impact of risk management practices on financial performance of selected listed commercial banks of Pakistan. Return on equity (ROE) is defined as a proxy of dependent variable i.e. financial Performance whereas risk management practices were taken as an independent variable, five proxies have been operationalized and five hypotheses were framed. Their study results demonstrated risk management practices have significant impact on financial performance of small, medium and large banks.

2.1.3: Loan Loss Provision and Banks' Performance

One of the ways banks make money is off the interest payments and expenses they receive from the loans they give out. If those loans are not repaid or the interest payments are not as high as expected, the banks' earnings can take a hit. To mitigate those losses, banks will always make provision such loan loss. Onyefulu et al; (2020) conceptualized loan loss provision as an income statement expense set aside as an allowance for uncollected loans and loan payments. This provision is used to cover different kinds of loan losses such as non-performing loans, customer bankruptcy, and renegotiated loans that incur lower-than-previously-estimated payments. Kolapo, Ayeni and Oke (2017) on his study on credit risk and commercial banks' performance in Nigeria carried out an empirical investigation into the quantitative effect of credit risk on the performance of commercial banks in Nigeria over the period of 11 years (2000 - 2010). Five Commercial banking firms were selected on a cross sectional basis for eleven years. The traditional profit theory was employed to 24 formulate profit, measured by Return on Asset (ROA), as a function of the ratio of Non - performing loan to loan & advances (NPL/LA), ratio of total loan & advances to total deposit (LA/TD) and the ratio of loan loss provision to classified loans (LLP/CL) as measures of credit risk. They found that a 100 percent increase in loan loss provision also reduces profitability by about 0.65percent while a 100 percent increase in total loan and advances increase profitability by about 9.6 percent.

2.2 Theoretical Framework

There are numerous theories developed to guard against banks operation and its associated risk. Such theories include modern portfolio theory, anticipated income theory, moral hazard theory, Commercial loan theory, the shiftability theory, the liability management theory, financial economic theory etc. This current research paper acknowledges other relevant theories but anchored on stakeholder's theory.

2.2.1: Stakeholder's Theory

The Stockholder's theory was developed by Freeman (1984) as a management instrument and has over the years evolved with high explanatory potential on firm performance. Stakeholder theory focuses explicitly on equilibrium of stakeholder interests as the main determinant of corporate policy. The most promising contribution to risk management is the extension of implicit contracts theory from employment and other contracts, including sales and financing. In certain industries, particularly high-tech and services, consumer trust in the company being able to continue offering its services in the future can substantially contribute to company value. However, the value of these implicit claims is highly sensitive to expected costs of financial distress and bankruptcy. Since corporate risk management practices lead to a decrease in these expected costs, company value rises.

Therefore, stakeholder theory provides a new insight into possible rationale for risk management. Aabo (2002) and Judge (2006) in their study of the effect of stakeholder theory on risk management investigated the relationship between the objectives of companies and the risk management strategy that the companies employ. The study shows a distinct difference between the two groups of companies in relation to actual risk management decisions which in turn have an effect on whether the risk management decisions will have a value addition or value retention effect on the company. This study concludes that this difference in risk management behaviour could not be explained by company characteristics normally identified in the literature as being decisive for the extent of hedging such as firm size, leverage, and export ratio. Rather, the study finds a unique relationship between the managerial focus on stakeholders taking a conservative risk management strategy (that focused more on value preservation) and managerial focus on shareholder taking a forward looking risk management strategy (that focused on value addition). Thus the theory ensures an understanding of actual risk management decisions which in turn helps determine whether the decisions have a value addition or value retention effect on the company.

The theory is appropriate for the study since there is need to involve the interrelationship of credit management team in both short and long run profitability estimation and this will ultimately increase the profitability levels in an organization and minimize the level of risk exposure in listed commercial banks in Nigeria and Botswana.

2.3: Empirical Review

In a study by Sathyamoorthi, Mapharing, Mphoeng and Dzimiri (2020) examined the impact of financial risk management practices on the financial performance of commercial banks in Botswana. The study used Return on Assets and Return on Equity to measure financial performance. Inflation, Interest rates, total debt to total assets, total debt to total equity, total equity to total assets and loan deposit ratios were used as proxies for financial risk management.

The research population was all the 10 commercial banks in Botswana and the study covered a period of 8 years from 2011 to 2018.This descriptive study sourced monthly secondary data from Bank of Botswana Financial Statistics database. Descriptive statistics, correlation and regression analyses were applied to analyze the data. The results from regression analysis showed that interest rates had a negative and significant impact on return on assets and on return on equity. On the other hand, total debt to total assets showed a negative and insignificant effect on return on assets. However, total debt to total assets, revealed a positive and insignificant effect on return on equity. The loan deposit ratio indicated a negative and significant impact on return on assets and on return on equity. Findings suggest that banks should strike a proper balance between financial risk management practices and financial performance by engaging in appropriate market, credit, and liquidity risk management practices that will ensure safety for their banks and yield positive profits.

Similarly, Aluko, Kolapo, Adeyeye and Oladele (2019) examines the impact of financial risks in form of credit, interest rate and liquidity risk on the profitability of systematically important banks in Nigeria over the period from 2010 to 2016. The fixed effects regression model is estimated with Driscoll–Kraay standard errors in order to produce results that are robust to heteroscedasticity, autocorrelation, cross-sectional dependence and temporal dependence. After controlling for some bank-specific, industry-specific, macroeconomic and institutional factors, the empirical results show that credit and liquidity risks have a positive impact on bank profitability while interest rate does not have an impact. The results are robust to alternative measures of profitability.

Following the same line of thought, Onyefulu, Okoye and Orjinta (2019) examined the relationship between financial risk and performance of Deposit Money Banks (DMBs) listed on Stock Exchange of two selected West African countries using a sample of twenty (20) Deposit Money Banks (DMBs). They covered 10 years period spanning from 2009 to 2018 using ex-post facto research design using three specific variables such as operational risk, liquidity risk and loan loss provision. Their result revealed that liquidity risk has negative and significant effect on performance of banks in both Ghana and Nigeria using ROA model which was statistically significant at 1% level of significance. Operational risk was discovered to have positive and significant effect on performance of Banks in West Africa having recorded a positive coefficient values across Nigeria and Ghana banks. Their study recommended among others that, Deposit Money Banks in Nigeria and Ghana should comply with relevant provisions of the Banks and Other Financial Institutions Act (1999) as amended and the Prudential Guidelines.

In the same vein, Shair, Sun, Shaorong, Atta and Hussain (2019) investigate the impact of risk and competition on the profitability of the Pakistani banking industry. Data are retrieved from the annual statements of banks, the Ministry of finance Pakistan and the World Bank covering the period of (2007–2017). Two steps Generalized Method of Moments (GMM) with the collapse command is used as an estimation technique to overcome endogeneity, unobserved heterogeneity and autocorrelation problems. The results of the study showed that the liquidity risk has positive while credit risk, insolvency risk and competition hurt negatively the profitability of Pakistani banks. The results of the study also revealed that capitalization, size, taxation and GDP growth rate positively affect the Banks' profits while banking sector development and infrastructure negatively affect banking profitability in Pakistan. The operational cost management positively affects net interest margins but negatively affects ROA and PBT in the Pakistani banking industry.

Similarly, Lasisi, Mustapha and Irom (2018) investigated financial risk management and the profitability using empirical evidence from commercial banks in Nigeria from 2011-2016. Profitability is measured using Return on Asset while financial risk management as the independent variables was proxy with liquidity risk, credit risk and capital adequacy risk. The population of the study is fifteen (15) commercial banks listed on the Nigerian Stock Exchange as at 2017 out of which a sample of fourteen (14) banks were used. Multiple regression technique was employed. The findings revealed that liquidity risk has a positive effect on profitability but insignificant. Also, the credit risk revealed a significant negative effect on the bank profitability, while the capital adequacy risk was also found to have a positive and significant effect on profitability of the commercial banks in Nigeria.

Olalekan, Olumide and Irom (2018) examined the effect of financial risk management on profitability of commercial banks in Nigeria. Profitability is measured using Return on Asset while financial risk management as the independent variables was proxy with liquidity risk, credit risk and capital adequacy risk. The population of the study is fifteen (15) commercial banks listed on the Nigerian Stock Exchange as at 2017 out of which a sample of fourteen (14) banks were used for the analysis due to the accessibility and availability of data. Data were obtained from the financial statements covering the period 2011-2016. Multiple regression technique was employed. The findings revealed that liquidity risk has a positive effect on profitability but insignificant. Also, the credit risk revealed a significant negative effect on the bank profitability, while the capital adequacy risk was also found to have a positive and significant effect on profitability of the commercial banks in Nigeria.

3.0   Methodology:

Ex post facto research design was used to describe the effects of financial risk on financial performance of 20 deposit money banks in Nigeria and Botswana by using existing secondary data on the selected proxies from financial statement of the quoted banks which cannot be manipulated or altered by the researcher. These two countries were selected because they have the largest and most active stock markets in Sub Sahara Africa (in terms of market capitalization, fast rising gross domestic product (GDP) and volume of trade). Deposit money banks were chosen because of their uniqueness in financial reporting disclosure requirements. The start of 2010 is chosen because this period is generally considered as the heat of the financial crisis in which the first severe sub-prime losses were realized. However still after 2010, many banks were still struggling for their existence after the capitalization exercise. The model adopted in this study assumed a linear relationship between financial risk variables measured using liquidity risk, operational risk and loan loss provision and financial performance captured using return on equity (ROE). Panel least square was adopted for the purpose of hypothesis testing and was guided by the following linear explicit model as:

$$ROE_{it} = \beta_0 + \beta_1 LQRSK_{it} + \beta_2 OPRSK_{it} + \beta_3 LLPV_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots..1$$

Where, -ROE stands for return on equity, LQRSK stands for liquidity risk measured as the *ratio of credit facility to total deposit*, OPRSK stands for operational risk measured as *operating expenses/operating income* while LLPV means loan loss provision.

. **ESTIMATION RESULTS AND DISCUSSION OF FINDINGS**

The study investigated the causal effect that exists between financial risk and financial performance of quoted deposit money banks in Nigeria and Botswana for a period of 10 years spanning 2010 to 2019. The study carried out some preliminary tests like descriptive statistics, correlations and variance inflation factor (VIF) analysis. Finally, the study used panel regression analysis in obtaining functional causal effect between performance of deposit money banks and financial risk. The table below shows the descriptive statistics of the selected deposit money banks that make up our sample.

4.1 Descriptive Statistics Analysis

	ROE	LQRSK	OPRSK	LLPV
Mean	9.691900	0.728050	0.860200	-3484.920
Median	12.00000	0.500000	0.880000	-3200.000
Maximum	58.46000	2.180000	1.210000	59024.00
Minimum	-91.95000	0.000000	0.510000	-9948.000
Std. Dev.	19.79726	0.631297	0.103258	4998.468
Skewness	-2.477663	0.893471	-0.522773	9.736438
Kurtosis	12.16567	2.573920	6.170160	123.6613
Jarque-Bera	904.7057	28.12255	92.85904	124486.3
Probability	0.000000	0.000001	0.000000	0.000000
Sum	1938.380	145.6100	172.0400	-696984.0
Sum Sq. Dev.	77994.39	79.30854	2.121792	4.97E+09
Observations	200	200	200	200

Source: researcher's summary of descriptive result (2020) using E-view 10

The descriptive statistics result in Table 4.1 above shows the mean values for each of the variables, their maximum values, minimum values, standard deviation and Jacque-Bera values which show the normality and nature of the data. The result provides some insight into the nature of the selected listed deposit money banks from two Sub Sahara African countries (Nigeria and Botswana) that were used in the study. Firstly, it was observed that over the period under review, the sampled banks have average positive return on equity. Within the period under review, the banks have maximum values of return on equity of 9.69 while the minimum value of return on equity was -91.95. The large difference between the maximum and minimum values of return on equity indicates that the performance of the deposit money banks differs greatly among the banks selected and over the period under review, this shows that the banks are not heterogeneous in nature. This extreme large value of ROE implies that some banks in the sample performed poorly while some had very good ROE when compared to the average value. Hence, it can be argued that Nigeria and Botswana banks had been efficient enough to generate a higher rate of return out of their shareholder's equity.

Similarly, the mean value of the Liquidity risk (LQRSK) of the sampled banks was 0.73 approximately while its median value was 0.50. The maximum value of liquidity risk was 2.18

while the minimum was 0. This means that only banks that actually take its liquidity position into consideration was used in this study since no banks had negative liquidity risk value.

The loan loss provision (LLPV) ratio shows the default risk that the bank expects to sustain from the lending business. For example, while some banks are making provision for non-performing loans and expected loss amount more, some are not making provision for it at all or making less provision. Also, while some of the banks are profitable and having large return on their shareholder's equity, others are not. The value of skewness of 9.73 indicates that the data skewed to the right and therefore conforms to the symmetrical distribution requirement. Moreover, the coefficient of Kurtosis 123.66 also indicates that loan loss provision variable meet the Gausian distribution criterion.

Also, the JB Probability shows that all the variables are normally distributed at 1% level of significance. This means that there no variables with outlier, even if there are, they are not likely to distort the conclusion and are therefore reliable for drawing generalization. This also justifies the use of panel least square estimation techniques. Hence, any recommendations made to a very large extent would represent the characteristics and nature of the true population of study.

4.2: Pearson Correlation Matrix

Pearson's correlation matrix was applied to check the degree of association between ratio of financial risk component and performance of quoted deposit money banks in Nigeria and Botswana so as to determine the nature or degree of association i.e. positive or negative correlation and the significance of the relationship between dependent variable (ROE) and independent variables such as liquidity risk (LQRSK), operational risk (OPRSK) and loan loss provision (LLPV). Therefore, in examining the association among the variables, we employed the Pearson correlation coefficient (correlation matrix) and the results are presented in the table 4.2 below.

Table 4.2:   Correlation Result

	ROE	LQRSK	OPRSK	LLPV
ROE	1.000000			
LQRSK	-0.055135	1.000000		
OPRSK	0.083378	0.034434	1.000000	
LLPV	-0.071377	-0.027242	0.066509	1.000000

Source: researcher's summary of correlation result (2020) using E-view 10

The above results show that there exist a positive and weak association between return on equity and operational risk (ROE/OPRSK= 0.083) while negative and weak correlation is documented against ROE and liquidity risk (ROE/LQRSK= -0.055). In the same vein, another negative and weak association was documented against ROE and loan loss provision (ROE/LLPV= -0.071). There exists a weak negative association between liquidity risk (LQRSK/LLPV= -0.027) while a very weak and positive association co-exist between liquidity risk and operational risk (LQRSK/ OPRSK = 0.034). Similarly, a very weak and positive association was documented against operational risk and loan loss provision (LQRSK/LLPV= 0.066).

In checking for multicollinearity, the study noticed from the correlation table above that no two explanatory variables were perfectly or highly correlated and thereby ruled out the case of having an outlier. This indicates the absence of multi-collinearity problem in the model used for the analysis. This also justifies the use of the panel least square and variation inflation factor (VIF). Therefore, to further check for multicollinearity problem, VIF analysis was conducted below in table 4.3.

4.3: Test of Multi-collinearity or Variance Inflation Factor (VIF)

Multicollinearity was tested by computing the Variance Inflation Factor (VIF) and its reciprocal or the tolerance. Collinearity diagnostics measure how much regressors are related to other regressors and how this affects the stability and variance of the regression estimates. To further check for multi-collinearity problem or to know whether the independent variables used are perfectly correlated, we conducted Variance Inflation Factor (VIF) to check for the multi-collinearity problem. The result of the Variance Inflation Factor (VIF) is provided below in table 4.3 below:

Table 4.3: Variance Inflation Factor Result (Nigeria and Botswana)

Variance Inflation Factors
Date: 12/27/20   Time: 21:53
Sample: 2010 2019
Included observations: 200

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	144.5420	60.46823	NA
LQRSK	4.964103	2.102957	1.002187
OPRSK	187.1266	58.93113	1.005915
LLPV	7.99E-08	1.411505	1.005552

Source: researcher's summary of VIF result (2020) using E-view 10

As can be observed from the result of VIF above that the mean value of the independent variables coefficient is less than 10 it can be concluded that there is no problem of multicollinearity. It can also be seen from the table that all the variables had a variance inflation factor (VIF) of less than 10: liquidity risk (1.002), operational risk (1.006) approximately and finally, loan loss provision (1.006) approximately. This implies that there was no multicollinearity problem with the variables, thus all the variables were maintained in the regression model. Our finding also justifies the use of panel least square estimation techniques. Hence, any recommendations made to a very large extent would represent the characteristics of the true population of study and thus can be used to draw conclusion.

4.3.1: Test of Hypotheses (Nigeria and Botswana)

In order to examine the relationship between the dependent variable (ROE) and the independent variables such as liquidity risk (LQRSK), operational risk (OPRSK), and loan loss provision (LLPV) and to test the formulated hypotheses, we employed panel regression analysis since

the data had both time series (2010-2019) and longitudinal properties (20 quoted deposit money banks). The summary result of both countries regression analysis is presented below. However, the study takes into cognizance the non-homogeneity nature of the banks, hence the need for testing its effect on the data. This necessitated the use of Hausman effect test to ascertain which effect to explain. That is whether fixed effect or random effect is to be used in interpreting the regression result or to ascertain that which is best to be adopted in the study since our data is a panel data with complete information. Below is the summary of the Hausman test result

4.3. 1: Hausman Effect Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	1.019912	3	0.7964

Source: Researcher's summary of Hausman effect test result (2020)

The Nigeria and Botswana Hausman test result above shows a chi-square statistics value of 1.0199 and probability value 0.7964 which was greater than 5% (0.05); this means that there is heterogeneity in the collection of the banks' data. Since the Chi-square (Prob) value is greater than 5%, hence we accept the random effect and interpret its regression while the fixed effect is rejected. Hausman test shows that the random-effects estimation (REM) method is more appropriate and more preferable than the fixed effects model (FEM) for all deposit money banks in Nigeria and Botswana; hence the results from REM is presented and interpreted. The random effect regression result is presented in table 4.3.2 below.

Table 4.3.2 Random Effect Regression Result (Nigeria and Botswana)

Period random effects test equation:
Dependent Variable: ROE
Method: Panel Least Squares
Date: 12/27/20   Time: 21:52
Sample: 2010 2019
Periods included: 10
Cross-sections included: 20
Total panel (balanced) observations: 200

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.448757	12.18141	-0.611486	0.5416
LQRSK	-1.876871	5.236357	-3.839254	0.0024
OPRSK	20.19514	13.88429	1.454531	0.1475
LLPV	-0.000326	0.000288	-1.132692	0.2588
	Effects Specification			

Period fixed (dummy variables)

R-squared	0.459529	Mean dependent var	9.691900
Adjusted R-squared	0.300822	S.D. dependent var	19.79726
S.E. of regression	19.80540	Akaike info criterion	8.872578
Sum squared resid	73351.48	Schwarz criterion	9.086968
Log likelihood	-874.2578	Hannan-Quinn criter.	8.959338
F-statistic	6.986375	Durbin-Watson stat	1.797880
Prob(F-statistic)	0.003471		

Source: Researchers Summary of Regression Result (2020)

The table 4.3.2 above shows the panel regression analysis of 20 quoted deposit money banks in both Nigeria and Botswana. From the table above, the F-statistics value of 6.986 and their P-value of 0.0034 showed that the overall analysis of our variables in the regression result was generally significant at 1% level of significance and it shows that the model was well specified in explaining banks performance. From the result above, the study observed that the R. squared value was 0.4595 (46%) approximately and R-squared adjusted value was 0.3008 (30%). The value of R- squared which is the coefficient of determination stood at 46% which implies that 46% of the systematic variations in individual dependent variables were explained in the model while about 54% were unexplained thereby captured by the stochastic error term. Moreover, the Durbin Watson statistic of 1.797 showed that the model is well spread since the value is approximately 2 and that there have not been self or auto correlation problem and that error are independent of each other.

4.4: Discussion of Findings

In testing our hypotheses for both Nigeria and Botswana context, we provide the below specific analysis for each of the independent variables as follows:

Ho1: *Liquidity risk has no significant effect on return on equity of deposit money banks in both Nigeria and Botswana.*

The result of the effect of risk management on performance of quoted deposit money banks showed a coefficient value of -1.876, t-value of -3.839 and a P-value of 0.0024. The coefficient values of -1.876 shows that liquidity risk has negative influence on the return on equity of selected banks in both Nigeria and Botswana. This indicates that an increase in the management of liquidity ratio or ratio of credit facility to total deposit of banks leads to an increase in the profitability of selected banks to the tune of 1.876%. In the same vein, when liquidity risk is reduced, there is an automatic reduction in the return on equity of deposit money banks in both Nigeria and Botswana. There is a potential for an increase in profitability on the basis of increase in management of ratio of credit facility to total deposit or loans and advances ratio which measures liquidity ratio. The study is strongly of the opinion that if the deposit money banks concentrate on the management of loan deposit ratio, it will result to high profitability of deposit money banks in both countries. The t-value of -3.839 reveals that banks liquidity risk has a strong effect on return on equity of selected banks. The probability value of 0.0024 reveals that the effect of liquidity risk on banks profitability in both countries is statistically significant at 1% level of significance. Our finding is in line with findings of Sattyamoorthy et al (2020), Shen, Chen, Kao and Yeh (2009), Dimitropuolos, Asteriou and Koumanakos (2010),

Tabari, Ahmadi and Emami (2013), Al-Khouri (2011), Li yugi (2007) who found negative effect and significant result but in disagreement with the findings of Shenir, Sum, Shaorong, Atta and Hussain (2019), Tafri et al. (2009) and Khouri (2011) who documented positive and significant result. As a result of this significant result obtained, we therefore reject our first null hypothesis (Ho$_1$) and accept our alternate hypothesis and conclude that liquidity risk has significant effect on profitability of deposit money banks in Nigeria and Botswana which was statistically significant at 1% level of significance.

Ho$_2$: *Operational Risk has no significant effect on return on equity of deposit money banks in Nigeria and Botswana.*

The regression result in table 4.3.2 above revealed that operational risk has positive and insignificant effect on return on equity of quoted deposit money banks in Nigeria and Botswana with a positive coefficient value of 20.195% and t-statistics value of 1.454 and a probability value of 0.1475 which is statistically insignificant. This positive effect implies that a 1% increase in the fraction of operational risk is associated with an increase in the ratio of return on equity by 20.195%. The t-values of 1.454 reveal that banks operational risk has a strong positive effect on return on equity of selected banks. The probability value of 0.1475 reveals that the effect of operational risk on banks profitability in Nigeria and Botswana is statistically insignificant. Our finding is in agreement with the findings of Shenir et al (2019), Tanveer, Muhammad and Sadaf (2017) that documented positive but significant effect between operational risk and banks performance while in conflict with the findings of Akong'a (2014) that recorded negative but significant result. As a result of this insignificant result documented, this leads to the acceptance of our second null hypothesis, we therefore conclude that there exist a strong and positive but insignificant effect between operational risk and performance of deposit money banks in Nigeria and Botswana.

H$_{03}$: *Loan loss provision has no significant effect on return on equity of deposit money banks in Nigeria and Botswana.*

The regression result in table 4.3.2 above revealed that loan loss provision has negative and insignificant effect on return on equity of quoted deposit money banks in Nigeria and Botswana having recorded a minimal and negative coefficient value of -0.0003% and t-statistics value of -1.132 and a probability value of 0.2588 which was statistically insignificant. This implies that a 1% decrease in the fraction of loan loss provision is associated with a percentage increase in the ratio of return on equity by an insignificant amount of 0.0003%. The t-value of -1.132 reveals that banks loan loss provision has an insignificant effect on return on equity of selected banks. The probability value of 0.2588 reveals that the effect of loan loss provision on banks profitability in Nigeria and Botswana is statistically insignificant. Our finding is in disagreement with the findings of Kargi (2011), Dietrich and Wanzenried (2011) who documented negative and significant effect between loan loss provision and banks performance and agrees with the findings of Kolapo, Ayeni and Oke (2012) that recorded insignificant result. As a result of this insignificant result documented, this leads to rejection of last alternate hypothesis and we therefore accept our null hypothesis and conclude that there is a no significant effect between loan loss provision and return on equity of deposit money banks in Nigeria and Botswana.

4.5   COMPARATIVE ANALYSIS OF COUNTRIES SPECIFIC RESULTS

The result provides an insight into the nexus of financial risk variables and the dependent variable (return on equity) of banks quoted across these 2 countries (Nigeria and Botswana). We examined it variable by variable.

Table 4.7.1: Summary of country specific regression results

Variables	Nigeria		Botswana	
	Coeff. Value	P-value	Coeff. Value	P-value
LQRSK	-2.179	0.4518	-2.195	0.4959
OPRSK	4.702	0.8168	30.359	0.0823
LLPV	-0.0002	0.4706	-0.0006	0.4193
R-squad	24%		14%	

Source: Researchers' Summary of country specific analysis (2020)

The country specific analysis was carried out to examine the effect of financial risk on performance of each country selected for the study. This will enable us examine the impact each country financial risk components and bank system plays on performance of banks quoted in their stock exchange. From the result above, the study observed that financial risk variables jointly affect about 24% of banks performance in Nigeria while jointly affect about 14% of what happened in Botswana banks using ROE as a measure of performance. The joint effect was more pronounced in Nigeria banks using return on equity while this was also followed by Botswana banks. This indicates that financial risks management in Nigeria has about 24% chances of improving profitability of banks while in Botswana, financial risk can only improve performance by about 14% when measured using return on equity respectively. In other words, Nigerian and Botswana financial risk strategy have the tendency of improving profitability when adequate measures are put in place to control it.

In the same vein, **Liquidity risk** was seen to have a negative and insignificant effect on both Nigeria and Botswana banks while operational risk was found to have positive and insignificant effect on both Nigeria and Botswana banks. Similarly, loan loss provision was also seen to have another negative and insignificant effect on both Nigeria and Botswana banks.

5.0:   CONCLUSION AND RECOMMENDATIONS

To identify the effect of Financial Risk Management on the Corporate Performance of Deposit Money Banks in Nigeria and Botswana, Descriptive statistics and Panel data regression analysis were employed on data collected from the deposit money banks in Nigeria and Botswana over 10 years period from 2010 to 2019. Based on a sample of 20 selected banks from Nigeria and Botswana Stock Exchange for ten fiscal years from 2010-2019 and using three independent variables (LQRSK, OPRSK and LLPV). The study found that liquidity risk has negative and significant effect on performance of selected deposit money banks in Both Nigeria and Botswana put together which was statistically significant at 1% level of significance. Operational risk has positive but insignificant effect on performance of selected deposit money banks in Both Nigeria and Botswana. Last but not the least, loan loss provision was seen to have negative but insignificant effect on performance of selected deposit money banks in Both Nigeria and Botswana.

Generally, based upon results, banks should fully concentrate on the loan assessment procedure, polices and quality of loans and liquidity management. Nigeria and Botswana banking industry should inculcate a balance risk management culture to mitigate risks and shocks. There should be financial risk based strategy formulation and mature corporate governance framework.

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Appendix 1:   Raw Result Output

Descriptive Result

	ROE	LQRSK	OPRSK	LLPV
Mean	9.691900	0.728050	0.860200	-3484.920
Median	12.00000	0.500000	0.880000	-3200.000
Maximum	58.46000	2.180000	1.210000	59024.00
Minimum	-91.95000	0.000000	0.510000	-9948.000
Std. Dev.	19.79726	0.631297	0.103258	4998.468
Skewness	-2.477663	0.893471	-0.522773	9.736438
Kurtosis	12.16567	2.573920	6.170160	123.6613
Jarque-Bera	904.7057	28.12255	92.85904	124486.3
Probability	0.000000	0.000001	0.000000	0.000000
Sum	1938.380	145.6100	172.0400	-696984.0
Sum Sq. Dev.	77994.39	79.30854	2.121792	4.97E+09
Observations	200	200	200	200

Correlation Result

	ROE	LQRSK	OPRSK	LLPV
ROE	1.000000	-0.055135	0.083378	-0.071377
LQRSK	-0.055135	1.000000	0.034434	-0.027242
OPRSK	0.083378	0.034434	1.000000	0.066509
LLPV	-0.071377	-0.027242	0.066509	1.000000

VIF Result

Variance Inflation Factors
Date: 12/27/20   Time: 21:53
Sample: 2010 2019
Included observations: 200

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	144.5420	60.46823	NA
LQRSK	4.964103	2.102957	1.002187
OPRSK	187.1266	58.93113	1.005915
LLPV	7.99E-08	1.411505	1.005552

Nigeria Regression Result

Dependent Variable: ROE
Method: Panel Least Squares
Date: 12/28/20   Time: 21:47
Sample: 2010 2019
Periods included: 10
Cross-sections included: 10
Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.687239	17.76612	0.263830	0.7925
LQRSK	-2.179562	2.885031	-0.755473	0.4518
OPRSK	4.702168	20.24007	0.232320	0.8168
LLPV	-0.000205	0.000284	-0.724307	0.4706

R-squared	0.240953	Mean dependent var	7.682800
Adjusted R-squared	0.219955	S.D. dependent var	18.54261
S.E. of regression	18.72670	Akaike info criterion	8.736956
Sum squared resid	33666.18	Schwarz criterion	8.841163
Log likelihood	-432.8478	Hannan-Quinn criter.	8.779130
F-statistic	0.354368	Durbin-Watson stat	1.624324
Prob(F-statistic)	0.786076		

Botswana Regression Result

Dependent Variable: ROE
Method: Panel Least Squares
Date: 12/28/20   Time: 21:51
Sample: 2010 2019
Periods included: 10
Cross-sections included: 10
Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-14.65926	15.29584	-0.958382	0.3403
LQRSK	-2.195850	3.212353	-0.683564	0.4959
OPRSK	30.35984	17.28752	1.756171	0.0823
LLPV	-0.000684	0.000843	-0.811221	0.4193

R-squared	0.141713	Mean dependent var	12.49475
Adjusted R-squared	0.111451	S.D. dependent var	19.40722
S.E. of regression	19.29579	Akaike info criterion	8.797216
Sum squared resid	35371.10	Schwarz criterion	8.902069
Log likelihood	-431.4622	Hannan-Quinn criter.	8.839639
F-statistic	1.378408	Durbin-Watson stat	1.264631
Prob(F-statistic)	0.254121		

Hausman Test (Nigeria and Botswana)

Correlated Random Effects - Hausman Test
Equation: Untitled
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	1.019912	3	0.7964

Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LQRSK	-1.876871	-1.891100	0.037191	0.9412
OPRSK	20.195136	17.880761	5.646856	0.3301
LLPV	-0.000326	-0.000315	0.000000	0.8432

Period random effects test equation:
Dependent Variable: ROE
Method: Panel Least Squares
Date: 12/27/20   Time: 21:52
Sample: 2010 2019
Periods included: 10
Cross-sections included: 20
Total panel (balanced) observations: 200

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.448757	12.18141	-0.611486	0.5416
LQRSK	-1.876871	5.236357	-3.839254	0.0024
OPRSK	20.19514	13.88429	1.454531	0.1475
LLPV	-0.000326	0.000288	-1.132692	0.2588

	Effects Specification			

Period fixed (dummy variables)

R-squared	0.459529	Mean dependent var	9.691900
Adjusted R-squared	0.300822	S.D. dependent var	19.79726
S.E. of regression	19.80540	Akaike info criterion	8.872578
Sum squared resid	73351.48	Schwarz criterion	9.086968
Log likelihood	-874.2578	Hannan-Quinn criter.	8.959338
F-statistic	6.986375	Durbin-Watson stat	1.797880
Prob(F-statistic)	0.003471		