4 RISK MANAGEMENT AND DECISION MAKING: EVIDENCE FROM NIGERIAN BANKS

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ABSTRACT

This study sought to investigate the extent to which risk management affects the loans and advances of Nigerian Banks. This study adopted a descriptive study design. The population of the study comprised of the totality of Deposit Money Banks (DMBs) in Nigeria as at December 31, 2016. However, a sample of six (6) banks selected by means of judgmental sampling technique was used in the study. In order to achieve the objectives of the study, secondary data on liquidity ratio, interest rates, foreign exchange rates and loans and advances were obtained from the Central Bank of Nigeria Statistical Bulletin during the period 2000-2016. These parameters were used to measure credit and market risks that have the tendency to influence loans and advances of Deposit Money Banks (DMBs) in Nigeria when properly managed. The model specification was based on decision making(proxy by loans and advances of banks) as a function of credit risk (liquidity ratios) and market risks (interest and foreign exchange rates). Regression analysis method was employed in analyzing the data via SPSS, version 20.0. The findings revealed that liquidity risk, interest rate risk and foreign exchange risk significantly affects the loans and advances of Nigerian banks. Thus, the study concluded that risk management significantly and positively influences the decision making of banks in Nigeria. Based on the findings, we recommend among others that Nigerian banks should employ robust liquidity risk management practices that ensure sufficient liquidity including a cushion of unencumbered high quality liquid assets to withstand a range of stress events as well as those involving the loss or impairment of both secured and unsecured funding sources. In addition, for Nigerian banks to improve on their decision making, they should focus more on their credit risk as well as market risks such as interest and foreign exchange rates.

Keywords:
Risk Management; Decision Making; Market Risk; Credit Risk; Banking Industry

1.0 INTRODUCTION

Managing risk is a fundamental concern in today's dynamic global environment. In recent years, a paradigm shift has occurred regarding the way to view risk management (Mohamad &Mohdsaad, 2010). Gordon, Loeb & Tseng (2009), emphasized that risk management should be viewed from a silo-based perspective, which trend is to take a holistic view of risk management. This holistic approach is termed Enterprise Risk Management (ERM).A general argument gaining momentum in the literature is that effective risk management will improve decision making (e.g., COSO, 2004; Nocco & Stulz, 2006; Hoyt & Liebenberg, 2008). One industry that is characterized with high risk is the banking industry. However, empirical evidence confirming the relation between risk management and decision making in the Nigerian banking industry is quite limited and is not based on a robust measure of risk management or enterprise risk management.

According to Abdullah, Guo & Mande (2012), this limited relations between risk management and decision making is as a result of the evolvement of financial instruments and markets that has enabled banks to undertake varied risk exposures. In the context of these developments and the progressive deregulation and liberalization of the Nigerian financial sector, having in place effective risk management and internal control systems has become crucial to the conduct of banking business. This is also significant in view of proposed introduction of the Basel Accord under which capital maintained by a bank will be more closely aligned to the risks undertaken towards risk-based supervision of banks. The supervisory process would seek to leverage the work done by internal auditors of banks (Gordon, Loeb & Tseng (2009).

Risk management plays an important role in contributing to the effectiveness of decision making (Abdelgalil, 2014). Risk management is a scientific approach to the problem of pure risk which has its objective as the reduction or elimination of pure risk facing the firm (*Vaughan& Vaughan,*2003).ISO 31000 (2009) defined it as *the effect of uncertainty on objectives*(whether positive or negative) followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities. As observed by Al-Khouri, Magableh & Aldamen (2010), the key issues in risk management comprised of the probability (likelihood) of event occurring, severity (impact) of the event on set objectives, the strategies to manage and avoidthe risk.

It becomes obvious however, that risk management process entails the planning, arranging and controlling of the activities and resources that will help in minimizing the impact of all forms of risks to levels that can be tolerated by all stakeholders and the organization as a whole. In order to minimize risk, banks should first make a comprehensive list of potential organization-wide risks, assess the magnitude and probability of occurrence (Epstein & Buhovac, 2006) as well as the various quantitative techniques that are available (Beasley, Clune & Dana, 2015).

In addition to assessing the potential cost of a risk materializing, benefits accruing from an appropriate response to the risk should also be assessed (Epstein & Buhovac, 2006).

There are several risks characterizing the banking industry such as credit risk, market risk and operational risk (Dorfman, 2007). The Basel Committee on Banking Supervision (2001) sees credit risk as the possibility of losing an outstanding loan partially or totally, due to credit events (default risk). Market risk refers to the risk of loss to an institution resulting from movements in market prices, in particular, changes in interest rates, foreign exchange rates, and equity and commodity prices (Spuchlakova, Valaskova & Adamko, 2015). Operational risk on the other hand, is the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events (Spuchlakova, Valaskova & Adamko, 2015). However, in this study, two aspects of risk management will be the focal point: credit risk (liquidity risk) and market risks (interest and foreign exchange risks) as it affects decision making of Nigerian banks.
In the immediate aftermath of the financial crisis, emphasis has been on managing risk. Risk is an integral feature of business activity. Effective risk management not only helps companies avoid costly financial distress and sustain investment programmes, but also improves company-wide decision making. In recent years, a paradigm shift has occurred regarding the way organizations view risk management(Gordon, Loeb & Tseng, 2009). Instead of looking at risk management from a silo-based perspective, the trend is to take a holistic view of risk management. Indeed, there is growing support for the general argument that banks since they are characterized with risky assets will make improved decision by employing effective risk management. The basic argument presented in this paper is that the relation between risk management and performance is contingent upon the appropriate match between performance and the following two factors affecting banks: credit and market risks.

Gordon, Loeb & Tseng (2009) argued that the central function of a financial institution is its ability to distribute risk across different participants. According to Saunders & Cornett (2006), banks are in the risk management business as they undertake the functions of bearing and managing risks on behalf of their customers through the pooling of risks and the sale of their services as risk specialists. A search on studies on risk management and decision making in Nigeria yielded no empirical evidence. The banking industry has not been studied as far as risk management and decision making is concerned. There is therefore, a gap as far as studying the influence of risk management on decision making. Analytically, the study measures risk through a selection of key risk variables that have the tendency to influence corporate decision making such as credit and market risks.

The broad objective of this study therefore, is to examine the effect of risk management on the decision making of Nigerian banks. However, the specific objectives are:

(a) To determine the extent to which liquidity risk affects the loans and advances of banks in Nigerian.
(b) To ascertain the extent to which interest rate risk affects the loans and advances of banks in Nigerian.
(c) To examine the extent to which foreign exchange risk affects the loans and advances of banks in Nigerian.

Following from the above, the following research hypotheses were formulated and tested in their null form(s):

H_{o1}: Liquidity risk does not significantly affect the loans and advances of banks in Nigeria.
H_{o2}: Interest rate risk does not significantly affect the loans and advances of banks in Nigeria.
H_{o3}: Foreign exchange riskdoes not significantlyaffect the loans and advances of banks in Nigeria.

2.0 REVIEW OF RELATED LITERATURES

Theoretical Framework

The theoretical framework for the study is premised on Nocco & Stulz (2006) Enterprise Risk Management (ERM) theory. Nocco & Stulz (2006)'s study is the one which successfully attempts to develop the underlying theory of risk management or enterprise risk management. This theory holds that risk management and decision making of firms should institute efficient measures that offer maximum way of reducing risk to its barest level. According to them, risk management brings two main advantages to firms which are at macro and micro level. The macro benefits refer to long-run competitive advantage that a firm can gain through Enterprise Risk Management (ERM). This becomes possible with risk management since it enables firms to transfer its non-core risks (that is, financial risks which can be transferred in a cheap way thanks to the presence of extensive and cheap derivatives market) effectively. By reducing the exposure to these non-core risks, the firm can take up more core-risks (that is, business risks which the firm has competitive advantage in bearing). In other words, companies do business in order to take strategic and business risks; hence by increasing the ability to bear more business risk, firms can create competitive advantage in the long run. This according to Nocco & Stulz (2006) can guide the firm in making effective decision that can help in actualizing the profit maximization of firms.

The micro benefits implies assigning carefully how and by whom risk is owned, as well as from allocating capital based on risk-return tradeoff analysis. A well-designed enterprise risk management system ensures that all material risks are "owned," and risk-return tradeoffs carefully evaluated, by operating managers and employees throughout the firm. In summary, Enterprise Risk Management (ERM) increases shareholder value according to Nocco & Stulz (2006) through careful risk-return tradeoffs on projects for capital allocation, which facilitates pursuing its strategic and business plan, as well as exploiting its business risks, leading to remain and/or improve firm's competitive advantage.

Empirical Studies

There is scanty empirical evidence on the relationship between risk management and decision making. What is well known in literature is credit risk management, firm performance and value. For instance, Adesugba & Bambale (2016) empirically investigated the effect of credit risk management on the performance of Nigerian banks using ten (10) Deposit Money Banks (DMBs). Secondary data on non-performing loan ratio, loan to deposit ratio, return on equity, return on asset and net interest margin spanning the period 2010-2015 utilized in the study were derived from the published annual financial statements of the sampled banks. The data were analyzed by means of simple regression analysis technique. The results showed that credit risk management has significant effect on the performance of the banks in Nigeria.

Poudel (2012) studied the impact of credit risk management on the financial performance of commercial banks in Nepal. Judgmental sampling method was adopted in the selection of the thirty-one (31) banks used in the study. The secondary data spanning the period 2001-2011 emanated from the audited Annual Reports and Accounts of the sampled banks. Correlation and regression analysis method was employed in the analysis of the data via SPSS, version 20.0.The results of the study revealed that the financial performance of the banks was significantly influenced by credit risk management over the period.

Olusanmi, Uwuigbe & Uwuigbe (2015) using variables as capital ratio, return on equity, non-performing loan ratio, loan to total deposit and risk disclosure examined the relationship between risk management and financial performance of Nigerian banks. The sample comprised of fourteen (14) Deposit Money Banks (DMBs) which maintains active presence in the Nigerian Stock Exchange (NSE). The secondary data utilized in the study covering the period 2006-2012 emanated from the Published Annual Reports and Accounts of the sampled banks. Simple regression analysis method was employed in the analysis of the data collected. Findings showed that there is no significant relationship between risk management and banks' financial performance.

Muhammad & Shahid (2012) empirically investigated the impact of credit risk management on the performance of banks in Nigeria. Judgmental sampling method was adopted in the selection of the six (6)Deposit Money Banks (DMBs) used in the study. The secondary data on loans and advances, non-performing loans, total deposits, profit after tax and total assets used in the study were sourced from the Published Annual Reports and Accounts of the banks. The Ordinary Least Square (OLS) statistical tool was employed in the analysis of the data. Findings revealed that credit risk management has a significant effect on the financial performance of the banks during the period.

Kolapo, Ayeni & Oke (2012) using a sample of five (5) Deposit Money Banks (DMBs) examined the effect of credit risk on the performance of Nigerian banks. The secondary data on return on asset, non-performing loans, loans and advances,

loan loss provision, classified loans and total deposits spanning the period 2000=2010 were extracted the annual financial statements of the sampled banks. Panel data regression model was employed in the data analysis. The results showed that the effect of credit risk on bank's performance measured by return on asset was cross-sectional invariant. However, loans and advances ratio had a significant and positive influence on the performance of the banks sampled.

Alalade, Agbatogun, Cole & Adekunle (2015) empirically investigated the impact of credit risk management on the financial performance of banks in Nigeria using a sample of ten (10) Deposit Money Banks quoted on the Nigerian Stock Exchange. The secondary data spanning the period 2006-2010 used in the study were derived from the published financial statements of the banks. Multiple regression analysis technique was utilized in the analysis of the data via E-views 7 Statistical Software. The results revealed that credit risk management has a significant influence on the financial performance of the banks during the period.

Isanzu (2017) studied the effect of credit risk on the financial performance of Chinese banks. The sample used in the study comprised of five (5) commercial banks selected using judgmental sampling technique.The secondary data on non-performing loans, capital adequacy ratio, impaired loan reserve, loan impairment charges and return on asset spanning the period 2008-2014 were derived from the Published Annual Reports and Accounts of the banks. Panel data regression analysis method was employed in the analysis of the data collected. Findings showed that non-performing loan and capital adequacy has a significant and positive effect on the financial performance of the sampled banks during the period.

Ajayi & Ajayi (2017) investigated the effects of credit risk management on the performance of Nigerian banks using secondary data. The data which covered 2001-2015 were extracted from the financial statements of the ten (10) banks used in the study. Simple regression analysis technique was employed in the data analysis. The results indicated that non-performing loan ratio, loan loss provision ratio and cost per loan ratio have no influence on the banks profitability. Though, the performance of the banks was significantly affected by loan to total assets ratio.

Almekhlafi, Almekhlafi, Kargbo & Hu (2016) empirically investigated the determinants of credit risk and its effect on the performance of banks using six (6) banks in Yemen. Secondary data on return on asset, ratio of total loans to total asset, non-performing loans, gross domestic product growth and inflation spanning the period 1998-2013 were sourced from Bank Scope and World Development Indicators Database (2013). Multiple regression analysis method was employed in the analysis of the data. The results indicated that credit risk management has significant and positive influence on the performance of the banks over the period.

Ogbulu & Eze (2016) using secondary data on ROA, ROE, return on shareholders'

fund and non-performing loan ratios empirically investigated the effect of credit risk management on the financial performance of Nigerian banks. The data were derived from the Central Bank of Nigeria Statistical Bulletin and Published Annual Reports and Accounts of NDIC for the period 1989-2013. Multiple regression and correlation analysis methods were utilized in the analysis of the data collected. The findings of the study showed that credit risk management significantly affects the performance of the banks during the period.

Nwude & Okeke (2018) using a sample of five (5) banks empirically examined the effect of credit risk management on the performance of Nigerian Deposit Money Banks (DMBs). The secondary data (return on asset, return on equity, non-performing loan ratio and bank size) spanning the period 2000-2014 were obtained from Central Bank of Nigeria Statistical Bulletin and Published Annual Reports and Accounts of the banks. Regression analysis method was employed in the data analysis. Findings showed that credit risk management has a significant effect on the performance of the banks sampled.

Adeusi, Akeke, Obawale & Oladunjoye (2013) using a secondary data on return on asset, return on equity, liquidity ratio, capital asset ratio and doubtful loans examined the relationship between risk management and financial performance of Nigerian banks. The sample comprised of ten (10) Deposit Money Banks (DMBs). Secondary data used in the study emanated from the published Annual Reports and Accounts of the sampled banks. The data included return on asset, return on equity, liquidity ratio, capital asset ratio and doubtful loans covering the period 2006-2009. Panel data estimation technique was utilized in the analysis of the data. Findings indicated that a significant relationship exist between risk management and financial performance of banks in Nigeria.

Kayode, Obamuyi & Owoputi (2015) evaluated the effect of credit risk on the performance of Nigerian banks using variables as ROA, ROE, non-performing loans to total loans and advances, total loans and advances to total assets and loan loss provision to total loans and advances. The data spanning the period 2000-2013 were derived from the Annual Reports and Accounts of the six (6) banks sampled. Random effect model was employed in the analysis of the collected data. The results demonstrated that credit risk has no significant influence on the banks performance. However, total loans significantly and positively influence the banks performance during the period.

While risk management literature shows consistent evidence that effective risk management affect firm value and performance, there are inconclusive or no empirical evidence on risk management and decision making, hence this study.

3.0 METHODOLOGY

This study is aimed at examining the effect of risk management on the decision making of Nigerian banks. Descriptive research design was adopted for this study. The population of the study is made up of all the Deposit Money Banks (DMBs)in Nigeria as at December 31, 2016. The total

numbers of Deposit Money Banks (DMBs)as at December 31, 2016 in the country stood at twenty (CBN, 2016).However, sixbanks (FBN Plc, UBA Plc, Access Bank Plc, Zenith Bank Plc, Diamond Bank Plc and GTB Plc)selected by means of judgmental sampling technique were used in the study. Secondary data on liquidity ratios, interest rates, foreign exchange rates and loans and advances covering the period 2000-2016used in the study were sourced from the Central Bank of Nigeria Statistical Bulletin (see Table I). In order to determine the effect of risk management on decision making, the regression analysis method was employed in analyzing the data via the Statistical Package for Social Sciences (SPSS, version 20.0).

Table 1: Value of the Variables for the Period Under Review

DCM (Loans/Advances)	LQR	INR	FXR
533.715	53.3	4.61	102.105
836.01	52.9	10.09	111.943
1002.33	52.5	15.57	120.97
1270.5	50.9	11.88	129.357
1670.76	50.5	12.21	133.5
2075.535	50.2	8.68	132.147
2650.515	55.7	8.26	128.652
5054.175	48.8	9.49	125.833
8189.37	44.3	11.95	118.567
9357.705	30.7	12.63	148.88
8091.72	30.4	7.19	150.298
7678.335	42.0	6.3	153.862
8557.5	49.7	7.63	157.499
10505.88	63.2	6.72	157.311
13533.87	38.3	9.89	158.553
604.877	53.3	4.61	102.105
947.478	52.9	10.09	111.943
1135.974	52.5	15.57	120.97
1439.9	50.9	11.88	129.357
1893.528	50.5	12.21	133.5
2352.273	50.2	8.68	132.147
3003.917	55.7	8.26	128.652
5728.065	48.8	9.49	125.833
9281.286	44.3	11.95	118.567
10605.399	30.7	12.63	148.88
9170.616	30.4	7.19	150.298
8702.113	42.0	6.3	153.862

9698.5	49.7	7.63	157.499
11906.664	63.2	6.72	157.311
15338.386	38.3	9.89	158.553
772.616	53.3	4.61	102.105
1210.224	52.9	10.09	111.943
1450.992	52.5	15.57	120.97
1839.2	50.9	11.88	129.357
2418.624	50.5	12.21	133.5
3004.584	50.2	8.68	132.147
3836.936	55.7	8.26	128.652
7316.52	48.8	9.49	125.833
11855.088	44.3	11.95	118.567
13546.392	30.7	12.63	148.88
11713.728	30.4	7.19	150.298
11115.304	42.0	6.3	153.862
12388	49.7	7.63	157.499
15208.512	63.2	6.72	157.311
19591.888	38.3	9.89	158.553
904.774	53.3	4.61	102.105
1417.236	52.9	10.09	111.943
1699.188	52.5	15.57	120.97
2153.8	50.9	11.88	129.357
2832.336	50.5	12.21	133.5
3518.526	50.2	8.68	132.147
4493.254	55.7	8.26	128.652
8568.03	48.8	9.49	125.833
13882.932	44.3	11.95	118.567
15863.538	30.7	12.63	148.88
13717.392	30.4	7.19	150.298
13016.606	42.0	6.3	153.862
14507	49.7	7.63	157.499
17809.968	63.2	6.72	157.311
22943.132	38.3	9.89	158.553
992.7099	53.3	4.61	102.105
1554.9786	52.9	10.09	111.943
1864.3338	52.5	15.57	120.97
2363.13	50.9	11.88	129.357
3107.6136	50.5	12.21	133.5
3860.4951	50.2	8.68	132.147
4929.9579	55.7	8.26	128.652
9400.7655	48.8	9.49	125.833

15232.2282	44.3	11.95	118.567
17405.3313	30.7	12.63	148.88
15050.5992	30.4	7.19	150.298
14281.7031	42.0	6.3	153.862
15916.95	49.7	7.63	157.499
19540.9368	63.2	6.72	157.311
25172.9982	38.3	9.89	158.553
655.1987	53.3	4.61	102.105
1026.3018	52.9	10.09	111.943
1230.4794	52.5	15.57	120.97
1559.69	50.9	11.88	129.357
2051.0568	50.5	12.21	133.5
2547.9663	50.2	8.68	132.147
3253.8227	55.7	8.26	128.652
6204.6015	48.8	9.49	125.833
10053.4266	44.3	11.95	118.567
11487.6969	30.7	12.63	148.88
9933.5496	30.4	7.19	150.298
9426.0703	42.0	6.3	153.862
10505.35	49.7	7.63	157.499
12897.2184	63.2	6.72	157.311
16614.4366	38.3	9.89	158.553

Source: CBN Statistical Bulletin, 2016

3.1 Model Specification

The following model was utilized to perform the regression analysis.

$$Y = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu \quad Eq.1$$

Where α, β, and μ are constants.

In order to estimate equations (1), it wastranslatedinto equation (2) as below:

$$DCM_{it} = \beta_0 + \beta_1 LQR_{it} + \beta_2 INR_{it} + \beta_3 FXR_{it} + \varepsilon_t \quad Eq.2$$

Where: DCM = Decision Making (proxy by Bank Loans and Advances)
LQR = Liquidity Ratios at time t
INR = Interest Rates measured at time t
FXR = Foreign Exchange Rates measured at time t
ε = Error Term (variables not captured in the model)
it = Time Period
$\beta_0 \beta_1 \beta_2$ = Regression Coefficients

4.0 ANALYSIS OF RESULTS

The study used selected risk indicators that may be used to analyze how well risk management affects decision making during the period 2000-2016. The data are presented and analyzed in tables. The results are presented in order of precedence. The descriptive statistics of the variables came first, followed by the Pearson Product Moment Correlation (PPMC) results and test of hypotheses.

Analysis of Descriptive Statistics

Table 2 to 4 presents the dependent variable's sensitivity to changes in independent variable. The statistical indicators used for this purpose was the standard deviation, minimum and maximum values obtained from the Ordinary Least Square (OLS) results.

Table 2: Sensitivity of Decision Making to Credit Risk

Periods = 14	Std. Dev.	Minimum	Maximum
Sensitivity Coefficient (β_i):	23.1564	30.40	63.20
Sign of Sensitivity Coefficient (βi): Positive: 22(83.33%) Negative: 2(16.67%)			

Source:*Regression Output, 2018*

Table 2 above, presents the estimates of decision making (proxy by Loans and Advances) to changes in Credit Risk (proxy by Liquidity Ratio). A closer look at the result indicated that decision makingduring the period under review were sensitive to changes in liquidity risks. It can be observed that liquidity risk to decision making coefficient for the observed period range between 30.40 and 63.20 minimum and maximum values respectively with standard deviation value of 23.1564. This means that the decision making can deviate from mean to both sides by 23%. The minimum 30% is due to the fact that the banking industry bulk of capital comprised of loans and advances. Also, 22(83.33%) of the aggregate loans and advances of the banks were positively sensitive, while 2(16.67%) were adversely (negatively) sensitive to changes in liquidity risk.

Table 3: Sensitivity of Decision Makingto Market Risks

Period. = 14	Std. Dev.	Minimum	Maximum
Sensitivity Coefficient (β_i):	3.0211	4.61	15.57
Sign of Sensitivity Coefficient (βi): Positive: 22(83.33%) Negative: 2(16.67%)			

Source:*Regression Output, 2018*

Table 3 above, presents the estimates of decision making (proxy by Loans and Advances) to changes inMarket Risks (proxy by Interest Rates).A closer look at the result suggests that decision making during the period under review were sensitive to changes in market risks. It can be observed that market risks coefficient for the observed period range between 4.61 and 15.57 minimum and maximum values

respectively with standard deviation value of 3.0211. This means that the decision making can deviate from mean to both sides by 3%. The minimum 4.61% is due to the fact that the basis for granting loans is based on the interest rates. Also, 22(83.33%) of the aggregate decision makingof the banks were positively sensitive, while 2(16.67%) were adversely (negatively) sensitive to changes in market risks.

Table 4: Sensitivity of Decision Making to Market Risks

Obs. = 14	Std. Dev.	Minimum	Maximum
Sensitivity Coefficient (β_i):	33.2651	102.105	158.553
Sign of Sensitivity Coefficient (βi): Positive: 22(83.33%) Negative: 2(16.67%)			

Source:*Regression Output, 2018*

Table 4 above presents the estimates of decision making (proxy by Loans and Advances) to changes inMarket Risks (proxy by Foreign Exchange Rates). A closer look at the result suggests that decision makingduring the period under review were sensitive to changes in market risks. It can be observed that market risks coefficient for the observed period range between -102.105 and 158.553 minimum and maximum values respectively with standard deviation value of 33.2651. This means that decision making can deviate from mean to both sides by 33.3%. Also, 22(83.33%) of the aggregate decision making of the banks were positively sensitive, while 2(16.67%) were adversely (negatively) sensitive to changes in market risks

Correlation Analysis

Closely related to but conceptually very much different from regression analysis is correlation analysis, where the primary objective is to measure the strength or degree of linear association between the dependent and independent variables. This was done using the Pearson Correlation Coefficient (PCC), Variance Inflator Factor (VIF) and Tolerance Level (TL). The Pearson Correlation Coefficient is used to establish the inter-correlation among the dependent and independent variables. There could be strong positive relationship, a weak positive relationship and no relationship and Pearson's *r* ranges from -1.0 to 1.0, where a negative coefficient indicates inverse relations between the variables (Nachmias & Nachmias, 2009). The Variance Inflator Factor and Tolerance Level (TL) was used to establish the multi-collinearity between the dependent and independent variables. The closer the VIF and TL to 1, the greater the collinearity between the dependent and independent variables

Table 5: Correlation for Credit Risk and Decision Making

Pearson Correlation			Variance Inflator Factor (VIF)	Tolerance Level (TL)
Zero	Partial	Part		
-.057	-.029	-.029	.735	1.360

Source:*Regression Output, 2018*

Table 5 showed the correlation results for credit risk (liquidity ratio) and decision making (loans and advances). The results above revealed that there is a perfect collinearity between credit risk and decision makingjudging by the Variance Inflator Factor (VIF) with value .735 and Tolerance Level (TL) with value 1.360. Going by the Zero, Partial and Part Correlation results, the degree of association is negative and weak.

Table 6: Correlation for Market Risks and Decision Making

Pearson Correlation			Variance Inflator Factor (VIF)	Tolerance Level (TL)
Zero	Partial	Part		
.158	.151	.151	.735	1.360

Source:*Regression Output, 2018*

Table 6 showed the correlation results for market risks (interest rates) and decision making(loans and advances). The results above revealed that there is a perfect collinearity between market risks and decision makingjudging by the Variance Inflator Factor (VIF) with value .735 and Tolerance Level (TL) with value 1.360. Going by the Zero, Partial and Part Correlation results, the degree of association is positive and weak.

Table 7: Correlation for Market Risks and Decision Making

Pearson Correlation			Variance Inflator Factor (VIF)	Tolerance Level (TL)
Zero	Partial	Part		
.735	.735	.735	1.000	1.000

Source:*Regression Output, 2018*

Table 7 showed the correlation results for market risks (foreign exchange rates) and decision making (loans and advances). The results above revealed that there is a perfect collinearity between market risks and decision makingjudging by the Variance Inflator Factor (VIF) with value 1.000 and Tolerance Level (TL) with value 1.000. Going by the Zero, Partial and Part Correlation results, the degree of association is positive and strong.

Table 8: Model Summary

Model		Sum of Squares	Df	Mean Square	F.	Sig.
1	Regression	1446.925	2	723.463	46.194	.000[b]
	Residual	54369.723	12	2589.034		
	Total	55816.648	14			

Source:*Regression Output, 2018*

a. Predictors: (Constant), LQR, INR, FXR

b. Dependent Variable: DCM

Table 8 summarizes the information about the variation of the dependent variable explained by the existing model used for this study and the residual that indicates the variation of the dependent variable that are not captured by the model. It can be observed that the independent variables give a significant effect on the dependent variable, where f-value is 46.194 with a p-value of less than 0.05 (i.e. p>0.000) indicating that, overall, the model used for the study is significantly good enough in explaining the variation on the dependent variable. To ensure the statistical adequacy of the model, the goodness of fit can also be measured by the square of the correlation

Table 9: Goodness of fit through R Square

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.890[a]	.8600	.810	76.1943

Source:*Regression Output, 2018*

a. Predictors: (Constant), LQR, INR, FXR

As shown in Table 9 above, both R^2 and adjusted R^2 measure the fitness of the model i.e. they measure the proportion of the variation in dependent variable explained by the model. But since adjusted R^2 is the modification for the limitation of R^2, the value of the adjusted R^2 is considered to measure the fitness of the model. Thus, as it is shown above, the value of adjusted R^2 is .810, indicating that the independent variables in the model are explaining 81% variation on the dependent variables while the unexplained variation is just 19%. We can understand that the model is providing a good fit to the data.

Test of Hypotheses

To facilitate the study, three hypotheses were formulated. They are hereby restated and tested below:

Hypothesis I

The null hypothesis states that liquidity risk does not significantlyaffect the loans and advances of banks in Nigeria. While the alternative hypothesis states that liquidity risk significantly affects the loans and advancesof banks in Nigeria.The result for the test of Hypothesis I is presented in Table 10 below:

Table 10: T-Ratio for Hypotheses I

Variables	Coefficients	t-statistic	Prob.
Constant	88.123	3.139	.000
Liquidity Risk	.748	7.234	.008

Source:*Regression Output, 2018*

As shown in Table 10, Liquidity Risk of banks (p-value = .008) was statistically significant at 5 percent or lower.The result also revealed that there is a positive relationship between the independent and dependent variables. The t-calculated (7.234) is greater than the t-tabulated (1.23). Thus, the null hypothesis is rejected while the alternative hypothesis which states that "Liquidity risk significantly affects the loans and advancesof banks in Nigeria" is accepted.Thus, the result suggests that liquidity risk significantly influences the loans and advancesof Nigerian banks.

Hypothesis II

The null hypothesis states that interest rate risk does not significantlyaffect the loans and advances of banks in Nigeria. While the alternative hypothesis states that interest rate risk significantlyaffects the loans and advancesof banks in Nigeria.The result for the test of Hypothesis II is presented in Table 11 below:

Table 11 : T-Ratio for Hypotheses II

Variables	Coefficients	t-statistic	Prob.
Constant	91.923	5.079	.000
Market Risk	.973	3.484	.010

Source: Regression Output, 2018

As shown in Table 11, Market Risks (Interest Rates) of Banks (p-value = .010) was statistically significant at 5 percent or lower. The result also revealed that there is a positive relationship between the independent and dependent variable. The t-calculated (3.484) is greater than the t-tabulated (1.23).Thus, the null hypothesis is rejected while the alternative hypothesis which states that "Interest rate risk significantlyaffects the loans and advancesof banks in Nigeria" is accepted. In other word, the result showed that interest rate risksignificantly influences the loans and advancesof Nigerian banks.

Hypothesis III

The null hypothesis states that foreign exchange risk does not significantlyaffect the loans and advances of banks in Nigeria.While the alternative hypothesis states that foreign exchange risk significantlyaffects the loans and advancesof banks in Nigeria.The result for the test of Hypothesis III is presented in Table 12 below:

Table 12 : T-Ratio for Hypotheses III

Variables	Coefficients	t-statistic	Prob.
Constant	91.923	5.079	.000
Market Risk	.945	6.193	.008

Source:*Regression Output, 2018*

As shown in Table 12, Market Risks (proxy by Foreign Exchange Rates) of banks (p-value = .008) was statistically significant at 5 percent or lower. The result also revealed that there is a positive relationship between the independent and dependent variables. The t-calculated of 6.193 is also greater than the t-tabulated of 1.23. With this result, we reject the null hypothesis which states that "Foreign exchange riskdoes not significantlyaffect the loans and advances of banks in Nigeria" and accept the alternative hypothesis.Thus, the result suggests that foreign exchange risk significantly influences the loans and advancesof Nigerian banks.

5.0 CONCLUSION AND RECOMMENDATIONS

The study examined the effect of risk management on the decision makingof Nigerian banks. Data on liquidity ratios, interest rates, foreign exchange rates and loans and advances spanning the period 2000–2016 were utilized in the study.The findings revealed that liquidity risk, interest rate risk and foreign exchange risk significantly affects the loans and advances of Nigerian banks.The study concludes that risk management influences the decision making of Nigerian banks to a very large extent. This may be as a result of the fact that most the assets of banks are risky in nature.Consequently, the study recommends based on the findings that:

(a) Nigerian banks should employ robust liquidity risk management practices that ensure sufficient liquidity including a cushion of unencumbered high quality liquid assets to withstand a range of stress events as well as those involving the loss or impairment of both secured and unsecured funding sources.

(b) In order for Nigerian banks to improve on their decision making, they should focus more on their credit risk as well as market risk such as interest and foreign exchange rates.

(c) Identifying, assessing and promoting sound risk management practices have become central elements of good supervisory practice. Nigerian banks therefore, should ensures that their risk management practices include a focus on less likely outcomes, not just the most common ones, and that they are being sufficiently compensated for the risk they are bearing. The use of stress tests and scenario analysis can assist banks to identify certain points of exposure that may arise periodically.

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APPENDIX I

Detailed Output of the Regression

Descriptive Statistics

	Mean	Std. Deviation	N
PFM	41.5029	49.26267	16
LQR	47.7583	23.1564	16
INR	63.2667	3.0211	16
FXR	43.1030	33.2651	16

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	LQR, INR, FXR[b]	.	Enter

a. Dependent Variable: DCM
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.890[a]	.860	.810	76,1943	.081	46.194	2	12	.000	2.064

a. Predictors: (Constant), LQR, INR, FXR
b. Dependent Variable: DCM

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1446.925	2	723.463	46.194	.000[b]
	Residual	54369.723	14	2589.034		
	Total	55816.648	16			

a. Dependent Variable: PFM
b. Predictors: (Constant), LQR, INR, FXR

Appendix I Cont'd

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				LQR	INR	FXR
1	1	2.907	1.000	.00	.01	.00
	2	.084	5.870	.00	.37	.13
	3	.008	18.758	1.00	.62	.86

a. Dependent Variable: PFM

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	26.9752	54.7356	41.5029	7.93157	16
Residual	-119.45558	116.10837	.00000	48.61996	16
Std. Predicted Value	-1.832	1.668	.000	1.000	16
Std. Residual	-2.348	2.282	.000	.956	16

a. Dependent Variable: PFM