

EFFECT OF CREDIT RISK MANAGEMENT ON FINANCIAL PERFORMANCE OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

This study examines the effect of credit risk management on financial performance of deposit money banks in Nigeria. The study used ex-post factor research design. The study was quantitative in nature and secondary data was adopted. The population and sample size of this study includes all the 13 Deposit Money Banks in Nigeria listed on the Nigerian Exchange Group (NGX). The study used panel data which was obtained from secondary sources. The study employed STATA version 14 software and the normality test for the residuals was carried out using Shapiro – Wilk test. Data were analysed and tested using ordinary least square regression model. The findings reveal that capital adequacy ratio and net interest margin have significant influenced on the financial performance (ROA) of listed DMBs in Nigeria. Also, non-performing loan to total deposit ratio has no significant impact on the financial performance (ROA) of listed DMBs in Nigeria. The study recommended that bank managers need to put more efforts to control the non-performing loan by critically evaluating borrowers' ability to pay back. The regulators should also strengthen its monitoring capacity in this regard.

Keywords: Credit Risk Management, Non-performing Loans, capital adequacy ratio, Return on Asset, financial performance

1. Introduction

The strength of banking sector of every country plays an important role in the economic growth and development of that country. Banks act as intermediary between investors who have a surplus and the investors who borrow these money to cover their investment needs. Mostly the performance of deposit money banks is affected by transformation of financial system, technological developments and deregulation (Muhammad et al., 2021). Such factors form the shape of performance and costs incurred by management. In every financial institution acceptable generation of revenue is the major concern also take severity of risk exposure in its consideration (Raza et al., 2021). The financial system of any economy always contributes a lot in transmitting funds from different sources into gainful investments which

can increase economic growth and decreased inequality of income in an economy. Bank contributes a lot in the growth of an economy because banks are intermediaries between those who provide funds to banks in the form of deposits and those who are in the need of funds as borrowers (Muhammad et al., 2021).

Financial Performance of banking sectors is an estimation of how better a bank can use its assets from its private instrument of business and generate profits. Financial performance can be used by the analysts to compare different firms and organizations in aggregate. A company has many stakeholders that consists of trade creditors, employees, bondholders and management. Each of them has their own interest in analysing the financial performance of any organization (Harcourt, 2019). According to Boadi et al., (2019) stakeholders get information regarding financial performance of any organization from the annual reports published by the company. Stakeholders use these reports for getting accurate and consistent information given in financial statements that provide an outline of a company's financial performance. Banks' credit creation is considered the primary means of financial intermediaries/banks making money/profit. However, there are always risks attached to it when measures are relaxed to the extent that (all and sundry) customers are granted loan facilities without necessary security measures to recover liabilities. Credit risk management is a strategy that banks worldwide have resorted to in protecting bank balance sheets and depositors' savings. Relaxed regulatory measures typically result in what is perceived as institutional governance failure or systemic market failure (Jackson & Jabbie, 2019). The process of channelling surpluses from one sector of an economy into areas considered as highly indebted is what financial intermediaries have engaged themselves with for decades since the inception of banking operations all around the world (Boateng, 2019).

In the aftermaths of global economic crisis, banks were under serious pressure to develop better credit risk management (CRM) strategies, especially as the lack of powerful CRM is one of the factors that helped trigger the recent financial crisis in Nigeria (Emerson & Edmund 2022). The supervisory bodies looking for higher capital requirements and liquidity protections, the cost of banking business is increasing globally. Credit risk remained one of the topical issues on the current financial studies that enjoyed special attention from both scholars and professionals. In fact, this debate was more pronounced immediately after the global economic crisis of 2009. A number of scholars concede that one of the key causes of severe banking trouble is motionless credit risk control, and since supply of credit is still the primary business of every bank, credit quality is regarded as a major sign of financial dependability and healthiness of banks. The interests that are charged on loans and advances from substantial component of banks' assets, as such, non-payment of loans and advances, created serious hindrance not only for borrowers and lenders but also for the whole financial system of a country. Studies of banking tragedies all over the world have exposed those poor loans (asset quality) is the key cause of bank distresses. Furthermore, Hambolu et al. (2022) lending behaviour affects borrowing firm's performance, the performance of borrowing firms itself has a significant impact on the way lenders extend loans. This paper tackles this problem by taking advantage of the natural experiment provided by a natural disaster, which allows us to single out a purely exogenous shock to firms' bank financing. Risk management is the individual effort which incorporates acknowledgement of risk, risk evaluation, developing policies to control it, and lessening of risk by means of managerial resources.

Credit risk is a risk of borrower default, which happens when the counterpart fails to pay on time. There can be many reasons for default. One of the most common ones is the obligor is in a financially stressed situation. Besides, if a borrower with high credit quality has deteriorated profile, it can also cause credit risk loss to the banks. Banks invest in debt of

those customers however, the loss from the default of the bank does not have to be great (Serwadda 2018). It depends on the percentage of recovery from obligor and total exposure of banks. A good risk management tries to avoid high exposure on risk (Serwadda 2018). Although the regulations have been evolutionarily developed, the three Basel Accords all have placed explicitly the onus on banks to adopt sound internal credit risk management practices to assess their capital adequacy requirement. Chuke and Chinedu, (2018) further assert that credit risk is one of the most common causes of bank failures and the success of their banking business depends on accurate measurement and efficient management of credit risk more than any other risks. Countries in the Europe and North America instantly felt the impact as it manifested in form of a drastic reduction in available credit and the consequential slump in aggregate demand. Nigerian Banking industries affected by economic meltdown particularly those that had large portfolio exposure to the oil and gas sectors, the capital market and through rareness of off-shore credit lines.

The Nigerian banking sector has been stressed with the dwindling value of its credit assets as a result of the huge drop in stock market indicators, worldwide oil prices, and rapid drop of the value of Naira compared with international currencies (CBN, 2019). The concern for adequate risk management in deposits money banks has been on the increase as a result of increasing activities engaged in by the banks which exposed the banks to various kind of risk such as rising on non- performing loans and the dynamism of the banking sector. Credit risk management is the core of lending in the banking industry. Many Nigerian banks had failed in the past due to inadequate risk management strategy. The possibility of yet another round of systemic failure in the Nigerian banking industry, as raised by the Nigerian Deposit Insurance Corporation, calls for quick, concerted and pre-emptive action. NDIC report (2019) revealed, that weak credit risk management is tipping the financial sectors toward a complex and difficult crisis with a similar alarm raised by the International Monetary Fund anchored on weak regulation and adverse operating conditions. The economy is falling short of growth projections, urgent extraordinary measures have to be adopted to prevent a calamity. This is despite stringent and elaborate rules, weak credit risk management cultures had rebounded in the banking system and along with ineffectual controls have presented to the regulators the possibility of bank failures. For regulators, the fear had prompted the conduction of tests and moves to stave off adversity (Nwanna, 2019).

These risks have increased, especially in recent times as banks diversify their assets in the changing market. In particular, with the globalization of financial markets over the years, the activities and operations of banks have expanded rapidly including their exposure to risks. More so, the non-performing loans of DMBs have been continuously in deteriorating part since 2012 (Chuke & Chinedu, 2018). As a result of this Assets Management Company of Nigeria (AMCON) was established in 2010 to manage the fallen assets of the DMBs in order to avoid collapse of the banking sector (NDIC Report 2018). In line with the above regulations were put in place by the Central Bank of Nigeria and other regulatory bodies. The banking sector is still overwhelmed with high credit risk in the form of non-performing loans (Central Bank of Nigeria 2019). It is estimated that, rate of non-performing loans to total deposits had its peak of 37.3% in 2009 and had a low rate of 3.0% in 2014 and has been constantly increasing at the rate of 11.4% in 2018 (NDIC Report 2019).

Managing credit has been challenging to numerous deposits money banks in Nigeria even with the best practices measures put in place by the management of these banks in managing credit risk, customers still have solid tendencies to delay or completely stop repayment of their loans and these often lead to the problems of risk management in the banking sector. Therefore, this study examined the impact of credit risk management proxies by loan to total

deposit ratio, net interest margin and capital adequacy ratio on financial performance proxy by return on asset for the period of ten (10) years from 2012 to 2021.

2. Literature Review

2.1 Conceptual Review

Concept of Credit Risk Management

Credit risk management is a set of procedures and methodologies used to identify measure, monitor and control risks arising from bank activities. Organizational risk management is a system of risk management faced by the organization comprehensively for the purpose of increasing company value (Mardina et al., 2018). Credit risk management aims to manage risks for the organization to survive, and or to optimize risk. The study of Mardina et al. (2018) Credit risk management is critical to every business, especially to banks whose stock is cash. The main profitable activity of the bank is lending money and the underlying principle of lending is risk mitigation, which goes with determining a borrower's ability and propensity to repay the loaned amount. The importance of credit risk management has become heightened in today's competitive economic world. These cannot be underemphasized as the practice of risk management minimizes financial losses to the firm. Companies often deliberately take certain risks, seeing the potential returns behind those risks. The importance of risk management has become a concept and has been given more attention from practitioners in today's competitive economic world. The study of Gadzo et al. (2021), cited that these cannot be underrated or overlooked as the practice of risk management minimizes financial losses to the firm. Banks that manage their risks have a competitive advantage.

Concept of Financial Performance

A company's financial performance forms the backbone on which a profit seeking entity would continue to exist. According to Fauzi et al. (2010), financial performance is the outcomes of management processes in relation to the goals that were set. It is the capability of the company to use its resources more efficiently and effectively so as to accomplish those goals. Furthermore, Trivedi (2010) defined financial performance as the act of performing a financial activity measured against pre-set standards of accuracy, completeness, cost, and speed. It is the degree to which financial objectives of an organization are being met or has been accomplished

Performance is the most common measure of bank profitability. Performance is measured using the following criteria: Return on Assets (ROA) is equal to net profit/total asset shows the ability of management to acquire deposits at a reasonable cost and invest them in profitable investments (Okere et al., 2018). This ratio indicates how much net income is generated per naira of assets. The higher the ROA, the more the profitable the bank is. Return on Equity (ROE) is equal to net profit/ total equity. ROE is the most important indicator of a bank's profitability and growth potential.

2.2 Empirical Review

Non-Performing Loan to Total Deposits Ratio and Financial Performance

Kajola et al. (2018) investigated the impact of credit risk management on the performance of 7 commercial banks in Nigeria for the period 2005 - 2011. A panel regression model was adopted as an estimation technique. Findings suggested that non-performing loan (a measure of credit risk) has a negative and significant effect on the performance of Nigerian commercial banks.

According to Nwanna and Oguezue (2017) investigated the impact of credit risk management on the performance of commercial banks in Nigeria. The main objective of the study was to examine the relationship between CRM and financial performance of Nigerians' commercial banks. Study employed multiple regression analysis which reveals that loans and advances and loan loss provision have positive and significant effect on bank performance, while non-performing loan has a negative and insignificant effect on performance. The study recommended that commercial banks should strengthen their credit risk management policies to gain better financial performance.

Odawo (2019) examine the impact of CRM and banks' profitability in Nigeria. The main objective of the study was to investigate CRM and banks' profitability in Nigeria. Secondary data was used. In analysing the data, a STATA software version 11 was used to compute the descriptive statics and panel data regression model was also used. The study displayed that there is a substantial correlation between bank performance (in the field of profitability) and credit risk management (in terms of loan performance). The study recommended that banks should effectively manage their credit risk for a better performance.

Capital Adequacy Ratio and Financial Performance

According to Mardiana et al. (2018) investigate the effect of CRM on Capital Adequacy Ratio (CAR) at least 8% in Indonesian banking sector. The purpose of study is to examine the relationship between CRM proxies by Capital Adequacy Ratio (CAR) at least 8%. A panel regression model was adopted as an estimation technique. Findings suggested that CAR (a measure of credit risk) has a negative and significant effect on the performance.

Gadzo et al. (2021) examined the relationship between credit risk management and banks' performance in Nigeria. Capital adequacy ratio was used as proxy of banks' performance, while non-performing loan rate, liquidity rate and loan-deposit ratio were used as proxies of credit risk management. The study employed both descriptive and panel regression analyses for ten commercial and microfinance banks between 2008 and 2017. Hausman test and Random effect model were employed. The study found direct relationships between capital adequacy ratio (banks' performance) and liquidity rate, loan-deposit ratio (credit risk management) and return on asset. It concluded that credit risk management had significant impact on banks' performance in Nigeria and that most banks under study were fairly managing their credit risks.

Agu et al. (2019) examined the effect of capital adequacy ratio on performance in a cross-country study of 12 banks from Europe, Australia and North America. The study found a significant positive relationship between capital adequacy and performance indicating that banks with higher capital ratio are more profitable than banks with fewer capital ratio.

Net Interest Margin and Financial Performance.

Catherine (2020) investigated the effect of net interest margin on the performance of Nigerian banks. Data on net interest margin and performance ratios. The analysis of this data involved descriptive, correlation and regression techniques. The result shows that net interest margin has a substantial influence on the performance of commercial banks in Nigeria. Other findings on the study showed that a rise in non-performing loans negatively affect performance and liquidity.

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2.3 Theoretical Framework

In examining the impact of CRM on financial performance of listed DMBs in Nigeria, two (2) theories are found be relevant. These are the shiftability and the anticipated income theories.

Shiftability Theory

This theory was developed by Harold G, Moulton in 1915. This theory states that, for an asset to be perfectly shiftable, it must be directly transferable without any capital loss when there is a need for liquidity. This is specifically used for short term market investments, like treasury bills and bills of exchange which can be directly sold whenever there is a need to raise funds by banks. But in general circumstances when all banks require liquidity, the shiftability theory need all banks to acquire such assets which can be shifted on to the central bank which is the lender of the last resort. This theory maintains that banks could effectively protect themselves against massive deposit withdrawals by holding, as a form of liquidity reserve, credit instruments for which there existed a ready secondary market. Included in this liquidity reserve were commercial paper, prime bankers acceptances and, most importantly as it turned out, treasury bills. Under normal conditions all these instruments met the tests of marketability because of their short terms to maturity. The shiftability theory will be important to this study because it has some positive elements of truth. Now banks obtain sound assets which can be shifted on to other banks. Shares and debentures of large enterprises are welcomed as liquid assets accompanied by treasury bills and bills of exchange. This has motivated term lending by banks.

Anticipated Income Theory

Anticipated Income Theory was developed in 1945 by H. V. Prochnow. According to this theory bankers began to look at their loan portfolio as a source of liquidity. The anticipated income theory encouraged bankers to treat long-term loans as potential sources of liquidity. How can a banker consider a mortgage loan as a source of liquidity when, typically, it has such a long maturity? Using the anticipated income theory, these loans are typically paid off by the borrower in a series of instalments. Viewed in this way, the bank's loan portfolio provides the bank with continuous flow of funds that adds to the bank's liquidity. Moreover, even though the loans are long term, in a liquidity crisis the bank can sell the loans to obtain needed cash in secondary markets.

3. Method

To examine the credit risks management and financial performance of DMBs, the study employed the ex-post factor research design. The population of this study comprises all the 13

DMBs listed on the Nigerian Exchange Group as at 31st December, 2021. The data was extracted from the annual reports and accounts of deposit money banks for the period 2011-2021. Data collected was analysed using regression model with the help of STATA software version 15. The research design is justified base on the nature of the data collected and the analysis carried out on it.

Table 1: Variable Definitions and Measurements

VARIABLES	Acronyms	MEASUREMENTS	SOURCE
Return on Asset	ROA	Profit after tax/ Total assets	Abubakar et al (2018); Kajola et al (2018)
Nonperforming Loan to Total Deposit	NPLD	Nonperforming Loan to Total Deposit/Total Loan Asset	Gadzo et al. (2021)
Net Interest Margin	NIM	Net Income minus interest expenses divided average earnings multiply by 100	Gadzo et al. (2021)
Capital adequacy ratio	CAR	Capital base (tier I + tier II)/Risk weighted Asset	Abubakar et al (2018); Kajola et al (2018)
Firm size	FSIZE	Natural logarithm of total asset	Egbuhuzor and Wokeh (2022)

Source: Author Compilation, 2023

Model Specification

To examine the effect of credit risk management and financial performance of listed deposit money banks, the following model from the study of Emerso and Edmund (2022) was adopted:

$$ROA = f(NPLD, NIM, CAR, FSIZE) \dots \dots \dots (1)$$

Where;

ROA: Return on Assets

NPLD: Non-Performing Loan to Deposits

NIM: Net Interest Margin

CAR: Capital Adequacy Ratio

FSIZE: Firm size

$$ROA_{it} = \beta_0 + \beta_1 NPLD_{it} + \beta_2 CAR_{it} + \beta_3 NIM_{it} + \beta_4 FSIZE_{it} + e_{it} \dots \dots \dots 2$$

Where;

β_0 = Constant parameter/Intercept

$\beta_1 - \beta_3$ = Coefficients of independent variables

e = Error term

The model is postulated to examine the effect of credit risk management on financial performance. Therefore, the coefficients β_1 to β_3 in the model are the independent variables. They are expected to be positive and significantly associated with financial performance.

4. Result and Discussions

This section presents the results of the analysis conducted on the data collected from the annual report and accounts of Nigerian listed deposit money banks. Correlation and regression results are presented in the subsequent sub sections.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
ROA	156	0.0269	0.0488	0.0004	0.5850
NIM	156	0.5913	0.1751	0.0000	1.0714
CAR	156	0.1980	0.0713	0.1000	0.7400
NPLD	156	0.0514	0.1089	0.0502	1.7397
FS	156	12.1703	0.4693	10.4883	13.0694

Note: ROA: Return on asset, NIM: Net interest margin, CAR: Capital adequacy ratio NPLDR: Non-performing loan to total deposit ratio.

Table 2 summarizes the key descriptive attributes of the data extracted from annual reports of sampled banks. Reflects the descriptive statistics of 156 observations. The results indicate that the mean of Return on asset (ROA) is 2.69% with a minimum of 0.04% and a maximum of 58.5%, and a standard deviation of 0.0488 or 4.88%. This suggests that on the average, the selected banks make a return of 2.69% on their total assets, but this increases to a maximum of 58.5% and as low as 0.04%. It clearly suggests that the sampled banks are not performing well.

The NIM has an average of 0.5913 or 59.13% with a minimum of 0.0000 or 0.00%, a maximum of 1.0714 or 107.13%, and a standard deviation of 0.1751 or 17.51%. This implies that the sampled banks on average makes a return on their credit asset of 59.13% on the total interest income, but this increase to 107.13% and as low as 0.00%.

The non-performing loan to total deposit ratio (NPLDR) has a mean of 5.14% with a minimum of 5.02% and a maximum figure of 173.97%, and a standard deviation of 0.1089 or 10.89%. This implies that on the average 5.14% of the total loans and advances granted by banks to customers was bad, while some banks have as low as 5.02%, others have bad debt as high as 173.97%. This means that many of the banks did not adopt an aggressive deposit mobilization to increase credit availability as the margin between the maximum and the average in the industry was very high.

The capital adequacy ratio (CAR) has an average of 19.8% (more than the CBN's minimum figure for national banks of 10%, and also more than that of international bank of 15%). CAR also has a minimum of 10.00% and a maximum of 74.0%, and a standard deviation of 0.071 or 7.1%. This is also means that the deviation from the mean is very high which is at variance with the Central Bank of Nigeria regulation. An indication that the banks have marginal ability to bear losses. The control variable which is Firm Size (FS) has a mean value of 12.1703, a minimum value of 10.4883 and maximum value of 13.0694.

Correlation Results

The correlation between the dependent and independent variables are presented in Table 3. The correlation matrix shows the relationship between the variables in the regression model; the relationship between the explanatory variables with the explained variable.

Table 3: Correlation Matrix

	ROA	NPLD	CAR	NIM	FS	VIF
ROA	1.0000					
NLTD	- 0.0291	1				1.05
CAR	0.5278	0.1402	1			1.67
NIM	0.444	0.2128	0.5693	1		1.59
FS	-0.0464	-0.0415	-0.1017	- 0.1284	1	1.02

Table 3: shows the correlation coefficients on the relationship between the dependent variable (ROA) and independent variables (non-performing loan to total deposit, capital adequacy ratio, net interest margin and firm size). ROA is negatively related with NLTD and FS the value of the correlation coefficient is negative, the sign indicates the direction of the relationship (positive or negative), the absolute values of the correlation coefficient indicate the strength, with larger values indicating stronger relationships. The correlation coefficient on the main diagonal is 1.0, because each variable has a perfect positive linear relationship with itself. As shown in Table 3, the correlation coefficient for NLTD and FS is -0.0291 and -0.0464 respectively which show a weak negative relationship.

Regression Results

This section presents results of the analysis conducted on the data collected from the annual reports and accounts of DMBs in Nigeria and the diagnostic checks are presented in the following sub-sections.

Diagnostic Tests Results

The diagnostic test was conducted in order to improve the validity of all statistical inferences for the study. The tests include Breusch-Pagan/Cook-Weisberg test for heteroskedasticity and the normality test. These are discussed below.

Heteroskedasticity

From the heteroskedasticity test on the model, the result of the test reveals that there is no presence of heteroskedasticity in the model because the probability of the chi square is 0.9726. This signifies absence of heteroscedasticity and existence of homoscedasticity, which is the ideal condition of the test. In the homoskedastic model, it is assumed that the variance of the error term is constant for the values of independent variable.

Multicollinearity test

Multicollinearity test result shows that the variance inflation factor (VIF) is less than 5 and tolerance value is less than 1, which indicate absence of multicollinearity. The rule of thumb states that there is evidence of collinearity if the tolerance value is greater than 1 or if the largest VIF is greater than 5 (Hair et al., 2010).

Normality Test of Residuals

An assessment of the normality of data is a prerequisite for many statistical tests because normal data is an underlying assumption in parametric test (Hair et al., 2010). Hence, validity of the results is determined by the normally distributed data. Besides, data normality is

assessed in two ways, namely: graphical method and numerical method. In this study, a non-graphical test was carried-out, which is the Shapiro-wilk test (i.e. swilk test) for normality. Table 3 shows the results of panel regression analysis for non-performing loan to total deposit ratio, capital adequacy ratio, net interest margin, firm size and ROA. The Hausman specification test indicates that Fixed Effect (FE) model is preferred to its Random Effects (RE) counterpart. This follows the rejection of null hypothesis, as a result of significant chi-square value at 0.05 (significance) levels. Therefore, FE model is reported in this analysis.

Table 4. Results of OLS, Fixed and Random Effects

Variables	Fixed Effect			Random Effect			Pool OLS		
	Coef.	t-value	P-value	Coef.	t-value	P-value	Coef.	t-value	P-value
CONS	0.775	0.36	0.722	0.760	0.55	0.579	0.761	0.56	0.574
NLTD	-0.910	-1.81	0.072	-0.863	-1.86	0.062	-0.861	-1.86	0.065
CAR	0.238	3.45	0.001	0.224	3.66	0	0.224	3.66	0
NIM	0.140	1.97	0.051	0.155	2.26	0.024	0.156	2.27	0.024
FS	0.048	0.27	0.786	0.054	0.5	0.617	0.054	0.51	0.613
R-square		0.3915			0.392			0.3919	
Adj								0.3717	
prob. F-St		0.0000			0.0000			0.0000	
Obs		156			156			156	

Table 4 presents the regression result and conclusion was arrived at after considering the result of the robust regression estimations. The results show that capital adequacy ratio has a significant and positive impact on ROA at 0.05 significant levels with p-value of 0.001 and net interest margin has a significant positive impact on ROA at 0.10 significant levels with p-value of 0.051 while non-performing loan to total deposit ratio has negative but significant impact on ROA at 0.10 significant levels with p-value of 0.072 and firm size which is the control variable has positive but insignificant impact on ROA of the DMBs in Nigeria. The R2 showed that the model explained 39.15 % of variance in ROA and it was found to be fit as the F-statistic was also significant at 5% level of significance and the remaining 60.85% was explained by other factors which was not captured by this model.

5. Conclusion

The study is on the impact of credit risk management and financial performance of listed DMBs in Nigeria. The study concludes that capital adequacy ratio and net interest margin have significant influenced on the financial performance (ROA) of DMBs in Nigeria. Also, non-performing loan to total deposit ratio has no significant impact on the financial performance (ROA) of DMBs in Nigeria. The study recommended that, Deposit money banks should effectively manage, monitor and improve their credit risk management strategies. Since it was concluded credit risk management has major impact on the financial performance in Nigeria.

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