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Efficacy of Credit Risk Management on the Performance of Banks in Nigeria A Study of Union Bank PLC (2006-2010)

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I. Introduction

Adequately managing credit risk in financial institutions is critical for the survival and growth of the Financial Institutions. In the case of banks, the issue of credit risk is of even of greater concern because of the higher level of perceived risks resulting from some of the characteristics of clients and business conditions that they find themselves in. According to Dwayne (2004) banks originates for the main purpose of providing a safe storage of customer's cash. He argued that since this money received from the customers was always available to the bank, they later put it to use by investing in assets that are profit earning. Thus, the practice of advancing credits. Banks are in the business of safeguarding money and other valuables for their clients. They also provide loans, credit and payment services such as checking accounts, money orders and cashier's checks.

Banks also may offer investment and insurance products and a wide whole range of other financial services (in accordance with the 1999. Financial Services Modernization Act by the US congress) which they were once prohibited from selling (by the Glass-Steagall or Banking Act of 1933 in the USA).

According to Ayo (2002), in modern economy, there is distinction between the surplus unit and the deficit unit in economy and inconsequence a separation of the saving investment mechanism. This has necessitated the existence of Financial Institutions whose job includes the transfer of finds from savers to investors. One of such institution is the money deposits banks, the intermediating roles of the money-deposit banks places them in a position of "trustee" of the saving of the widely dispersed surplus economic units as well as the determinant of the rate and the shape of economic development. The techniques employed by banks in this intermediary function should provide them with perfect knowledge of the outcomes of lending such that funds will be allocated to investments in which the probability of full payment is certain.

But unarguably, financial institutions have faced difficulties over the years for a multitude of reasons, the major cause of serious banking problems continues to be directly related to lax credit standards for borrowers and counter parties, poor portfolio risk management, or a lack of attention to changes in economic or other circumstances that can lead to a deterioration in the credit standing of a bank's counter parties. This experience is common in both G-10 and non G-10 countries. Credit risk is one of great concern to most authorities and banking regulators. This is because credit risk is those risks that can easily and most likely prompts bank failure.

Therefore, credit risk management needs to be a robust process that enables Financial Institutions to proactively manage facility portfolios in order to minimize losses and earn an acceptable level of return for shareholders Dandago (2006).

Credit risk management is a structured approach to managing uncertainties through risk assessment, developing strategies to manage it, and mitigation of risk using managerial resources (Nnanna, 2004). The strategies include transferring to another party, avoiding the risk, reducing the consequences of a particular risk. The objective of risk management is to reduce the effects of different kinds of risks.

a) Statement of the Problem

The advent of the Financial Services Modernization Act of 1999 was embraced with a lot of excitement by all in the banking sector. The present possibility for banks to diversify into broader range of

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services and products make life really cool for banking entrepreneurs and managers. But this diversification advantage is a once in a life opportunity that should be consumed with some cautions and prudence as this involves a great deal of risk.

The very nature of the banking business is so sensitive because more than 85% of their liability is deposits from depositors (Saunders, Cornett, 2005). Banks use these deposits to generate credit for their borrowers, which in fact is a revenue generating activity for most banks. This credit creation process exposes the banks to high default risk which might lead to financial distress including bankruptcy.

Starting from 1990, the Nigeria financial system has utilized various reforms such as: the Universal Banking 1992; Bank Consolidation Reserve 2005; Bank Credit Reforms; Interest Rate Reforms and so on.

In spite of all those measures, the CBN has found some banks to be distressed in poor credit risk management which explains a high level of non-performing loans in most Nigeria commercial banks. The pervasive incidence of non-performing loan is one of the prime causes of failure in the banking system.

The CBN last three years released the lists of debtors some of those loans are uncollateralized and run into billions of naira. The internal exams to ascertain if loans are will collateralized and self-liquidating could not be held accountable. Although the recent CBN audit uncovered those large non-performing loans, these should have been flagged by previous audit report if adequate checking were made.

Another serious problem is the customer's default in repayment of credits which causes a reduction in the bank's earnings for the period. Hence, this in turn reduces the amount of credits which the bank can grant to prospective loan applicants. All the same, beside other services, bank must create credit for their clients to make money, grow and survive stiff competition at the market place.

The principle concern of this project is to ascertain to what extent bank can manage their credit risk, tools or techniques are at their deposit and to what extent their performance can be augmented by proper credit risk management policies and strategies.

b) Objectives of the Study

The main objective of the study is to examine credit risk management on the performance of banks in Nigeria. More specifically, the study aimed at achieving the following objectives:

1. To determine if credit risk have effect on the profitability of Union Bank plc and to what extent.
2. To examine the relationship between interest income and bad debt of Union Bank plc.

c) Research Hypotheses

1. Ho: Higher loan losses does not have negative significant effect on the profitability of Union Bank plc (ROE, ROA).
2. Ho: There is no significant relationship between higher interest income and lower bad loans in Union Bank plc (NPL).

d) Significance of the Study

The significance of this study is that, it will enable banker to appreciate the appraisal of their lending and control mechanism now that they are expected to lend under tight monetary conditions. In essence, finding from the study will assist management and regulatory authorities in ensuring a safe banking since development of country's economy is tired to performance of financial institutions of such country.

This work will in no doubt will add and contributed to the already similar literature in abound. It will help researcher who will work further on this problem to afford him with material and act as a searchlight for those who are interest to duel on it for practical application.

e) Scope of The Study

The study will be conducted on Union Bank plc, being specifically targeted and it covers period of five (5) years from 2006-2010. Therefore, most references sorted through secondary data are related to Union Bank of Nigeria plc.

II. Conceptual Frame Work

One of the most important and profitable business of commercial banks is lending or rather advancing credits to boost economic activities. Bank optimizes utilization of deposits by deploying funds for developmental activities and productive purposes through credit creation process Dandago (2009). Deposit mobilization and Credit deployment constitute the core of banking activities and substantial portion of expenditure and income are associated with them. According to Dwayne (1961) banks originates for the main purpose of providing a safe storage of customer's cash. He argued that since this money received from the customers was always available to the bank, they later put it to use by investing in assets that are profit earning. Thus, the practice of advancing credits. Banks has grown from being a financial intermediary, in the past, to a risk intermediary, at present. In credit, risks are co-related and exposure to one risk may lead to another having deeper ramification and hence, the real mantra for prudent banking lies in successfully managing the risks in an integrated and pro-active manner to optimize the exposure already taken or to be assumed by the bank. Adherence to standards of quick decision and providing adequate and need based financial assistance on attractive but safe terms, without losing the sight of the associated risks involved therein, appears to be a difficult proposition. There is an implicit understanding on the part of the planners that in the post nationalization era, banks will meet what is called

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social obligations through directed lending Mandel (1974). Pitcher (1970) stressed that it is very much essential to conduct credit investigation before taking up a proposal for consideration. This preliminary study should lead to valuable information on borrower's integrity, honesty, reliability, credit worthiness, management competency, expertise, associate concern, guarantor, etc. A due diligence report shall invariably accompany the credit proposal evaluation. Banks have to strictly adhere to the KYC (Know Your Customer) norms to ensure bonafide identification of borrows and should also follow the prescribed Fair Practice Code on Lenders Liability, by evolving their own best practices to be followed by the field functionaries, so as to avoid complaints from customer at a later date Raghavan (2005).Whenever those cautions above are not observed, is always obvious that banks record a high rate of debts annually, delay in repayment of borrowed fund from bank and experience high operational cost. From the record and researches kept, Adewumni (2005) calculate bank fraud in Nigeria to be #200million annually out of which #40million were successfully carried out.

These problems have frustrated most bank's effort to encourage growth through lending. Failure of some of the banks has placed the entire system under great distress resulting to default transactions.

Thus, the 1990's can be rightly characterized as a period of upheaval for the banking industry. With the directive issued to commercial banks by the CBN in July 2004 of the 25 million minimum capital base, it is obvious that a lot of bank were not able to meet up the directive issued out. Hence banks were gone to either liquidation or marginalization by December which was the deadline (Oseyameh, 1986).Apart from the aforementioned above reason that constituted a stumbling block on the effective performance of the credits of commercial banks, it has also been recognized through studies that the numerous government controls have contributed to these problems.

The main objective of CBN's various control measures over the commercial banking system is the promotion of the efficiency of the system. There is therefore no doubt that governments all over the world have at one time or the other tried to intervene to correct the imperfection of the banks and ensure that credit allocations are in line with national priorities but sometimes these might not appear helpful to the problem of risk exposure faced by the banks (Chazen, 1985).

a) Credit Risk

As observed by RBI (2005), Credit Risk is the major component of risk management system and this should receive special attention of the Top Management of a bank. Credit risk is the important dimension of various risks inherent in a credit proposal, as it involves default of the principal itself.

According to Raghavan (2005) Credit risk consists of primarily two components, viz. Quantity of risk, which is nothing but the outstanding loan balance as on the date of default and the Quality of risk, which is the severity of loss defined by Probability of Default as reduced by the recoveries that could be made in the event of default. Thus credit risk is a combined outcome of Default Risk and Exposure Risk. The elements of Credit Risk are Portfolio risk comprising Concentration Risk as well as Intrinsic Risk and Transaction Risk comprising migration/down gradation risk as well as Default Risk. At the transaction level, credit ratings are useful measures of evaluating credit risk that is prevalent across the entire organization where treasury and credit functions are handled.

b) Bank Credits/Credit Facilities

Traditionally, bank lending could in broad term be categorized into two: overdraft and loan but according to Osayemeh (1981) he described credit facilities as the types of loans portfolio that are available to customers in the banking industry especially in commercial banks. He further classified these credit facilities into four major categories; Short term credit, Medium term credit, Long term credit, Secured and unsecured credits.

i. *Short Term Credit*

This type of credit facility is due for repayment after one year. It is used to meet working capital requirement i.e expansion of current business operation. Examples are: Commercial credits, Overdraft, and Demand/call credit.

ii. *Medium Term Credit*

Osayemeh (1986) described medium term credit as bank credit whose maturity is over one year, but not more than five years. It is required to finance or acquire capital assets which yield a commensurate return within the credit period. Examples are: Consumption credit and Letter of Credit.

iii. *Long Term Credit*

According to Onouha (2007), this is a credit facility that is used to finance the expansion of fixed assets. It is usually a large sum of money which is due for repayment after five years of grant. Examples are; Industrial Credit, Equipment leasing credit, Stock replacement credit.

iv. *Secured and Unsecured Credits*

Banks grant credits against the securities of tangible pledges by the borrower in favour of the lending bank. The assets so pledge are known as collateral securities'. Therefore credits granted with respect to provision of such collateral securities are known as' SECURED CREDITS.' On the other hand, 'UNSECURED

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CREDITS' are those credits granted to customers without any requirement of collateral securities.

In addition to these Ajayi (1997) submits that at the long-run, these credit classifications would be in two categories i.e performing loans and Non-performing loans. He described performing loans as those loans/credits that are well serviced by the customers as at when due i.e they do not default in loan repayment. Graham (2007) described non-performing loans as those loans/credits that are not well serviced by the customers as at when due i.e they delay/default in loan repayment. He identified the types of such non-performing loans as follows; Doubtful Debts, Bad Debts and Loss.

c) Factors Responsible for Credit Risk

According to Taxxman, (2006) some of the important factors which cause credit risk and have adverse impact on credit quality highlighted in various studies conducted by expert communities/groups are: Deficiencies in appraisal of loan proposals and in the assessment of credit worthiness of financial strength of borrowers, Inadequately defined lending policies and procedures High prudential exposure limits for individuals and group of borrowers, Absence of credit concentration limits for various industries/business segments, Inadequate values of collaterals obtained by the banks to secure the loan facilities, Liberal loan sanctioning powers for bank executives without checks and balance, Lack of knowledge and skills of officials processing loan proposals, Lack of information on functioning of various industries and performance of economy, Lack of proper coordination between various departments of banks looking into credit functions, Lack of well defined organizational structure and clarity with respect to responsibilities, authorities and communication channels, Lack of proper system of credit risk rating, quantifying and managing across geographical and product lines, Lack of reliability of data being used for managing credit and risks associated with lending.

d) Credit Risk Management Strategies

Graham 1997 stated "it is quite obvious that greater percentage of most banks earning come from the interest earned from loans and advances (credits) granted to customers. Banks should therefore employ policies and strategies that would ensure effective management of banks loan portfolio. Graham therefore suggested the following strategies.

i. *Policy Strategy*

Banks and other financial institutions should endeavour to have a credit policy manual which should be updated regularly to meet the changing business environment. Such credit manuals should provide rules and regulations guiding the important aspect of work being performed within their credit department. The reason for the manual is to understand and recognize important issues and to ensure consistent thinking and action on these issues by people inside the department. One of the fundamental things to remember is that the work being done by the credit department affects many people and departments within the organization. Because of this, it is therefore vital that the manual be agreement of written off after mutual agreement of policies from the management, sales and other departments have been affected.

Graham suggested that the credit manual policy should be details; guidelines give in respect of the following:

Documentation required; department of credit analysis and format to be used; statutory requirements; approval process; credit procedure; Communication channels between headquarter, the branches and customers; Penalties for defaulters, e.t.c .

e) Risk Based Audit System

Risk-based internal audit system (RBI) has advised banks to put in place system which should play an important role in bringing effectiveness in credit risk management and control system as also to help in ensuring regulatory compliances by providing high quality counsel to bank's management. The banks internal audit systems have been concentrating on transaction testing, ensuring accuracy and reliability of accounting records and timely submission of control returns.

According to Taxxman, (2006) for effectiveness of risk-based credit audit, it is suggested that banks should formulate risk based audit policy and establish a proper set-up clearly indicating their role/responsibilities' and communication channels between risk-based internal audit staff and to management which encourages reporting of negative and sensitive findings so that it help in initiating corrective actions to remedy the ills. Banks should consider merging credit inspection and auditing functions to avoid duplicity.

f) Managing Credit Risk Using Ratios

An analysis of the financial statement of the customer is always helpful, financial statement constitute an important source of information for appraising the financial health of a business venture. For purpose of compassion, the audited figures are expressed as ratios computed from audited figures of two consolidated years immediately preceding the request for loan will help to determine the credit worthiness of the customer and his ability to repay the loan. In short the ratio helps the banker to assess the degree of risk being taken-emphasis being placed on earning capacity and operating efficiency (Dandago 2010).

Mather (1979) grouped financial ratios into five categories are as follows:-

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Liquidity ratio, Leverage ratios, Efficiency ratios, Profitability ratios and Equity related ratios.

i. *Liquidity Ratios*

This is a measure of short term solvency. It indicates the extent to which claims of the creditors are covered by assets that are expected to be converted to cash in a period roughly equal to the maturity of the claims. The two commonly used liquidity ratios are the current ratio and the quick ratio.

$$\text{Current ratio} = \frac{\text{Total current Asset}}{\text{Total current liability}}$$

$$\text{Quick Ratio} = \frac{\text{Total liquid Asset}}{\text{Total current liability}}$$

Some creditors argue that under adverse conditions, stocks may not have sufficient liquidity. Therefore the quick ratio is a modified version of the current ratio which measures the firm's ability to pay off current liabilities without relying on the sale of stock. Obviously an important factor to watch closely here is the underlying quality of the debtors.

ii. *Leverage Ratios*

The debt/equity ratio is the most important of the leverage ratios. It measures total claim on a business of all forms of creditors in relation to owners equity.

$$\text{Debt/Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Network (shareholders equity)}}$$

All other debt ratios are complementary to this one and are designed to measure the appropriateness of the capital structure.

iii. *Efficiency Ratios*

As indicators of managerial efficiency in the use of the firm's assets, efficiency ratios are very useful in judging the performance of the firm. They help in explaining any improvement or decline in the solvency of a business and may also help to explain underlying changes in profitability. Some of the ratio includes:

A. Average period of credit taken $= \frac{\text{Average creditors X 52 weeks}}{\text{Purchase} \quad 1}$

B. Average period of credit granted $= \frac{\text{Average debtors x 52 weeks}}{\text{Sales} \quad 1}$

C. Fixed asset turnover $= \frac{\text{Net Sale}}{\text{Assets}}$

D. Stock Turnover $= \frac{\text{Net sales}}{\text{Stock}}$

iv. *Profitablity Ratio*

The profitability ratios are important to the banker, the creditors and the shareholders of a business. This is because if sufficient profits are not made, it would be difficult to meet operating expenses, pay interest charges or loans and pay dividend to shareholders. Profitability ratios include:

A. Gross profit margin $= \frac{\text{Gross profit x 100}}{\text{Assets} \quad 1}$

B. Return on Total Assets $= \frac{\text{Net profit x 100}}{\text{Sales} \quad 1}$

C. Net profit Margin $= \frac{\text{Net Profit}}{\text{Sales}} \times \frac{100}{1}$

D. Return on equity $= \frac{\text{Net profit after tax}}{\text{Equity}}$

v. *Equity Ratio*

These measure the values and earning of the firms common stock. They include

A. Dividend yield $= \frac{\text{Dividend paid}}{\text{Market Price}}$

B. Price Earning Ratio $= \frac{\text{Market Price}}{\text{Earnings}}$

g) Credit Risk Models

Credit scoring models use data on observed borrower characteristics either to calculate the probability of default or to borrowers into different default risk classes (Saunders and Cornett, 2007). Prominent amongst the credit scoring models are as follow:

i. *Altman's Z-Score*

The Z-score formula for predicting Bankruptcy of Dr. Edward Altman (1968) is a multivariate formula for measurement of the financial health of a company and a powerful diagnostic tool that forecast the probability of a company entering bankruptcy within a two year period with a proven accuracy of 75-80%.

The Altman's credit scoring model takes the following form;

$$Z = 1.2X21 + 1.4X2 + 3.3X3 + 0.6X4 + 1.0X5 \qquad (1)$$

Where, X1 = Working capital/ Total assets ratio

X2 = Retained earnings/ Total assets ratio

X3 = Earnings before interest and taxes/ Total assets ratio

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X4 = Market value of equity/ Book value of long-term debt ratio

X5 = Sales/ Total assets ratio.

The higher the value of Z, the lower the borrower's default risk classification. According to Altman's credit scoring model, any firm with a Z-Score less than 1.81 should be considered a high default risk, between 1.81-2.99 an indeterminate default risk, and greater than 2.99 a low default risk.

a. *Critics*

Use of this model is criticized for discriminating only among three borrower behavior; high, indeterminate, and low default risk. Secondly, that there is no obvious economic reason to expect that the weights in the Z-Score model – or, more generally, the weights in any credit-scoring model- will be constant over any but very short periods. Thirdly the problem is that these models ignore important, hard to quantify factors (such as macroeconomic factors) that may play a crucial role in the default or no-default decision.

ii. *Kmv Credit Monitor Model4*

In recent years, following the pioneering work on options by Merton, Black, and Scholes, we now recognize that when a firm raises funds either by issuing bonds or by increasing bank loans, it holds a very valuable default or repayment option (Black and Scholes, 1973) and (Merton, 1974). The KMV Model is a credit monitor model that helps to solve the lending problems of banks and further look at the repayment incentive problem (Gilbert, 2004). To try resolving the problems, the KMV Model uses the structural relationship between the **volatility of a firm's asset** and the **volatility of the firm's equity.**

The KMV Corporation (purchased by Moody's in 2002) has turned this relatively simple idea into a credit-monitoring model now used by most of the large US banks to determine the Expected Default Frequency (EDF) that is the probability of default of large corporations (KMV Corporation, 1994).

The expected default frequency that is calculated reflects the probability that the market value of the firm's assets will fall below the promised repayments on debt liabilities in one year. If the value of a firm's assets falls below its debt liabilities, it can be viewed as being economically insolvent. Simulations by the KMV have shown that this model outperforms both accounting-based models and S&P ratings (Saunders and Cornett, 2007). The relevant net worth of a firm is therefore.

The market value of the firm's assets minus the firm's default point. (1)

Net worth= (Market Value of Assets) - (Default Point) (2)

A firm will default when its market net worth reaches zero.

$$\text{Distant to Default} = \frac{(\text{Market Value of Assets})\ (\text{Asset Volatility})}{(\text{Market Value of Assets})\ (\text{Default Point})} \quad (3)$$

(Source: Moody's KMV; Modeling Default Risk, 18th December 2003.)

The KMV's empirical EDF is an overall statistics that can be calculated for every possible distance to default (DD) using data either aggregated or segmented by industry or region. To find the EDF for any particular firm at any point in time, one must look at the firm's EDF as implied by its calculated DD. As a firm's DD fluctuates, so do its EDF.

For firm's that are actively traded, it would be possible in theory to update the EDF every few minutes (Gilbert, 2004).

a. *Critics*

The KMV EDF Model has been criticized on the basis that they are not true probabilities of default. This is reflected in the poor results obtained using KMV empirical EDFs in order to replicate risky bond prices (Kao, Eom et al, 2000).

iii. *Risk-Adjusted Return on Capital (Raroc) Model*

An increasingly popular model used to evaluate the return on a loan to a large customer is the **R**isk-**A**djusted **R**eturn on **C**apital **(RAROC)** Model. This model, originally pioneered by Bankers Trust (acquired by Deutsche Bank in 1998) is now adopted by virtually all the large banks in Europe and the US, although with some differences among them (Saunders and Cornett, 2007). The essential idea behind RAROC is that rather than evaluating the actual promised annual cash flow on a loan as a percentage of the amount lent or (ROA), the lenders balance the loan's expected income against the loan's expected risk.

The RAROC Model is basically represented by,

RAROC = (one year net income on loan)/ (Risk adjusted assets) (4)

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For denominator of RAROC, duration approach can be used to estimate worst case loss in value of the loan:

$$DLn = -DLnx\ Ln\ x\ (DR/\ (1+R) \quad (5)$$

Where, DR is an estimate of the worst change in credit risk premiums for the loan class over the past year.

Ln= Loan

DLn= Change in loan class

R=Interest Rate

According to James (1996), the immediate purpose of the RAROC risk measurement systems is to provide bank managements with a more reliable way to determine the amount of capital necessary to support each of their major activities and, thus, to determine the overall leverage for the bank as a whole. The RAROC system provide a uniform measure of performance and management can, in turn use this measure to evaluate performance for capital budgeting and as an input to the compensation system used for senior managers.

iv. *Value at Risk (Var)*

This is a technique used to estimate the probability of portfolio losses based on the statistical analysis of historical price trends and volatilities.

Value at risk is commonly used by banks, security firms and companies that are involved in trading energy and other commodities. VAR is able to measure risk while it happens and is an important consideration when firms make trading or hedging decision (Simon and Robert, 2001).

Some people have described VAR as the **"new science of risk management"**, but one do not need to be a scientist to use VAR. Here, are the idea behind VAR and the three basic methods of calculating it. Basically, VAR is represented by;

$$VAR = (\text{naira value of position})(\text{price sensitivity})(\text{potential adverse move in price/yield}) \quad (5)$$

For financial institutions, risk is about the odds of losing money given out as loans, and VAR is based on that common-sense fact. By assuming financial institutions care about the odds of a really big loss on loans, VAR answers the question, **"What is my worst case scenario?"** or **"How much could I lose in a really bad month?"**

To be more specific, a VAR statistic has three components: a time period, a confidence level and a loss amount (or loss percentage). Some examples of variations of the questions that VAR answers are:

- What is the most I can - with a 95% or 99% level of confidence - expect to lose in default on loan repayment over the next month?
- What is the maximum percentage I can - with 95% or 99% confidence - expect to lose over the next year?

We can see how the "VAR question" has three elements: a relatively high level of confidence (typically either 95% or 99%), a time period (a day, a month or a year) and an estimate of lose on loan default (expressed either in naira or percentage terms) (Harper, 2008).

III. Methodology

The research work employed non-experimental design. Secondary sources of dates are used in which bank prospectus, annual reports and accounts, central bank of Nigeria bulletin on prudential guidelines are the major components. The study population of the twenty-one (21) commercial banks in Nigeria. The sample size is union bank in which judgmental or purposive sample technique was used to select the bank. Linear graph will be used to give a clear graphical relationship between credit risk and bank performance. Simple linear regression and Pearson coefficient for correlation method are used to test the nature of the relationship and the strength of such relationship as its partially affected by other factor.

IV. Data Presentation and Analysis

The objective of this chapter is to present, analyze and interpret the data collected for the purpose of this study. The data covers the information collected from secondary sources (i.e annual reports and accounts). Regression analysis is used to anayse and presents the findings for easy understanding.

a) Data Presentation

Table 1 : Total loans & advances and total assets

Year	TLA	TA
2006	45835	214885
2007	61962	275194
2008	70959	329584
2009	97643	367798
2010	95356	398271

Source : Annual reports and accounts of union banks plc (2006 -2010).

Table 2 : Non-performing loans, Performing and loans provisions

Year	NPL	PL	LP
2006	10254	35581	8910
2007	15804	46158	16476
2008	18262	52697	16399
2009	22730	74913	19305
2010	18588	76768	16672

Source : Annual reports and accounts of union bank plc (2006 -2010).

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Table 3 : Profit, Income and Capital

Year	(PAT)	SHARE EQ	NET INT.	TOTAL INCOME	CORE CAPIT.
2006	5035	5588	27282	35394	1 2,293
2007	4726	21398	25602	31846	28,809
2008	6600	21692	29003	34712	3 1,237
2009	7750	23414	33474	39185	34,492
2010	9375	25566	38311	44791	37,636

Source : Annual reports and accounts of union bank plc (2006-2010).

1. Capital Adequacy
   - Non-Performing Loans/Capital — NPL/C
2. Asset Quality Standards
   - Non- Performing Loans/Total Loans — NPL/TL (credit risk)
   - Loans Provisions/Non-Performing Loans — LP/NPL
   - Loans Provisions/Total Loans — LP/TL
   - Total Loan/Total Assets — TP/TA
3. Profitability Standards
   - Net Profits/ Average Shareholders' Equity — ROE
   - Net Profits/Average Total Assets — ROA
   - Net Interest/Total Income — NI/TI
   - Net Interest/Total Asset — NI/TA

Table 4 : Calculation of credit risk and Union Bank performance in percentage. (2006-2010)

Year	ROE	ROA	NPL/TL	TL/TA	NI/TA	NI/TI	NPL/C
2006	90.10	2.34	22.37	21.33	12.69	77.08	83.41
2007	22.08	1.71	25.50	22.51	9.30	80.39	54.46
2008	30.42	2.00	25.73	21.52	8.79	83.55	58.46
2009	33.09	2.10	23.27	26.54	9.10	85.42	65.89
2010	36.66	2.35	19.49	23.94	9.61	85.53	49.12

Source : Researcher's computation of ratio on Union Bank reports and accounts (2006-2010).

b) Data Analysis

Return on equity indicates how well the firm has uses the resources of owners. The ratio of net profit to owner's equity reflects the extent to which objective of wealth maximization has been accomplished (Pandey 2002). That is, the profitability to owners investment. In the year 2006, the bank maintains the highest return on equity which stood at 90.10 compared to 2007 when the ratio dropped to 22.08. For the years following these, the ratio picked up slowly, recovering at a decreasing rate with 30.42 in year 2008, 33.09 in 2009 and 36.66 in 2010 respectively. These results shows that Union Bank plc is positively disposed to information value added management in addressing difficult moment almost immediately.

Return on assets indicates the overall profitability and efficiency in the utilization of financial resource and assets used in sustaining the operation of the business. This ratio shows a great fluctuation and poor pattern of movement over the five years of the Union Bank activities with 5th year giving the highest return as 2.35. Year 2006 to 2007 was 2.34:1.71 and 2.00:2.10 in year 2009 to 2010 respectively. Though there is no standard level set as an indication of good performance. The standard level may varies and greatly depend on the nature of industry and level of fund committed.

Non-performing loan over total assets shows the level of banks exposure to credit risk. If the ratio goes above 25%, is an indication that the bank is getting into the zone of weak credit risk control system (Agborade 2002). For the Union bank plc within the period of the study, the bank shows a minimum tolerable level of risk exposure exception of year 2007 and 2008 when the risk level was 25.50% and 25.73% respectively indicating weak moment in their risk management.

Total loan over total assets indicates the percentage of bank assets advanced to the public as instrument of credit because it sees banking being a business of credit advancement. This shows the level of its operation in a particular year. The higher the ratio, the higher the level of its operation and the higher the risk level of risk exposure. The data from the table above shows that Union Bank plc maintain almost one fourth to one fifth of its assets as loan with 2009 and 2006 showing the highest and lowest in its operation during the five years of review at average of 26.54% and 21.33%. it shows that the bank, despite interest income accrued to the bank as main source of income, the management is informatively aware of its associated risk. Thus, maintaining a precautionary risk control measure.

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Net interest over total assets shows that bank being a financial intermediary that mobilized fund from surplus to deficit unit incurred cost in keeping and maintaining the fund the surplus unit while income is accrued from advancement of such fund to the deficit unit. The percentage of what is left as a net income over the total assets employed in the operation of these activities shows how efficient and effective the management toward administration of the risk involved. The performance of the Union Bank plc over these years understudy maintain a fair return almost constant within 2007 to 2010 with 9.30, 8.79, 9.10, 9.61 respectively exception of year 2006 when the return was at the highest value as 12.69.

c) Testing of Research Hypothesis

(Using the annual reports of union bank plc as a case study)

i. *Hypothesis One*

Ho: A higher loan loss (Non-performing loans/total loans) does not have negative significance on profitability of Union Bank plc (ROE).

Table 5 : Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.349[a]	.122	-.171	29.39139	1.320
a. Predictors: (Constant), CREDIT RISK					
b. Dependent Variable: PERFORMANCE INDICATOR (return on equity)					

Sources : SPSS 17

Table 6 : ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	359.750	1	359.750	.416	.565[a]
	Residual	2591.562	3	863.854		
	Total	2951.312	4			
a. Predictors: (Constant), CREDIT RISK						
b. Dependent Variable: PERFORMANCE INDICATOR (return on equity						

Sources : SPSS 17

Table 7 : Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	128.894	134.566		.958	.409
	CREDIT RISK	-3.710	5.750	-.349	-.645	.565
a. Dependent Variable: PERFORMANCE INDICATOR (return on equity)						

Sources : SPSS 17

Adjusted R^2 = -0.171, t_{cal} = 0.958, t_{tab} = 2.132

$F_{(3,1)}$ = 0.416, F_{tab} = 10.1, D.w = 1.320. 5% level of significance

The result of SPSS data analysis reveals that the Credit Risk can be held responsible for 17.1% (R^2) decrease in variation on the Return on Equity with reference to 2006-2010 year of study.

The F-statistics (ANOVA) of the model indicates that the model has closeness of fit which means that the model is negatively significant at 5% level of significance. The $F_{(3,1)}$ = 0.416 is less than the F_{tab} =10.1. Therefore, the estimated parameter is negatively significant at 5% level of significance.

The autocorrelation between the variables under consideration is indicated by Durbin-Watson value of 1.320, which further confirms that the estimate is negatively significant.

To test for the negative significance of the estimates, the student's t-test is employed. The t_{cal} = 0.958 < t_{tab} = 2.132 for the parameter estimate, this means that the null hypothesis that Higher loan losses (Non-performing loans/total loans) does not have negative significance on profitability of banks (ROE) should be rejected, while the alternative hypothesis should be accepted.

The estimated regression model is

ROE = 128.894 – 3.710cr (credit risk)

ii. *Hypothesis One*

Ho: A higher loan loss (Non-performing loans/total loans) does not have negative significance on profitability of Union Bank plc (ROA).

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Table 8 : Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.838[a]	.703	-604	.16717	2.895
a. Predictors: (Constant), CREDIT RISK					
b. Dependent Variable: PERFORMANCE INDICATOR (return on assets					

Sources : SPSS 17

Table 9 : ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.198	1	.198	7.098	.076[a]
	Residual	.084	3	.028		
	Total	.282	4			
a. Predictors: (Constant), CREDIT RISK						
b. Dependent Variable: PERFORMANCE INDICATOR (return on assets						

Sources : SPSS 17

Table 10 : Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.129	.765		5.395	.012
	CREDIT RISK	-.087	.033	-.838	-2.664	.076
a. Dependent Variable: PERFORMANCE INDICATOR (return on assets)						

Sources : SPSS 17

Adjusted R^2 = -0.604, t_{cal} = 5.395, t_{tab} = 2.132

$F_{(3,1)}$ = 7.098, F_{tab} = 10.1, D.w = 2.895. 5% level of significance

For the ROA, the result of SPSS data analysis reveals that the Credit Risk can be held responsible for 60.4 % decrease in variation on the Return on Assets with reference to 2006-2010 year of study.

The autocorrelation between the variables under consideration indicated by Durbin-Watson value 2.895.320 further confirms that the estimate is negatively significant and the student's t-test shows that The t_{cal} =5.295 < t_{tab} = 2.132 for the parameter estimate, this means that the null hypothesis should again be rejected, while the alternative hypothesis is accepted.

The estimated regression model is ROA = 4.129 – 0.087cr(credit risk)

iii. *Hypothesis Two*

Ho: There is no positive significant relationship between higher interest income (net interest/Average total assets, interest net /total income) and lower bad loans of Union Bank plc (NPL).

Table 11 : Correlations

		INTEREST INCOME (net int. over total loan)	BAD LOAN
INTEREST INCOME (net int. over total loan	Pearson Correlation	1	.934*
	Sig. (2-tailed)		.020
	N	5	5
BAD LOAN	Pearson Correlation	.934*	1
	Sig. (2-tailed)	.020	
	N	5	5
*. Correlation is significant at the 0.05 level (2-tailed).			

Sources : SPSS 17

The result of the Pearson coefficient (r^2) is 0.934 with its p-value of 0.05, therefore the coefficient of determination (r) the strength of association is 0.966 (96%) which is r (5) 0.966; p<.05. r^2 = 0.934. Since 96.6% of the variance is share, the association is obviously very strong.

Therefore, based on the test, alternative hypothesis will be accepted that there is significant positive relationship between high interest income and lower loan losses.

V. Conclusion and Recommendations

a) Conclusion

This study shows that there is a significant relationship between bank performance (in terms of profitability) and credit risk management (in terms of loan performance). Better credit risk management results in better bank performance. Thus, it is of crucial importance that banks practice prudent credit risk management and safeguarding the assets of the banks and protect the investors' interests. The study

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summarizes that banks used different credit risk management tools, techniques and assessment models to manage their credit risk, and that they all have one main objective, i.e. to reduce the amount of loan default which is a principal cause of bank failure.

The study also reveals that banks with good or sound credit risk management policies have lower loan default ratios (bad loans) and higher interest income (profitability). The study also reveals banks with higher profit potentials can better absorb credit losses whenever they crop up and therefore record better performances.

Furthermore, the study shows that there is a direct but inverse relationship between profitability (ROE, ROA) and the ratio of non-performing loans to capital (NPL\C).

These results are in line with our expectations and actually tallies with conventional wisdom. This has led us to accept our hypothesis and conclusion that banks with higher interest income have lower non-performing loans, hence good credit risk management strategies.

b) Recommendations

Based on the result from the research hypotheses, the following recommendations should be given consideration by Union Bank plc for effective credit risk management and good performance:

1. Policies already put in place for the management and measurement of credit risk should be reviewed from time to time to ensure its effectiveness i.e there should be policy consistency.
2. Establishment of credit policies and standards that conform to regulatory requirements and the bank's overall objectives to further reduce the level of there credit risk exposure.
3. The bank should work harmoniously in keeping aggregate credit risk well within the bank's risk taking capacity (risk tolerance).
4. Developing and maintaining Credit Approval Authority structure to ensure appraisal of only worthy credit facilities.
5. Granting approval authority to qualified and experienced individuals to ensure job competence.
6. Reviewing the adequacy of credit training across all the 379 bank branches to ensure of good credit risk management.
7. Setting systems to identify significant portfolio indicators, problem credits and level of provisioning required.
8. There should be system established for presentation of information about the bank's exposure to credit risk and its management and control over such credit risks in time.
9. Assessment and the continuous monitoring of counterparty and portfolio to know when loan is becoming non-performing.
10. Interest earnings constitute a great proportion of the gross earning of banks, the bank should be caution in increasing the rates charged on a loan.
11. Ensure that the wholesale portfolio, which includes corporate, and commercial are ideally collateralized by cash equivalents, fixed and current assets including property plant and equipment, and land.
12. Loans to individuals should be accordingly secured e.g autos for car loans and private or income producing real estate should be secured by a mortgage over the relevant property
13. Borrowers should be adequately informed of the procedures involved in getting a loan and the penalties given for defaulters

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