

## CREDIT TYPES AND LOAN DEFAULT: EVIDENCE FROM QUOTED DEPOSIT MONEY BANKS (DMBs) IN NIGERIA

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### **Abstract**

*The Nigeria banking industry has consistently witnessed continuous deterioration in non-performing loans despite the unprecedented transformation that ushered in the banking reform and consolidation in 2005. This is buttressed by the CBN Monetary Policy Committee report that Nigeria banks NPL stood at N1.2 trillion by June 2021. The Nigerian Deposit Money Banks (DMBs) are the focus of this study's examination of credit categories and loan default. The goals of the study were to ascertain the association between commercial bank non-performing loans in Nigeria and agricultural loans, real estate loans, project financing, and commercial agricultural credit programs. The study used an ex-post facto research approach using secondary data from selected DMBs' audited finances and annual reports. Thirty-three (33) banks listed on the Nigeria Exchange Group made up the study's population, and five (5) banks were chosen at random using the CAMEL rating. The data were analyzed using regression analysis and spearman/ rank order covariance analysis. The study discovered that agricultural loans (p-value 0.4225 & t-statistics 0.8090504) and commercial agricultural credit scheme (p-value 0.7285 & t-statistics 0.349174) have positive and weak relationships with NPL. Real estate loans (p-value 0.7018 & t-statistics -0.385254) have a negative and weak relationship with NPL. However, project finance has been identified as the only variable that can predict NPL as it has a strong and positive relationship with NPL with a p-value of 0.0270 and t-statistics of 2.281323. The policy implication is that while credit types contribute to defaults in loan repayments, there are other factors that immensely affect loan performance in banks. It is recommended that banks adequately secure their loans, follow due process flow in granting credits, especially with project finance, which is more vulnerable, and give more consideration to real estate loans with fewer risks.*

**Key Words:** Agricultural loans, non-Performing loans, Project Finance, Real estate loans

### **1. Introduction**

The banking industry's role is very crucial to the growth and development of the economy of every nation through its intermediation function of mobilisation of deposits from the surplus sector of the economy to the deficit sector in the most profitable manner. Commercial banks' major role is to afford financial services to the citizenry and businesses. Through also these services, they guarantee the economic and social steadiness and unceasing extension of the economy. It has been universally agreed that no nation can incident continuous enlargement and expansion in the absence of an impressive financial system.

Banks' activities in a nation lubricate the economic system as they act as custodians of the payment system. The advancing of credit by Deposit Money Banks (DMBs) is the major income stream from the payment of interest by the borrowers. Despite being the main sources of income for DMBs, credits continue to be a matter influencing the performance of DMBs and are considered the riskiest assets of banks due to their volatility. In line with the Basel Committee on Banking Supervision (2001), the chances of partially or wholly losing a large amount of loan due to credit default make credit financing volatile. Prior to the establishment of CBN in 1958, granting of loans and advances was not properly regulated and supervised, leading to an increase in NPL and bank distress. After that, the banking system became stable under the supervision of CBN, until 1986 when pressure from the International Monetary Fund (IMF) and World Bank forced the President Babangida administration to launch the Structural Adjustment Programme (SAP), with the primary objective of deregulation of the economy. The deregulation of the financial system ushered in the era of the banking boom in Nigeria due to the liberalisation of the bank licensing process and the consequent competition in the banking industry. The upsurge in the number of banks to be supervised by CBN was so overwhelming that in 1988 the Federal Government created Nigerian Deposit Insurance Corporation (NDIC) with a supervisory power to complement the supervisory efforts of CBN. Besides government efforts in stabilizing the banking industry, distress in the system continued unabated. NPL which is the main cankerworm ravaging the system rose higher and came to its climax in 1998 with the liquidation of 31 commercial/merchant banks in one fell swoop and 6 banks were closed between 2000 and 2003 NDIC (2003).

With the appointment of Prof Charles Chukwuma Soludo in 2004 as CBN governor, the banking system witnessed an unprecedented transformation. The banking sector reform and consolidations in 2005 restored confidence in Nigeria's banking system as banks became bigger and stronger with excellent performances. Three major elements of this reform nicknamed Soludo Solution were the increase of banks' Capital Base from ₦2 Billion to ₦25 Billion, the review of CBN Prudential Guidelines to synchronize the prudential guidelines with the IFRS 9 - Financial Instrument and the creation of the Asset Management Corporation of Nigeria (AMCON). Though the reform reduced the number of commercial banks from 89 to 25 through mergers and acquisitions, it facilitated economic growth and development. However, this stability came to an abrupt cease between 2007 and 2009 when the world experienced a global financial meltdown that wretched the economic stability of nations including Nigeria, with global bank distresses and failures. Despite the efforts of the apex bank- the Central Bank of Nigeria to ameliorate the rising trend of non-performing loan profile in the DMBs in Nigeria, through the review of the established Prudential Guideline and the creation of the Asset Management Company of Nigeria

(AMCON), more loans and advances deteriorate into bad debts. The AMCON was created in 2010, with a lifespan of ten (10) to specifically resuscitate the Nigerian financial system by recovering non-performing loans and injecting liquidity into the industry. This objective has not been wholly achieved as, even though bank distress is greatly reduced, there is still an increasing trend in non-performing loans and if not checkmated, Nigeria might witness another round of bank distress. As at the third quarter of 2020, a whopping sum of ₦1.1 trillion was classified as non-performing loans, representing, 6.1% NPL ratio above the 5% CBN threshold and has increased to ₦1.2 trillion by June 2021 (Emefiele, 2021). Sequel to the above, the researchers studied the various types of credit facilities and the default in loan repayment of Deposit Money Bank in Nigeria from 2011 to 2020. From the ongoing empirical review much work has been done on the relationship between agricultural, real estate, project finance in oil and gas and mining, and non-performing loan on individual basis by Azubugwu and Osuafor (2019) Maloba and Alhassan (2019), Nwuba and Chukwuma-Nwuba (2018), Saif-Alyousfi, Saha and Mdrus (2018). However, none of the reviews included the variable-Commercial Agricultural Credit Scheme holistically with other credit types- Agricultural Loans, Real Estate Loans and Project, in ascertaining their relationship with non-performing loans in the banking industry.

### **1.1 Objective of the Study**

The broad objective of the study is to evaluate credit types and default in loan repayment of deposit money banks in Nigeria. The specific objectives are to:

- a) examine the relationship between Agricultural Loans and Non-performing loan of deposit money banks in Nigeria.
- b) analyze the relationship between Real Estate Loans and Non-performing loans of deposit money banks in Nigeria.
- c) appraise the relationship between the Commercial Agricultural Credit Scheme (CBN Special Credit Intervention Fund) and Non-performing loans of deposit money banks in Nigeria.
- d) explore the relationship between Project finance and non-performing loan of deposit money banks in Nigeria.

### **1.2 Statement of Hypotheses**

The following null hypotheses are formulated for the study:

- a) There is no strong relationship between Agricultural Loans and Non-performing loans of deposit money banks in Nigeria.

- b) Real Estate Loans and Non-performing loans do not have any strong relationship in Nigerian deposit money bank.
- c) There exists no strong relationship between the Commercial Agricultural Credit Scheme (CBN Special Credit Intervention Fund) and Non-performing loan of deposit money banks in Nigeria.
- d) Project finance and non-performing loan of deposit money banks in Nigeria do not share a strong relationship.

## 2. Literature Review

### 2.1 Conceptual Review

#### Credit and Credit Types

Credit is the idea that enables one party to lend money or resources to another party, with the expectation that the second party would either repay the first party later or return the resources. According to Tetteh (2012), effective credit-giving is one of the most important concepts that improves the financial status of financial organizations. Nerdwallet (2022) defined credit as the ability to borrow money with the promise that you will repay it in future, often with interest. It is an arrangement that allows one to borrow money now and repay it later.

#### (a) Agricultural Loans

These are loans which banks extend to farmers to fund both seasonal and perennial agricultural activities. The loans are used to finance occupations like animal farming, pisco-cultural or procurement of land and agricultural tools. Also, the purchase of farm inputs like fertilizers, seeds, and insecticides.

#### (b) Real Estate Loans

A real estate loan is a housing loan financing deal between a borrower or special subsidiary and an unaffiliated third-party lender in which the lender offers real estate financing that is exclusively backed by a mortgage lien on the company's headquarters and other relevant fixtures (Law Insider, 2021).

#### (c) Commercial Agricultural Credit Scheme (CACS)

The Commercial Agricultural Credit Scheme was established in 2009 by the CBN in coordination with the Federal Ministry of Agriculture and Rural Development (FMARD), which is the representative of the Federal Government of Nigeria. The primary objective is for the promotion of large-scale agricultural enterprise in Nigeria, a constituent of the Commercial Agriculture Development Programme (CADP) through the provision of finances for the value chain of Nigerians agricultural sector (production, processing, storage, and marketing).

(d) Project Finance

Banks extend project finance to investors to enable them to fund long-term projects like public infrastructure, industrial projects, and others through a specific financial structure, (Sweta, 2021). It is a type of loan structure that primarily relies on expected cash flow accruing from the projects to be financed for repayment of both the principal and interest.

### **Non-Performing Loans (NPLs)**

The International Monetary Fund (IMF) 2018 defined NPL loans whose:

- 1) Debtors have not paid interest and/or principal payment in at least 90 days or more.
- 2) Interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement.
- 3) the payment has been delayed by less than 90 days but came with high uncertainty that the debtor will make payments in future.

Furthermore, it was advised in the IMF Financial Soundness Indicators Compilation Guide (2016) that loans should be labeled as non-performing when principal as well as interest payments are three months or more past due or when interest payments corresponding to three months' worth of interest or more have been capitalized or rolled over. The CBN Prudential guideline classifies NPL as Substandard for payments overdue for 90 days and above, Doubtful for payments overdue for between 180 -360 days and lost for overdue above 360 days. The CBN prudential guideline also mandated banks to make provisions accordingly for the categorized NPLs. (Appendix A-Classification of NPL in line with CBN Prudential Guideline)

## **2.2 Theoretical Framework**

This study was anchored on the under-listed theories namely, financial intermediation and fractional reserve theories.

### **Financial Intermediation Theory**

It was propounded by Gurley and Shaw in 1960. The two basic assumptions are transaction costs and asymmetric information. It was built on the belief that intermediaries help to lessen transaction costs and information asymmetries. Gurley and Shaw (1960) argued that the function of financial intermediation is being shared between the banks and non-financial institutions, pointing out that there is nothing special

about banks. The Financial Intermediation theory of banking says that banks are not different from other non-banking financial institutions as they are mainly financial intermediaries carrying out the primary functions of gathering money and lending them out – Werner (2014). Harrod (1939) and Domar (1947) support this theory by emphasising the view of saving to enhance investment. Mises (1980) expressed an opinion in support of this theory acknowledging banks as negotiators of credit between lenders and borrowers. The antagonists of this theory, namely Macleod (1906) and Moore (1988) described the process of bank lending as mainly crediting the customer's account with the loan amount granted. The study was anchored on this theory because banks mobilize deposits from the surplus unit of the economy and lend to the deficit units.

### **The Fractional Reserve Theory**

The Fractional Reserve Theory was propounded by Alfred Marshall in 1888. The Fractional Reserve Theory of Banking has a different opinion from the Financial Intermediation Theory of Banking pertaining to the corporate macroeconomics roles of banks. The basis of the disagreement is that individually, a bank is a financial intermediary, but collectively, money is created by the banks by a process called multiple deposit expansion. This was supported by Philip (1920) who opined that what is true about banks as an aggregate is not true individually. Keynes (1930), in support of the theory, adopted the concept of money creation of deposits. However, Werner (2005) in criticising the theory, stated that banks in creating credits do not withdraw money from other customers' accounts to deposits in the borrower's account, but simply process paper documentation to write figures into customers' accounts.

## **2.3 Empirical Review**

### **Agricultural Loans and Non-Performing Loans (NPL)**

Aniefiok, Akpan, and Udoh (2016) examined the Relationship between Agricultural Lending, From 1980 to 2015, agricultural expansion and non-performing loans in Nigeria's banking system. The Granger Causality test, Pearson Correlation and Cointegration, as well as error correction models, were used to examine time series data obtained from CBN. The researchers discovered a bidirectional Granger causal relationship between loans and advances given to Nigeria's agriculture industry and NPL. Long-term NPL was shown to be positively correlated with agricultural production, GDP growth, and the amount of loans and advances made available to the agricultural industry. However, in the short term, both the negative impact of interest rates and the positive impact of GDP growth rate had a significant impact on NPL.

### **Real Estate Financing and Non-Performing Loans**

In research conducted in 2018 with a primary focus on Kaduna state, by Nwuba and Chukwuma-Nwuba (2018) looked at the obstacles to obtaining mortgages in Nigeria's metropolitan housing markets. The main goal of the study was to identify the many characteristics, as seen by households, mortgage lenders, and the Federal Mortgage Bank of Nigeria, that serve as obstacles to urban household access to mortgages for homeownership. Low wages and limited savings, which limit households' capacity to make mortgage payments, result in loan repayment default and, ultimately, NPL, according to the report. High interest rates, limited access to land, insufficient loanable capital, and a dearth of mortgage lending institutions are further obstacles.

### **Project Finance and Non-Performing Loans**

The impact of oil and gas price shocks on NPLs of banks at the cluster level as well as at the level of commercial and Islamic banks in Qatar between 2000 and 2016 was studied by Saif-Alyousfi, Saha, and Mdrus (2018). According to the analysis, the totality of Qatari banks' NPLs are not considerably impacted by changes in gas and oil prices. However, through institutional and macroeconomic factors that are unique to each country, these variables also have indirect effects on the banks. The study also revealed that while oil and gas prices have a large negative impact on NPLs of Qatari commercial banks, they have a considerable positive impact on NPLs of Qatari Islamic banks due to extended oil and gas-related cash flows. This means that the oil and gas price highs are of tremendous benefit to the Islamic banks in Qatar as there is an increase in cash flow caused by the increase in the oil and gas prices, leading to lower NPLs, than that in commercial banks. The authors also found out that the government can reduce the NPLs in both commercial and Islamic banks through positive fiscal policies.

### **Commercial Agricultural Credit Scheme (CACS)**

In Anambra State, Nigeria, Azubugwu and Osuafor (2019) looked at the effects of Commercial Agricultural Credit Scheme access on beneficiaries' and non-beneficiaries' agricultural production. The findings indicated that farmers' output increased because of using the Commercial Agricultural Credit Scheme. It suggests that CACS had a significant favorable impact on both beneficiaries' and non-beneficiaries' agricultural production. The hypothesis test revealed a strong positive association between CACS and beneficiaries' access to agricultural production.

### 3. Methodology

The study adopted an *ex-post-facto* research design because the design was suitable for achieving the research objectives which depended grossly on secondary data collected from the annual report and accounts of commercial banks listed on the Nigeria Exchange Group for the period 2011 to 2020. The population of the study was all the thirty-three (33) banks quoted on the Nigeria Exchange Group and the sample size was five (5) banks selected based on the Capital Adequacy, Asset quality, Management Efficiency and Liquidity (CAMEL) rating of Nigerian commercial banks. The study employed a correlation model because it has the capacity to ascertain the relationship between bank credits and default in Loan repayment of deposit money banks in Nigeria. The correlation model was specified as follows:

$$r_{xy} = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum(x_i - \bar{x})^2 \sum(y_i - \bar{y})^2}}$$

Where:

$r_{xy}$  is the correlation coefficient of the linear relationship between the variables  $x$  and  $y$ ;  $x_i$  is the values of the  $x$ -variable in the sample;  $\bar{x}$  is the mean of the values of the  $x$ -variable;  $y_i$  is the values of the  $y$ -variable in the sample;  $\bar{y}$  is the mean of the values of the  $y$ -variable;  $x$  represents Non-performing Loans;  $y$  represents other variables (Agricultural Loans, Commercial Agricultural credit schemes, Real Estate Loans and Project Finance) taken separately in each case.

The study employed correlation techniques to ascertain the relationship between credit types and default in Loan repayment of deposit money banks in Nigeria.

### 4. Results and Discussion

#### Descriptive Statistics

Table 4.2.1 above reveals the variable description of the 50 observations of the panel data for sampled deposit money banks in Nigeria.

Table 1: Descriptive Statistics

	NPL	AGRIC LOAN	REL	CACS	PROFIN
Mean	5.933800	48510.62	100118.3	25799.08	57253.90
Median	3.715000	46239.00	93348.00	20067.50	12777.50
Maximum	24.70000	178934.0	281673.0	80704.00	615978.0
Minimum	1.200000	2212.000	12913.00	3694.000	1301.000
Std. Dev.	5.980426	35448.89	55602.56	19802.76	117600.2
Skewness	2.222138	1.637117	1.033010	1.079288	3.463324
Kurtosis	6.885958	6.767755	4.159739	3.407922	14.94727

Jarque-Bera	72.60887	51.90956	11.69465	10.05386	397.3245
Probability	0.000000	0.000000	0.002888	0.006559	0.000000

Source: Researchers' compilation from E-views 10 software, (2022)

From Table 1 the probability of the Jarque-Bera Statistics, Skewness coefficient and Kurtosis all confirmed abnormal distribution.

**Pre-Estimation Test**

**Test for Stationarity (Unit Root Test)**

The Phillips-Perron (PP) tests of the unit root was employed for this study, to determine if the variables in the model are stationary, that is to ascertain whether the mean, variance, and covariance of each of the variables used in the model are constant over time, generated through a stochastic process. For the PP test, a variable is stationary if the probability value of PP Chi-square is less than 0.05 (at 5%).

H<sub>0</sub>: The time series variables have a unit root.

H<sub>1</sub>: The time series variables are stationary.

Table 2: Result of Panel Unit Root Tests

Variable	ADF P-value at levels	Decision	ADF P-value at 1 <sup>st</sup> diff.	Decision	Order of Integration
LAGRICLOAN	0.0001	Reject Ho	—	—	I (0)
LREL	0.0148	Reject Ho	—	—	I (0)
LPROFIN	0.0531	Accept Ho	0	Reject Ho	I (I)
LCACS	0.2355	Accept Ho	0	Reject Ho	I (I)
NPL	0.587	Accept Ho	0.0111	Reject Ho	I(I)

Source: Computed by Researcher Using Eviews 10.0 Statistical Software, 2022

Table 2 is a representation of the stationarity test of the variables employed in this study. It showed that the variables tested for the presence of a unit root, all returned an integration of levels and the first order, indicating that neither of the variables of study has a unit root, or that these variables are stationary at the first difference.

Table 3: Results of Kao (Engle-Granger based) Co-Integration Test

Residual Variance	HAC Variance	ADF	
0.253347	0.183138	t-statistic	Probability
		-2.569852	0.0051

Source: Computed by Researcher Using Eviews 10.0 Statistical Software, 2022

H<sub>0</sub>: There is no co-integration.

Decision Rule: Reject the null hypothesis if the p-value of ADF is less than 0.05.

Conclusion: The Kao (Engle-Granger based) Co-integration test result indicates that the variables under consideration have a consistent long-run connection. This is due to the ADF's probability value being less than 0.05. In other words, the variables are co-integrated. This means that the dependent variable, NPL, and the independent variables; CACS, AGRIC LOAN, PROFIN and REL, share a long-run relationship, and as such, a regression analysis can be conducted on them.

**Regression Results**

After the application of the ordinary least square (OLS) estimation method on the model earlier suggested in the previous chapter, the following results shown in the table below were obtained.

Table 4: OLS Estimation Result [Dependent Variable: Log (EXRV)]

Variable	Coefficient	Standard Error	T-Stat	P-Value
LOG(AGRIC LOAN)	2.479041	1.309688	1.892849	0.0655
LOG(REL)	-2.31506	1.411976	-1.639589	0.1087
LOG(CACS)	-2.636892	1.376529	-1.915609	0.0624
LOG(PROFIN)	0.348342	0.539219	0.646011	0.5219
C	28.90899	19.13793	1.51056	0.1386
R <sup>2</sup> = 0.48, Adjusted R <sup>2</sup> = 0.38, F-Stat = 23.58661, Prob(F-stat) = 0.0003, D.W. Stat. = 0.96				

Source: Researcher's compilation from E-views 10 software, (2022)

Agricultural Loans: The value of the t-statistics (1.892849 < 2) and the probability of t-Statistics (0.0655 > 0.05) shows that Agricultural Loan has an insignificant effect on Non-Performing Loan of deposit money banks in Nigeria.

Real Estate Loans: The value of the t-statistics (1.639589 < 2) and the probability of t-Statistics (0.1087 > 0.05) shows that Real Estate Loans have an insignificant effect on Non-Performing Loans of deposit money banks in Nigeria.

Commercial Agricultural Credit Scheme: The value of the t-statistics (1.915609 < 2) and the probability of the t-Statistic (0.0624 > 0.05) shows that Commercial Agriculture Credit Scheme has an insignificant effect on the Non-Performing Loan of deposit money banks in Nigeria.

Project Finance: The value of the t-statistics (0.646011 < 2) and the probability of the t-Statistic (0.0655 > 0.05) shows that Project Finance has an insignificant effect on Non-Performing Loan of deposit money banks in Nigeria.

Statistical Criteria (First Order Tests)

The value of the Adjusted R<sup>2</sup> is 0.38, which tells us that 38 per cent of the changes in the Non-Performing Loan are explained by the independent variables, while the other 62 per cent are explained by other factors capable of influencing Non-Performing Loan other than Agricultural Loans, Real Estate Loans, Commercial Agriculture Credit Scheme, and Project Finance. These other factors are contained in the error term. The f-test is used to check for the general significance of the model and if the value of the probability of the f-stat (p-value: 0.0003) is less than 0.05 at a 5% critical value, the model is said to be significant and statistically fit. The Durbin Watson Statistic (0.96) shows of positive autocorrelation in the time series data.

Table 5: Covariance Analysis Result

	NPL/AGRICLOAN	NPL/REL	NPL/CACS	NPL/PROFIN
Correlation	0.115989	-0.055521	0.050335	0.512761
t-Statistic	0.809054	-0.385254	0.349174	2.281323
P-Values	0.4225	0.7018	0.7285	0.027
Observation	50	50	50	50

Source: Researcher’s compilation from E-views 10.0 Software, (2022)

Table 5 above exhibits the covariance results of the variables of the study. The table shows how the various independent variables of the study relate to each other and with the dependent variable. From the table, Agricultural Loans (NPL/AGRICLOAN) has a positive and weak (11.5%) relationship with Non-Performing Loan, Real Estate Loans (NPL/REL) have a negative and weak (approx. 5.5%) relationship with Non-Performing Loan. Also, Commercial Agriculture Credit Scheme (NPL/CACS) has a weak and positive (5%) relationship with Non-Performing Loan. Furthermore, Project Finance (NPL/PROFIN) has a strong and positive (51%) relationship with Non-Performing Loan. Of all these variables, Project Finance is the one with a strong relationship with non-Performing loans.

**Test of Hypotheses**

The four hypotheses developed in chapter one of this study were tested using the following decision rule:

**Hypothesis One**

Step 1: Restatement of the Hypothesis in Null and Alternate Form

H<sub>0</sub>: There is no strong relationship between Agricultural Loans and Non-performing loans of deposit money banks in Nigeria.

H<sub>1</sub>: There is a strong relationship between Agricultural Loans and Non-performing loans of deposit money banks in Nigeria.

### **Step 2: Statement of Decision Criteria**

According to Gujarati and Porter (2009), the decision rule involves accepting the alternate hypothesis (H<sub>1</sub>) if the sign of the coefficient for Agricultural Loans (AGRICLOAN) is either positive or negative, the modulus of the t-Statistic > 2.0 and the P-value of the t-Statistic < 0.05. Otherwise, accept H<sub>0</sub> and reject H<sub>1</sub>.

### **Step 3: Presentation of Test Results**

Table 4.2.5 Spearman Rank Order Covariance analysis result is used to test the above stated hypothesis.

#### **Step 4: Decision**

The correlation coefficient in Table 4.2.5 shows that Agricultural Loans have a statistically positive relationship with Non-Performing Loans of deposit money banks. However, the values for the t-statistic (0.809054) and probability of the t-statistic (0.4225) depicts that Agricultural Loans have a statistically weak relationship with Non-Performing Loans in the industry. This makes Agricultural Loan unable to predict Non-Performing Loans in the industry.

### **Hypothesis Two**

Step 1: Restatement of the Hypothesis in Null and Alternate Form

H<sub>0</sub>: Real Estate Loans and Non-performing loans do not share a strong relationship in Nigeria deposit money banks.

H<sub>1</sub>: Real Estate Loans and Non-performing loans share a strong relationship in Nigeria deposit money banks.

### **Step 2: Statement of Decision Criteria**

If the sign of the coefficient for Real Estate Loans (REL) is either positive or negative, the modulus of the t-Statistic is  $> 2.0$ , and the P-value of the t-Statistic is  $0.05$ , the decision rule, according to Gujarati and Porter (2009), requires adopting the alternative hypothesis ( $H_1$ ). If not, accept  $H_0$  and disregard  $H_1$ .

### **Step 3: Presentation of Test Results**

Table 4.2.5 Spearman Rank Order Covariance analysis result is used to test the above- stated hypothesis.

#### **Step 4: Decision**

The correlation coefficient in Table 4.2.5 shows that Real Estate Loans have a statistically negative relationship with Non-Performing Loans of deposit money banks. However, the values for the t-statistic ( $0.385254$ ) and probability of the t-statistic ( $0.7018$ ) depicts that Real Estate Loans have a statistically weak relationship with Non-Performing Loans in the industry. This makes Real Estate Loans unable to predict Non-Performing Loans in the industry.

### **Hypothesis Three**

#### **Step 1: Restatement of the Hypothesis in Null and Alternate Form**

$H_0$ : There is no strong relationship between the Commercial Agricultural Credit Scheme (CBN Special Credit Intervention Fund) and Non-performing loan of deposit money Banks in Nigeria.

$H_1$ : There is a strong relationship between the Commercial Agricultural Credit Scheme (CBN Special Credit Intervention Fund) and Non-performing loan of deposit money Banks in Nigeria.

#### **Step 2: Statement of Decision Criteria**

Gujarati and Porter (2009) state that the decision rule entails accepting the alternate hypothesis ( $H_1$ ) if the Commercial Agricultural Credit Scheme (CACCS) coefficient's sign is either positive or negative, the t-Statistic's modulus is greater than  $2.0$ , and the t-Statistic's P-value is less than  $0.05$ . If not, accept  $H_0$  and disregard  $H_1$ .

#### **Step 3: Presentation of Test Results**

Table 4.2.5 Spearman Rank Order Covariance analysis result is used to test the above stated hypothesis.

#### **Step 4: Decision**

The correlation coefficient in Table 4.2.5 shows that the commercial agricultural credit scheme has a statistically positive relationship with Non-Performing Loans of deposit money banks. However, the values for t-statistic (0.349174) and probability of the t-statistic (0.7285) depicts that commercial agricultural credit scheme have a statistically weak relationship with Non-Performing Loans in the industry. This makes Commercial Agricultural Credit Scheme Loan unable to predict Non-Performing Loans in the industry.

### **Hypothesis Four**

Step 1: Restatement of the Hypothesis in Null and Alternate Form

H<sub>0</sub>: Project finance and non-performing loan of deposit money banks in Nigeria do not share a strong relationship.

H<sub>1</sub>: Project finance and non-performing loan of deposit money banks in Nigeria share a strong relationship.

### **Step 2: Statement of Decision Criteria**

The decision rule, as stated by Gujarati and Porter (2009), calls for adopting the alternative hypothesis (H<sub>1</sub>) if the sign of the coefficient for Project Finance (PROFIN) is either positive or negative, the modulus of the t-Statistic is > 2.0, and the P-value of the t-Statistic is 0.05. If not, accept H<sub>0</sub> and disregard H<sub>1</sub>.

### **Step 3: Presentation of Test Results**

Table 4.2.5 Spearman Rank Order Covariance analysis result is used to test the above stated hypothesis.

### **Step 4: Decision**

The correlation coefficient in Table 4.2.5 shows that Project Finance has a statistically positive relationship with Non-Performing Loans of deposit money banks. However, the values for t-statistic (2.281323) and probability of the t-statistic (0.0270) depicts that Project Finance have a statistically strong relationship with Non-Performing Loans in the industry. This makes Project Finance the only variable capable of predicting Non-Performing Loans in the Nigeria banking industry.

## 5. Conclusion and Recommendations

The functions of the banking industry in developing and ensuring growth of any nation is indispensable. This is buttressed through its intermediation function of mobilisation of deposits from the surplus section of the economy to the deficit zone in the most profitable manner. However, the rate at which borrowers' default has increased the rate of non-performing loans of deposit money banks in Nigeria. This propelled the researchers to evaluate different credit types and their relationship to loan default in deposit money banks in Nigeria. According to the data analysis's covariance finding, there is a positive but slender association between Nigerian deposit money banks' non-performing loans and agricultural loans and commercial agriculture credit schemes. However, there is a poor and unfavorable correlation between real estate loans and the non-performing loans of Nigerian deposit money banks. In the Nigerian banking sector, there is also a substantial and positive association between project funding and non-performing loans. The Adjusted R-Squared shows that 38% of changes in non-performing loans in the industry can be explained by agricultural loans, commercial agriculture credit scheme, real estate loans, and project finance, the remaining 62% could be explained by other factors capable of impacting non-performing loans in the industry.

From the findings of the study the researchers made the following recommendations: banks should demand for more collateral before giving out agricultural loans. The farmers must provide adequate collateral before they become eligible to collect agricultural loans. This will spur them to amortize the loans and reduce non-performing loans of banks in Nigeria. The real estate loans were found to decrease non-performing loans of banks; hence, banks are encouraged to maintain the policies that make the repayment of this loan prompt and should adopt a similar policy in dealing with other types of credit. They should ensure that credit takers have a good collateral and a realistic business plan and model of paying back the loans before giving them commercial agriculture credit scheme loans. They should sensitize them on the importance of paying back their loans and the penalties attached to default. Deposit money banks should diminish the rate at which they finance projects of individuals and organizations. They should always ensure that the project will be successful before granting credit for its execution.

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