



# Corporate Diversification and Firm Performance: Evidence from the Nigerian Banking Sector

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**Abstract:** Corporate diversification plays an important role in strategic decision-making, especially when it comes to corporate expansion and growth. This study examined the impact of corporate diversification on the financial performance of deposit money banks listed on the Nigerian Stock Exchange. The study covered a ten-year period, from 2010 to 2019, and included data from the annual reports of thirteen listed deposit-taking institutions. Two accounting and one economic measure of firm performance were chosen as indices for the response variables, while the predictor variables were specialisation, related diversification, unrelated diversification and cross-border diversification. Using the panel generalised least square method, the study found that specialisation and related diversification significantly influence firm performance in the Nigerian banking sector. The study, therefore, recommends cross-border geographical expansion for deposit banks in Nigeria while maintaining services in areas of expertise.

**Keywords:** Diversification, corporate performance, specialisation, Tobin-Q

## 1. Introduction

It is widely acknowledged that there is a high correlation between banking activities and economic developments. While banks are the biggest beneficiaries of the global economic boom, they are also known to be hardest hit in times of recession. During economic booms, banks enjoy increased demand for banking services and good profit margins. Whereas, in recessions, banks suffer from tightened policies of the government on one hand, and on the other hand, an increasingly hostile operating environment, declining bank revenues and impaired creditworthiness related to the recession-related business failures of their customers (Lown & Morgan, 2001). As in other fragile economies with underdeveloped capital markets, Deposit Money Banks (DMBs) in Nigeria play an important role in the value chains of both the private and public sectors of the economy. However, since the country adopted the Structural Adjustment Programme in 1986, the banking sector has experienced several turbulences that necessitate regulatory reforms. With galloping inflation rates, decaying infrastructures and other problems, including the global economic meltdown that has adversely affected the country's business environment; DMBs in Nigeria are increasingly struggling to remain solvent and profitable. For this reason, finding alternative sources in the area of services covered by existing licences is a pressing issue (Okotori & Ayunku, 2020).

A conventional approach to finding alternative ways to increase business revenue is to expand operations through diversification. Diversification models available to businesses include related and unrelated diversification, horizontal diversification, vertical diversification and topographical (cross-border) diversification. Diversification provides growth opportunities, spreads risk, increases efficiency and boosts performance. However, these gains can be offset by increased credit risk, agency problems and increased volatility in income (Aversa & Haefliger, 2015; Jeon et al., 2020).

While it is evident that corporate diversification strategy aims at growth and profit enhancement, the extent to which corporate diversification affects bank performance needs to be empirically investigated as the empirical evidence on the impact of diversification on firms is still inconclusive due to the mixed results of existing studies. For example, while Gongming et al. (2008); Li et al., (2016) and Chukwuka (2019) show that corporate diversification has a positive impact on firm-performance, the findings of Osifo & Evbayiro-Osagie (2020) show negative impact.

Another aspect that needs to be empirically investigated is which model of corporate diversification should be adopted by banks given the specificities of their environment. Moreover, studies on business diversification focusing on the banking sector in Nigeria are inadequate. As far as we are aware, little research has been conducted on the banking sector, despite the fact that this sector has the highest number of geographically diversified operations in Nigeria, according to the Nigerian Stock Exchange (2018). Moreover, this research conducted in Nigeria tends to be myopic. Existing research in Nigeria rarely examined the relative impact of specialised banking services and diversified banking services. Second, most of them focus on only one aspect of diversification, ignoring the benefits of relative comparison to determine the best strategy. For this reason, it is fair to say that the present results are suboptimal and therefore insufficient for policy formulation. The objective of this study is to address these shortcomings by providing a more robust and policy-friendly impact analysis that takes into account the various aspects of diversification. The study uses both accounting and market-based performance measures and departs from previous studies in Nigeria by examining the relative impact of both specialised banking and different models of diversified banking in Nigeria. This study therefore addresses the debate in the literature and among policy makers in Nigeria on the impact of universal banking and cross-border banking on the banking sector and hence on the Nigerian economy.

## 2. A Brief Review of Existing Literature

### 2.1 Conceptual Review

#### 2.1.1 Corporate Diversification

One proposition of economic theory is that firms are collections of tangible and intangible resources organized to achieve specific objectives. While some of these resources are particularly suited to a particular output and therefore cannot be used in a diversified manner, other resources can be used for multiple outputs, and if such resources are not fully utilised in the firm's current operations, it may be worthwhile to expand their utilisation. As stated by Pearce & Robinson (2000), Martin & Sayrak (2003), and Clarke (2005), diversification can be defined as a firm's distinct departure from its current operations, or the firm's expansion into new markets with the same product line or with products which are different from the firm's current product lines, or the establishment of a separate business internally. This separate business is such that can provide synergy with the original firm by counter-balancing the drawbacks and the strengths of both businesses. To Aversa et al. (2015), a firm diversifies when it adds other ways of creating value, and these additional ways are associated with distinct monetization mechanisms.

As a strategy for growth, companies diversify to explore new business areas that promise greater profitability (Kim et al., 2009). Firms plan to diversify because of changes in economic or industry conditions. Another reason firms enlarge their operational activities is to maintain their grip on large clients by expanding into a "one-stop" business where such clients are offered as many services under one roof. Alternatively, firms expand across borders to geographical locations where large clients may need their services (Osemwengie-Ero, 2019). Firms often view diversification as business strategy options and several diversification models used as strategy options can be found in the literature. One such model is the related diversification model. Diversification can be termed as related diversification when firms trading on similar products collaborate to have the benefit of sharing market knowledge such that they may act like conglomerates (Lopes, 2017). The advantage of related diversification as noted in Oyefesobi et al. (2017) is that firms can operate at lower cost through this synergy. On the other hand, firms may choose the unrelated diversification option. Unrelated diversification is conceptualized as diversifying into lines of business different from that of the current period. The main idea behind unrelated diversification is to enhance the quality of the organisation, make more profits, attain production or marketing synergy and serve as a shock absorber where one industry or sector is at risk of recession (Nyaingiri & Ogolla, 2015). The major reason for pursuing an unrelated growth strategy is that opportunities in the firm's current line of business are limited. Investment opportunity option, therefore, necessitates taking into consideration, options in other kinds of business (Akweshola & Wale, 2018). Schommer et al. (2019) believe that the tendency to opt for related diversification or unrelated diversification depends on the size of firms. Smaller firms are likely to be related diversifiers while larger firms are prone to opt for unrelated diversification as a business strategy option.

The third model of diversification is topographic diversification. As stated by Li et al. (2016), topographic diversification is the practice of diversifying investment portfolios across different geographic regions to reduce the overall risk and improve returns. To Shen et al. (2011), diversifying over many geographic regions compensates for the relative volatilities across economic regions, thereby reducing the risk associated with less-diversified portfolios. Advocating for cross-border diversification, Osemwengie-Ero (2019) argued that the numerous cross-border gains for deposit-money banks include increased opportunities for profitability, improved competition and financial efficiency;

financial deepening and outreach; financial stability and deepening; risk diversification and forestalling financial shock. Though less commonly used, another major classification of diversification is horizontal and vertical diversification. Horizontal or product diversification involves adding other goods or services to an existing line of production, while vertical diversification is the expansion of operations along different stages in the value chain of the same line of production. (Palepu, 1985; Aversa et al., 2015).

### 2.1.2 Financial Performance

Financial performance is the degree of effectiveness of the business models employed by firms. Financial performance measures show whether or not the organisation's strategy, implementation and execution are making contributions to bottom-line improvement. Its' most important purpose is to make available thorough information to shareholders and other stakeholders to enable them to make sound business decisions. It can also be employed for intra-industry or inter-industry appraisals (Farah et al., 2016). The most widely used financial measures of performance are the return on assets (ROA) and the return on equity (ROE) or variations of these. ROA indicates a bank's management's ability to bring forth profits from assets; on the other hand, ROE reflects the returns to shareholders' equity. In general, ROA is a more popular measure used in research because it measures the return generated by the bank to all resource providers (equity, debt and retained earnings) and not just to a single group like the ROE. Also, ROA is more sensitive to financial leverage, measured as debt-to-assets; the ratio of debt to total equity is referred to as financial leverage. Companies with higher (lower) equity bases will have lower (higher) financial leverage ratios, and therefore lower (higher) ROE (Emel & Yildirim, 2016). While the ROA and ROE are accounting-based measures, Li and Greenwood (2004) pointed out that the 'Tobin q' is another index of financial performance that is market-based. By definition, Tobin-Q is derived by taking the ratio of firms' assets in their market value and that of the replacement value (RVA).

## 2.2 Theoretical Literature

It is now conventional for business managers to plan on diversification as a growth strategy. Theoretical bases supporting the idea include the Resource Based Theory (RBT) which is based on the seminal work of Penrose (1959), the market power theory proposed by Montgomery (1994) and the capital market theory attributed to Jensen and Meckling (1976). The Resource-Based Theory (RBT) posits that every firm is predominantly a distinct bundle of resources that are uniquely different from the resources of its counterparts. This distinction determines the relative quality, and by extension, the respective profitability and growth potentials of each firm. In addition to the heterogeneous resource-endowment assumption, the theory also posits that these resources are immobile such that they are not easily acquired or imitated by other firms neither can firms sell excess resources or buy deficit resources from other firms. This implies that firms can only utilize excess resources by diverting them for the production of related products. Alternatively, the related-product diversification strategy will be beneficial to a collection of firms in the same industry if they work together as conglomerates (Wan et al. & Yiu, 2011; Bathia & Thakur, 2017; Jolly & Ariff, 2019; Utami & Alamos, 2022).

Economics theoretically emphasis increased market share in a target product market as a profit maximization strategy, and businesses often rely on the signal provided by market share as their market performance metrics. The Market Power Theory (MPT) however prescribes diversification as a tool for enhancing a firm's financial performance or profitability. Bhattacharya, Morgan and Rego (2022) find that market power and quality signaling are major determinants of a firm's competitiveness within markets and across markets. Market power theory posits that firms diversify to be more competitive (Barney, 2002). Placing more emphasis on diversification rather than market share, the theory states that the competitive power of a firm is enhanced by its positions in markets other than its market. However, to take advantage of the competitive advantage as posited by the market power theory; a firm must have established its competitive advantage in its market. This advantage then propels and enables the firm to enter new markets (Mulwa et al., 2015). While the RBT emphasises resource efficiency and the MPT emphasises competitiveness as the reasons for diversification, the capital market theory emphasises risk mitigation as the major reason for diversification. According to this theory, the main goal of diversification is to achieve efficiency by balancing risk and business returns. With appropriate diversification, risk can be lowered without lowering the expected revenue to the firm. By spreading the risk over multiple businesses, the risk per business (i.e., average risk) is lower than by concentrating on one business. (Laopodis, 2020). The theory acknowledges that risk averseness differs amongst managers. Every management is expected to obtain a balance compatible with its level of risk averseness (Fabozzi & Modigliani, 2002).

## 2.3 Empirical Review

Corporate diversification is key to strategic management and for this reason, myriads of empirical studies on issues related to corporate diversification exist. However, when compared to other sectors, studies related to corporate diversification in the banking sector is still scanty. Buch & Neugebauer (2009) opine that the main reason is the problem

of data availability. By nature, bank-related information is either classified or only available to closely guarded circles. Table 1 presents some of the more recent studies on diversification and bank performance.

**Table 1 - Prior studies related to bank and diversification- (Panel and country-specific studies)**

S/N	Author	Sample	Period covered	Objective	Dependent variables	Key Explanatory variables	Estimation technique	Findings
1.	Osifo & Evbayiro-Osagie (2020)	50 banks (11 African countries)	2007-2017	Foreign diversification on bank performance	NIM, Tobin-Q	Foreign div. Income div. Subsidiary div.	System GMM	Diversification has Negative impact on bank performance
2.	Gelman, Goldstein & MacKinlay (2022)	USA	1997-2017	Bank diversification and lending resilience	Bank Lending	Geographic div., subsidiary, assets, Z-score, ROA, equity-to-asset	Not stated	Diversification-induced lending is beneficial during financial crisis
3.	Armstrong & Fic (2014)	800 banks (31 OECD countries)	1998-2012	Financial institutions diversification on valuation	Tobin-q, market-to-book ratio	Asset and income diversification, operating income,	GMM	Smallest banks benefit more from diversification
4.	Jeon, Wu, Chen & Chen (2020)	1400 banks (39 emerging countries)	2000-2016	Revenue, loan and internationalization div. on investment	Risk, efficiency	Diversification, bank specific characteristics, macroeconomic conditions,	System GMM	diversification is negatively associated with bank efficiency
5.	Adem (2022)	45 african countries	2000-2017	Diversification on bank stability	SDROA/SDROE ratio	Liquidity, cost-to-income ratio, leverage, NIM,	System GMM	Income diversification positively impact bank stability
6.	Amidu & Wolfe (2013)	978 banks (emerging economies)	2000-2007	Competition and diversification on bank stability	Bank's total cost	Revenue diversification, Bank total asset, price of funds, labour, capital	2SLS	Diversification reduces banking risk.
7.	Uddin, Majumder, Akter & Zaman (2022)	32 banks (Bangladesh)	2007-2016	Income and asst diversification on bank performance	Y=ROA, ROE, Risk-adj. ROA, Risk-Adj. ROE	Y <sub>t-1</sub> , Diversity, liquidity, GDP, Bank size	System GMM	Income and assets diversification positively impact bank profitability
8.	Shweta & Anand (2018)	169 banks (BRIC countries)	2001-2015	Income diversification on bank performance	ROE, ROA	Diversification, Risk, size	System GMM	positive relationship between diversification and performance
9.	Osifo & Ighodaro (2020)	9 banks (Kenya)	2007-2017	Corporate div, macroeconomic factors on DMB performance	Tobin-Q, ROA	Foreign div. income div. subsidiary div, exchange rate, inflation rate	Feasible GLS	Diversification has positive impact on bank performance
10.	Obaro, Onuorah, Evesi & Ehiedu (2022)	10 banks (Nigeria)	1999-2020	Diversification on bank performance	ROA	Asset div., Deposit Div., investment div., product div.	Panel Least Square	Asset, Investment and Product diversification positively affect Bank performance
11.	Obisesan & Ogunsawo	10 banks (Nigeria)	2013-2016	Bank diversification on economic growth	GDP	Income div., loan div., deposit div.	Pooled OLS	Income and loan diversification positively

								affect GDP
12.	Osifo & Obanoike (2021)	12 banks (Nigeria)	2007-2017	Corporate diversification and macroeconomic factors on bank performance	Tobin-Q, ROA	Foreign div, subsidiary div, income div, interest rate, exchange rate	GLS	Diversification positively impacts DMBs in Nigeria
13.	Osemwengie-Ero (2019)	16 banks (Nigeria)	2001-2016	Cross-border div. on bank performance	ROA, stock performance, liquidity	Cross-border activities, Bank size, Bank leverage, bank age	GLS	Cross-border diversification has no significant impact on bank performance
14.	Cimar, Gursel & Tuzch (2018)	20 banks (Turkey)	2005-2016	Product and income div. on bank performance	ROA, NPL	Bank size, ownership structure, time, interest rate, risk preference, growth	Panel regression on entropy models	Positive impact
15.	Buyuran & Eksi (2020)	14 banks (Turkey)	2010-2017	Revenue diversification on bank performance	ROA	Bank equity, deposit, size, NPL	GMM on HHI indexed variables	Negative relationship between diversification and bank performance
16.	Japan & Van (2021)	30 banks (Vietnam)	2008-2019	Loan portfolio diversification on bank returns	ROA, ROE, NIM	Loan portfolio div., loan level control variables	System GMM HHI and SEI data	Loan portfolio diversification has adverse effect on bank performance

Source: Authors' compilation. GMM=Generalised Least Square ROA= Return on Asset ROE= Return on earnings NIM= Net interest Margin

Table 1 shows the empirical results of the research done. The results presented attest to variations in country-wise results. For instance, while diversification negatively impacted banks in Vietnam, the results for Turkey show a positive impact. Panel results also show a lack of concession in the results presented by the various authors. Table 1 also shows that the results from Nigeria all proved positive. However, the research done on related topics for Nigeria is still inadequate. Secondly, the researchers only concentrated on single aspects of diversification. Gaps created by the dearth of research evidence on the impact of diversification on Deposit Money Banks in Nigeria and the relative impact of the various models of diversification therefore exist. This gives credence to the need for more research in this area and justifies this study.

### 3. Methods and Materials

#### 3.1 Model Specification

This study adapted the models of Karlsson & Tavassoli (2015) which analysed the effect of various diversification strategies of firms on their future performance for Swedish firms. The models are stated thus:

$$ROE_{it} = \beta_0 + \beta_1 SP_{it} + \beta_2 RDIV_{it} + \beta_3 URDIV_{it} + \beta_4 CBDIV_{it} + \mu_t \dots (1)$$

$$ROA_{it} = \beta_0 + \beta_1 SP_{it} + \beta_2 RDIV_{it} + \beta_3 URDIV_{it} + \beta_4 CBDIV_{it} + \mu_t \dots (2)$$

$$TOBINQ_{it} = \beta_0 + \beta_1 SP_{it} + \beta_2 RDIV_{it} + \beta_3 URDIV_{it} + \beta_4 CBDIV_{it} + \mu_t \dots (3)$$

The dependent variables are Return on Equity (ROE), Return on Asset (ROA), and Tobin Q (TOBINQ) while the explanatory variables are Specialization (SP), Related Diversification (RDIV), Unrelated Diversification (URDIV), and Cross-Border Diversification (CBDIV).  $\beta_1, \beta_2, \beta_3,$  and  $\beta_4$  are the corresponding parameters while the subscript  $it$  represents the  $i^{th}$  Firm in period  $t$ .  $\beta_0$  represents the intercept and  $\mu_t$  is the stochastic error term. In this study, models (1), (2) and (3) were modified by including Firm Size (FS) and Leverage (L) as control variables. We then specify the new models as:

$$ROE_{it} = \beta_0 + \beta_1 SP_{it} + \beta_2 RDIV_{it} + \beta_3 URDIV_{it} + \beta_4 CBDIV_{it} + \psi_1 FS_{it} + \psi_2 LEV_{it} + \mu_t \dots (4)$$

$$ROA_{it} = \beta_0 + \beta_1 SP_{it} + \beta_2 RDIV_{it} + \beta_3 URDIV_{it} + \beta_4 CBDIV_{it} + \psi_1 FS_{it} + \psi_2 LEV_{it} + \mu_t \dots (5)$$

$$TOBINQ_{it} = \beta_0 + \beta_1 SP_{it} + \beta_2 RDIV_{it} + \beta_3 URDIV_{it} + \beta_4 CBDIV_{it} + \psi_1 FS_{it} + \psi_2 LEV_{it} + \mu_t \dots (6)$$

The *a priori* sign expectations for the parameters are  $\beta_1 > 0; \beta_2 > 0; \beta_3 > 0; \beta_4 > 0; \psi_1 > 0; \psi_2 > 0$

### 3.2 Measurement of Study Variables

#### 3.2.1 Diversification Measures

*Specialisation (Core Operations):*

The Rumelt's specialisation ratio, the entropy index and the Herfindahl-Hirschman-index (HHI) are commonly used in researches, literature (for example, see Hoeche, Schmid, Walter & Yermack, 2009; Daud, Salamudin & Ahmad, 2009). This study however adopts the percentage earnings measure used in Oyedajo (2012) Because of its relative flexibility and ease of calculation. Specialisation for each bank ( $i$ ) and for each year ( $t$ ) is therefore calculated as:

$$SR_{it} = \frac{\text{Total revenue of core products}_{it}}{\text{Total revenue}_{it}} \times 100$$

Where SR denotes Specialisation ratio. By this measure, banks with higher percentage are more specialized or less diversified than banks with lower percentages. In this study, interest earning was used for revenue from core products.

*Related and Unrelated Diversification*

A number of researches also employed Shannon entropy index and HHI measuring relatedness (see Cimar et al, 2018 & Japan et al, 2021). A more measurable metric is the Average Revealed Relatedness (AVRR) in Karoly,

László, Zsolt & Balázs (2018). Based on Montgomery (1982) who defined related diversification (RD) as the proportion of the firm's sales which are related to one another this study measured related diversification as:

$$RD_{it} = \frac{\text{Total earnings from banking products}_{it}}{\text{Total earnings}_{it}}$$

While unrelated diversification is given as:

$$URD_{it} = \frac{\text{Total earnings from nonbanking products}_{it}}{\text{Total earnings}_{it}}$$

In this study, we defined banking products to include all core banking services to primary customers such as earnings from loans and advances and administrative charges for rendering banking services. All other earnings are classified as nonbanking earnings. Higher ratios indicate higher degree of related diversities (RD) and unrelated diversities (for URD<sub>it</sub>).

#### *Topographical (Cross-border, Geographical) Diversification*

In an attempt to examine the diversification of banks' international portfolio, Buch *et al.* (2009) employed Grubel-Lloyd index which is defined in the case of financial diversification as:

$$GL_{it} = 1 - \frac{|A_{it} - L_{it}|}{A_{it} + L_{it}}$$

Where  $A_{it}$  and  $L_{it}$  are total cross-border assets and total cross-border liabilities for country  $i$  at time  $t$  respectively. Where the index value =1, then this implies full diversification while an index value of zero implies no cross-border diversification. It is apt to expect GL values lying between 1 and zero. However, researches such as Osemwengie-Ero (2019) regarded the extreme values as dichotomous dummy variables, where 1 represents years of cross-border activities and 0 as years of no cross-border activities. Due to dearth of separate data for cross-border assets and liabilities, this study was unable to correct this misconception and therefore aligned with Osemwengie-Ero (2019).

### 3.2.2 Measures of Financial Performance

#### *Return on Asset (ROA)*

According to Osemwengie-Ero (2019), ROA may be calculated as:

$$ROA_{it} = \frac{\text{Net income before securities gain and losses}_{it}}{\text{Total assets}_{it}} \times 100$$

Or

$$ROA_{it} = \frac{\text{Profit after tax}_{it}}{\text{Total assets}_{it}} \times 100$$

This study employed the later measure.

#### *Return on Equity (ROE)*

Following Topbas (2017) ROE is calculated as:

$$ROE_{it} = \frac{\text{Profit after tax}_{it}}{\text{Total equity}_{it}} \times 100$$

#### *Tobin-Q*

The Tobin Q measure employed in this study is given as:

$$TobinQ_{it} = \frac{\text{Equity market value}}{\text{Equity book value}_{it}}$$



ROA and ROE ratios greater than 1 show increased viability while for Tobin-q, the firm is better positioned as the ratio reduces such that viability implies ratios less than 1.

### 3.3 Data

The data used for this study were sourced from annual reports for ten years of 13 banks listed in the Nigerian Stock Exchange (NSE). The number of observations per variable is 130 which is considered adequate for this study. The sources of data and the measurements used are presented in the table below.

### 3.4 Method of Data Analysis

The study commenced by conducting basic preliminary tests of data to determine the normality of their respective distributions. Other preliminary tests conducted are the tests for multi-collinearity and heteroskedasticity. By employing the Breusch-Pagan Lagrangian Multiplier (LM) test and the Hausman test, the study confirmed that the pool regression model is appropriate. Based on this confirmation, the study then estimated the data using Generalized Least Squares (GLS) technique. The test results are presented in the next section.

## 4.0 Results

### 4.1 Preliminary Results

The results of the various preliminary tests are compiled and presented in Table 4.1

**Table 4.1 - Preliminary tests results**

Tests		SP	RDIV	UDIV	CBDIV	FS	LEV
Variance Inflation Factor test (for multi-collinearity)	ROA	1.8297	1.8282	1.8345	1.8355	1.8546	1.8593
	ROE	1.07137	1.3167	1.1092	1.2022	1.4303	1.0466
	TOBIN Q	1.1386	2.1446	2.0401	1.839	1.921	3.520
Pearson Correlation Tests	ROA	0.1204	-0.12	0.0069	0.1025	0.1343	0.1097
	ROE	0.1632	-.0509	0.0169	0.1213	0.0772	0.2232
	TOBIN Q	0.0722	0.0361	0.0672	0.0514	-0.0650	0.03744
Gaussian distribution	Mean	0.7646	0.2354	0.0765	0.492	7.289	58.951
	Std. dev.	0.072	0.042	0.083	0.5019	0.673	20.172
	Skewness	0.728	-0.728	0.8426	0.0308	-0.03	0.5746
	Kurtosis	2.954	2.954	3.437	1.0009	2.382	4.9502
Jarque-Bera		11.516 (0.0031)	11.516 (0.0032)	16.4194 (0.0003)	21.67 (0.0000)	2.0861 (0.0352)	27.756 (0.0000)

Source: Compiled from Researchers' Computations t-values in parenthesis

The results presented in Table 4.1 show that the data used has reached an acceptable level to conclude that the data follows a normal distribution. The results also show that there is no reason to suspect multicollinearity. The correlation tests indicate a low correlation between each pair of response variables and an explanatory variable. Using the ratio of mean to standard deviation as a rule of thumb, it is fair to say that the data are normally distributed. This position is supported by the Jaque-Bera statistics, which were all significant at the 5% level of significance.

### 4.2 The Estimation Results

The panel data used in this study was tested for random or fixed effects in order to ascertain the estimation method best suited for the data. The result of the Hausman test as well as the Panel Data analysis is given in Table 4.2.

**Table 4.2 - Panel data results**

Variable	Apriori sign	ROE	ROA	TOBINQ
C		0.7701* {0.000}	0.5477* {0.000}	0.8265* {0.000}
SP	+	0.0051* {0.000}	0.0009** {0.043}	-0.0035** {0.029}
RDIV	+	0.0239* {0.000}	0.0067** {0.0227}	0.0148* {0.000}
URDIV	+	0.0009 {0.3834}	-0.0062 {0.901}	-0.0013 {0.9803}
CBDIV	+	0.0141* {0.000}	0.5296* {0.000}	0.0274** {0.0130}
FS	+	-0.0025* {0.000}	0.0548 {0.173}	0.0454** {0.0359}
LEV	+	0.6586 {0.6594}	0.8796* {0.004}	0.5579* {0.000}
Hausmann test result				
Prob(F-stat)		0.000	0.000	0.000
Durbin-Watson		1.029	1.904	0.59
$\chi^2_{Hetero}$		(0.3927)	$\chi^2_{Norm}$	0.6712
$\chi^2_{Serial/Corr}$		(0.862)	$\chi^2_{Hausman}$	11.232
$\chi^2_{Wald-Test}$		(0.00)		(0.000)

Note: \* denotes significant level of 1%, \*\* denotes significant level of 5% and \*\*\* denotes significant level of 10%. {} is p-value

The  $\chi^2$  Hausman statistic and the test value (11.232, p=0.00) indicate that the fixed effects estimation of the model at the 1% level of acceptability is the appropriate estimation technique for the model. Based on the result of the Hausmann test, the study employed the Generalised Least Square (GLS) panel estimation technique. In addition, GLS estimates perform better with heteroskedastic or linearly-dependent data.

Supporting the findings in Osifo & Ighodaro (2020), and Osifo & Obanoike.(2021), this study supports diversification as a positive strategy for enhancing Bank performance in Nigeria. A more specific approach to the results obtained in this study reveals a unanimous position that URDIV is not a significant predictor of Bank performance in Nigeria. The significant findings for cross-border diversification negate the insignificant results obtained by Ero (2019). The three models unanimously consented to the significance of SP, RDIV, and CBDIV at the 5% level of significance. Except for SP, the parameters of all other variables met *a priori* sign expectations. Based on the results of the Tobin Q model, SP has a negative impact on Bank performance. The results of the control variables reveal that Leverage is not significant in the ROE model while the Firm size is also not a relevant variable using the ROA and does not meet the *a priori* sign expectations going on the ROE response. In relative terms, CBDIV and RDIV have stronger parameter coefficients when compared with SP; indicating that these two diversification strategies have a stronger impact on Bank performance than specialisation.

### 4.3 Relative Analyses of Models

The study conducted a relative analysis of the results obtained from the three models to ascertain which of them best describes the dynamics of the bank performance. The study, therefore, compares the relative qualities of the models using R<sup>2</sup>, squared error of regression, sum of squared residual, F-statistics for both the weighted and the unweighted statistics. The result is presented in Table 4.3.

**Table 4.3 - Relative power of the various models**

Response variable	Weighted/unweighted statistics	R <sup>2</sup>	S.E. of Reg	SSR	F. Stat.	DW	Mean Dep. Var.
ROE	Weighted stat	0.6813	0.5598	53.90	63.956 (0.000)	1.974	-0.2048
	Unweighted Stat	0.6839	-	56.25	-	1.537	-0.1107
Tobin Q	Weighted stat	0.6130	0.5570	52.75	75.897 (0.000)	1.904	-0.1727
	Unweighted Stat	0.1727	-	55.65	-	1.530	-0.1107
ROA	Weighted stat	0.6319	0.0294	0.134	65.62 (0.000)	1.937	0.704
	Unweighted Stat	0.6300	-	0.1475	-	1.868	0.5918

S.E. of Reg is squared error of regression, SSR is sum of squared residual, DW is Durbin Watson test

The results presented in Table 4.3 confirm that the three models are good predictive models of changes in the profitability of Nigerian banks. The significant F. statistics confirm the overall fit of each of the three models at 1% level of significance. The DW statistics for all the models invalidate the suspicion of autocorrelation among the variables. The R2 values of the various models show that all three models confirm that not less than 60% of the variations in bank profitability can be explained by the predictor variables used in the model. Relatively, among the three models, ROE explained the largest percentage of observed variations in bank performance while the ROA has the smallest computed errors as shown by S.E. of regression and the SSR.

## 5. Conclusion and Recommendations

This study examined the impact of corporate diversification on the financial performance of listed Nigerian deposit money banks. Using accounting (ROA and ROE) and economic (Tobin Q) indices, the results of the empirical analysis confirm that it is beneficial for money banks to diversify their businesses. The study also shows that specialisation and cross-border diversification are significant determinants of bank performance. The findings lead to the conclusion that specialisation in their core competencies and expansion in this area is more beneficial to money banks in Nigeria than any form of diversification into unrelated businesses. The study therefore recommends that banks should focus on enhancing their capabilities in the areas of their core competencies. Plans for diversification should focus on geographic expansion within and outside the borders rather than product diversification. In particular, deposit banks should not diversify into areas outside their operational competence. Financial sector and policy reforms in Nigeria should focus more on promoting specialised banks rather than the universal banking model introduced in 2000. Policies that promote cross-border banking should also be pursued as this is beneficial to deposit-taking banks as it gives them more opportunities for profitability, improved competition and financial efficiency, thus creating a much-needed conducive financial environment in which other sectors can thrive.

## Author Contributions

The original draft of this study was written by Eseosa Ogedengbe as part of her Master’s Research work. Significant modifications were made by Asemota Georgina to the theoretical and empirical review. The methodology and estimation were also done by Asemota Georgina.

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