

BANK'S NON-CORE INCOME AND FINANCIAL PERFORMANCE IN NIGERIA

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Abstract: *The study ascertains the relationship between bank's non-core income components, Tobin's Q and market value added of DMBs in Nigeria. It also examines the reverse effect of Tobin's Q and market value added on bank's non-core income in Nigeria. The bank's non-core income components are foreign exchange transaction, commission, fees, e-banking and other operating incomes. The statistical tools employed were the descriptive statistics and econometric analysis. The results of the regression analysis show that only commission income, fee income, e-banking income and foreign exchange transaction income significantly influence Tobin's Q and market value added of DMBs in Nigeria. In addition, the results reveal a high degree of relationship between bank's non-core income components, Tobin's Q and market value added of DMBs in Nigeria. The regression results also show that in the reverse Tobin's Q and market value added each has a significant influence on fees and foreign exchange transaction incomes of DMBs in Nigeria. Our findings show that electronic, fees, and commissions are the most effective means of generating non-core income for the banks, with e-banking being a strong and emerging component. While income from foreign exchange activities seems to have boosted the banks' revenue, it was quite unimpressive for banks financial performance. It is recommended that banks should be more mindful of the means of acquiring non-core income if the goal is to promote financial performance. Also, banks should minimise their income from foreign exchange transactions to maximise their financial performance. Finally, banks should further develop reliable user-friendly electronic platforms with fast internet speed since customers tend to place more confidence on banks with more innovative operations in relation to e-banking to improve her income and stimulate the overall financial growth of the banks following the global outbreak of Covid-19 pandemic which hampers business activities.*

Keywords: *Bank, non-core income, market value added, Tobin's-Q ratio, foreign exchange.*

JEL Classification Code: O23, O34, O46.

1. INTRODUCTION

Deposit Money Banks (DMBs) promote economic growth primarily by mediating between the surplus and deficit economic units. The existence of banks has helped to alleviate a lot of hitches which otherwise would have stalled the flow of liquidity directly from agents with excess liquidity (depositors) to

agents in need of liquidity (borrowers). DMBs financial flows such as, interest received from loans and securities (interest income), interest paid on deposits (interest expense), and the subsequent net interest margins are principally from the intermediation process. Through the intervening process, they enable capital formation and facilitate the production process. This has been the core source of revenue generation to the banking sector decades ago prior to the arrival of e-banking.

However, since the deregulation process of the banking sector in 1970's, there has been an increase in the diversification of banks operations from interest based activity to non-core income based activity. To remain in business, banks are involved in different activities such as investments, trading and money transfer through which non-core income is earned, hence, a rise in the percentage of non-core income of commercial banks (Stiroh, 2010). This has also been attributed to recent structural forces of change that have caused banking in emerging markets to experience a decline in its traditional activities and leading them to diversify into new business strategies (Adedeji & Adedeji, 2018). The upsurge in bank's non-core income activity was further ascribed to the global financial crisis of 2008, the Nigerian banking sector reforms of 2004, the advent of Islamic banking, the introduction of Treasury Single Account (TSA) policy, increased competition among banks, technological advancement and financial innovation, which allowed banks to provide a much wider range of services and products to its clients.

Development in information and communications technology, for example, the Internet, Automatic Telling Machines (ATMs), new intermediation technologies for processes like loan securitisation and credit scoring, and the introduction and expansion of financial instruments and markets (high yield bonds, commercial paper, financial derivatives) all impacted on the levels and types of non-core income of DMBs (Lown, Osler, Strahan & Sufi, 2000). According to Ritter and Udell (1996), this source of revenue has become more important in recent times as banks have shifted from the traditional interest income to more of non-traditional income known as non-core income. This shift towards non-core income has increased banks' revenue as it is one of the significant factors influencing banks' profitability (Oniang'o, 2015). This income source had proven over the years to have great growth significance on the total income and financial performance of banks.

Historically, the growth of non-core income has been incremental since its inception into mainstream corporate banking in the 1970s. However, the

concept of non-core income had not been popularised and literature remains divergent on its exact meaning. Khrawish (2011) posit that non-core income is a controversial topic because it means different things to different people. This controversy notwithstanding, the quest to ascertain its meaning remains incremental. The most predominant definition is that offered by Khrawish (2011) who defines non-core income as incomes that banks earn from areas outside their lending operations or any income that banks earn from activities other than their core intermediation business or from investment. This suggests that companies must initiate and execute business ideas that are outside their core operations to maximise future long-term earnings of shareholders. Similarly, the concept of non-core income has been branded differently but unanimous in meaning. Other such terminologies include noninterest income, non-fund based income, alternative revenue and interest free income. In this paper, non-core income is viewed as that part of a bank's revenue that is not generated by its interest-bearing activities but from activities outside its core operations of intermediation. For directors of a bank to ascertain the extent to which non-core income influences financial performance of bank with a view to taking relevant management decisions, there is need for them to determine whether the proportion of net cash flow from non-core operations of the entity constitutes a substantial amount of the total revenue generated by the company.

This research focuses on Nigeria for the following reasons. First, majority of existing studies on banks' non-core income focuses on developed economies (such as the US, Europe and the Middle East) and this call for empirical investigation of this subject in other jurisdictions, basically in Nigeria. Second, despite the significant growth recorded in the Nigerian banking sector and technological improvements in virtually all spheres of human and business endeavours, there are no corresponding increases in non-core income studies in Nigeria. Only one major study (Adedeji & Adedeji, 2018) has empirically examined the effect of noninterest income on profitability of Deposit Money Banks in Nigeria. This study is not without limitations. Adedeji and Adedeji (2018) used 'profit before tax' which is a traditional performance indicator to measure financial performance. This is considered orthodox due to its imprecision in measurement and does not reflect the value relevance of accounting information. This study adopts "Market Value Added and Tobin's -Q ratio" which are modern performance indicators in measuring financial performance. Third, no prior studies compared by ranking the nexus between independent variables, Market Value Added and Tobin's Q ratio to ascertain

the variables with higher effects and its implication(s) on bank's financial performance. Finally, earlier studies did not consider the reverse effect of financial performance on non-core income of DMBs in Nigeria. This research bridges this gap by investigating whether banks that perform better tend to record higher income from non-core operations of the banks.

Given the associated lacunas identified above in the works of erstwhile scholars, this study is of the view that further evidence would be needed to substantiate whether non-core income affects financial performance of DMBs in Nigeria. It is on this premise that a detailed study of some selected banks within Nigeria was undertaken using banks non-core income indicators and country-specific data as contained in the annual reports of the sample banks and the Nigerian Stock Exchange website respectively as basis for measurement with a view to bridging existing knowledge gap. Against the backdrop of the above justifications, the objectives of this paper are to ascertain the relationship between bank's non-core income components, Tobin's Q and market value added of DMBs in Nigeria as well as assessing the reverse effect of Tobin's Q and market value added on bank's non-core income in Nigeria.

This paper is structured into five sections, with the first being the introductory section. Section two discusses the literature review and hypotheses development with emphasis on: conceptual review, theoretical review and review of empirical studies. Section three harps on the methodology. This is followed by section four which focuses on estimation results and discussion of findings, and section five presents the conclusion and recommendations.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Concept of Bank's Non-Core Income

Income generated from bank's lending activities otherwise known as interest income is essential to boost bank's financial performance and economic growth of a nation. Interest income from banks' intermediation activities remains banks' core income source and has been a major contributor to bank's earnings from the traditional financial services. Thus, for a bank to earn interest income it would have to give out loans as well as commits funds, invariably, interest income is a fund based generating income. However, current developments in the financial industry suggest that this form of income alone is not enough to sustain financial institutions economically. Therefore, financial institutions may need to look for additional source of income generation (Chen, Huang &

Zhang, 2017) if they must remain a going concern business. This alternative revenue source to the bank is the non-core operations of the bank from which non-core incomes are derived.

DMBs non-core incomes are incomes that banks earn outside their core business operations. It is the income that a bank earn for providing variety of services for which it does not need to involve its funds. These are incomes that banks generate from other sources other than income from banks' core intermediation role of making funds available to the deficit economic unit from the surplus economic unit. Elements of non-core income include but not limited to incomes from other operating activities, fees, commission, foreign exchanges, securitisation of the mortgages, credit cards, agency banking, mobile and internet banking, insurance underwriting, mutual funds investment, net insurance premium income, net insurance claims and benefits paid, gains from banking and trading activities, gains from investment activities as well as other operating income (Kaufman & Mote, 1994).

During the 1990s when banks non-core income trended up, it was generally believed that shifting banks' income away from intermediation-based activities (in which bank income was subject to credit risk and interest rate risk) towards fee-based financial products and services would reduce banks' income volatility (Hogarth, Milne, & Wood, 1998). Similarly, since banks non-core income is less dependent on overall business conditions like interest rates, they are expected to provide traditional diversification benefits of less volatile revenue. It was conventionally believed that expansion into new fee-based products and services would reduce earnings volatility due to diversification effect even as the portfolio theory states that business diversification can have positive benefits for banks, as banks can leverage on their skills and abilities across products to gain economies of scope which would impact positively on their income and reduce income volatility (Jaffar, Mabwe, & Webb, 2014). Stiroh (2010) posits that non-core income of banks can reduce the likelihood of distress during financial crisis, vouching for the validity of income diversification to mitigate bank risk. However, Stiroh and Rumble (2006) argue that the higher volatility of non-core income off set any diversification benefits even though revenue diversification is associated with higher risk-adjusted returns.

Short (1979) asserts that an increase in banks non-core income will improve earnings but an increase in non-core income of banks hardly occurs without associated changes in interest income, variable inputs, fixed inputs, and financing structure. While bank loans are relationship based and as a result

have high switching costs, most fee-based activities are not relationship based (Angbazo,1997). Thus, in spite of credit risk and fluctuations in interest rates, interest income from loans may be less volatile than non-core income from fee-based activities. Within the context of an ongoing lending relationship, the main input needed to produce more loans is variable (interest expense); in contrast, the primary input needed to produce more fee-based products is typically fixed or quasi-fixed (labour expense). Thus, fee-based activities may require greater operating leverage than lending activities which make bank earnings more susceptible to decline (Williams & Prather, 2010). While the capital for interest-based activities such as portfolio lending are strictly regulated by the relevant authorities, capital for fee-based activities like trust services, mutual fund sales, and cash management require little or no regulations.

Given the paucity of literature in this area of concern in Nigeria and the conflicting views of prior scholars resulting in lack of consensus, mixed, and inconclusive outcomes, this study is of the view that further proof would be required to validate existing studies thus, improving the frontiers of knowledge. Consequently, the study objective examines the effect of non-core income on financial performance of selected DMBs in Nigeria. In specific, the study ascertains the degree of relationship between bank's non-core income variables, Tobin's Q (TQ) and market value added (MVA) as well as the reverse effect of financial performance on bank's non-core income in Nigeria. The variables explicitly considered in this study with a view to making informed judgment are; e-banking, fee, commission, foreign exchange transactions and other operating incomes (as explanatory variables), firm size and firm age (as control variables) which serve as proxies for measuring bank's non-core income while Tobin's Q ratio and Market Value Added (dependent variables) were the measurement indicators used in measuring financial performance of banks. To achieve the specific objectives of this study, hypotheses 1-5 were formulated in the null form as follow:

H₀₁-H₀₅: E-banking, fee, commission, foreign exchange transaction and other operating incomes each has no significant effect on Tobin's Q and Market Value Added of DMBs in Nigeria.

FINANCIAL PERFORMANCE

Financial performance refers to the subjective measure of how firms use the assets from its primary mode of business to generate revenues. Financial performance is the general measure of firms' overall financial health over a

given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation (Santos & Brito, 2012). Financial performance is highly affected by the decisions made by firms to effectively utilise assets to increase profit (Abreu & Mendes, 2000). In the financial sector, decision made by DMBs indicates how effectively the management is working with a mathematical value of the operational efficiency being the measure of the revenues from the total assets (Saira, Jamil, Khalid, & Abdul, 2011). The degree to which DMBs rely on non-core income to make profit is a function of the economic environment (Okello & Muturi, 2018). Market interest rates are driven by benchmark rates such as the Inter Bank Rate (IBR). As interbank rate decreases, commercial banks make less profit from interest income and in order to increase the revenue base of DMBs' and enhance their financial performance, management of these banks embarks more on non-core income generating activities.

Corporate financial performance can be measured by variables which involve productivity, asset efficiency, profitability, growth, shareholders' wealth or even, customers' satisfaction (San & Heng, 2011). Management researchers prefer accounting measures of performance, such as Return on Equity (ROE), Return on Investments (ROI), Return on Assets (ROA), Tobin's-Q, Economic Value Added, Market Value Added, Shareholders Value Added, along with the variability in these returns measures. Researchers from Finance and Economics seem to prefer market returns or cash flow measures along with their variability as performance measures. The performance measures in erstwhile studies typically measure an Accounting Rate of Return (ARR). The idea behind these measures is perhaps to evaluate performance from a managerial standpoint. Return on Investment (ROI), Return on Capital (ROC), Return on Assets (ROA), Tobin's- Q, Market Value Added, Shareholders Value Added, Economic Value Added, and Return on Sales (ROS) are essentially efficiency measures. That is, how management is using the assets (as measured in naira) to generate accounting returns per naira of investment, assets or sales. However, for the purpose of this study, the Tobin's-Q and Market Value Added measurement indicators were adopted as the basis for performance evaluation. To ascertain whether financial performance has effect on non-core income of banks, the sixth hypothesis is formulated in the null form as thus:

H₀: Financial performance of banks has no significant influence on non-core income of banks in Nigeria.

Non-core Income and Financial Performance of Deposit Money Banks

As financial mediators, banks are the most important channel of money circulation between households, firms and financial markets. The role of banks to intermediate funds between the surplus and the deficit economic units has been the major activity of banks through which revenue is generated to the banks in the form of net interest income. This flow of income resulting from the intermediation activities of banks is also the basis for economic growth and development of nations. Deposit Money Banks (DMBs) therefore, is the backbone of any nation's economic growth and development.

However, due to the new banking environment characterized by high competition and pressure, strict government regulations, and the emergence of Islamic banking whose regulations and beliefs negate charging interest on banks' loans, made banks to diversify from interest income based activities (loans and advances) to non-core income generating activities. The diversification into non-core income by DMBs was borne out of the need for banks to improve their financial performance in the wake of declining revenue, majorly due to dependence on interest income. This was achieved by banks through launching of new products and services that are not interest yielding into the market. By implication, DMBs are progressively moving away from the traditional source of revenue generation since it's a less attractive part of banking business strategies to non-traditional based activity known as non-core generating activity. The income generated from non-core activity of banks is known as non-core income.

Non-core income therefore, is defined as income generated from fee-based activities, which include transaction fees, fees for services provided, for example, underwriting, insurance, trading and securitization, fiduciary duties and so on. Non-core income generally can be seen as a heterogeneous type of income that is earned through different activities, broken down into four primary components: fiduciary income, service charges, trading revenue, fees and other income (Kwast, 1989).

Bank being a financial institution invests in different business portfolios ranging from traditional operations such as accepting depositors' funds and granting of loans and advances to non-traditional operations such as investment in assets and products, oil contracts financing, rendering of other financial services, among others. Banks diversify significantly to stabilise profitability and earnings volatility in order to have a fair share of the market. However, for a bank to sustain its financial position in the banking sector, financial

performance plays a crucial role. Financial performance measures the efficiency of banks and the systems in which they operate. Financial performance is of great importance as it is an indicator of profitability and the overall success of the economy (Almazari, 2011). Despite the significance of non-core income to the banking sector, there are still conflicting views by scholars on the subject area as it is still not understood how bank's non-core income can efficiently improve the financial performance of DMBs in Nigeria. Studies on bank's non-core income and financial performance still remain an evolving field of study in Nigeria as little or no research to the best of the knowledge of researchers has been conducted on non-core income and financial performance of banks in Nigeria. It is based on this that hypothesis seven is formulated in the null using the country's specific data as basis for measurement.

Ho₇: There is no significant degree of relationship between bank's non-core income variables, Tobin's Q (TQ) and market value added (MVA) in Nigeria.

THEORETICAL REVIEW

Diffusion of Innovation (DOI) Theory is a theory developed by Professor Everett. M. Rogers of communication studies in his book "Diffusion of Innovations" which was first published in 1962, and is one of the oldest social science theories. This theory was invented in communication to explain how over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The diffusion of innovation explains the rate at which consumers will adopt a new product or service. Rogers (1995) defines diffusion as the process of communicating an innovation through certain channels over time among the members of a social system. Roger reiterated that an innovation is an idea, practice, or object perceived as new by an individual or another unit of adoption.

According to Richard, Florence, and Zénon (2015), diffusion of innovations is a theory that seeks to explain how, why, and at what rate new ideas and technology spread through cultures. The theory of diffusion of innovation analyses how the social members in an organization or society adopt the new innovative ideas and how decisions are made towards achieving them. This entails the use of both mass media and interpersonal communication channels in the diffusion process. The theory greatly relies on human capital with a view that innovations should be largely adopted so as to attain organisational development and sustainability.

In real life situations, the adaptability of the culture played a very relevant role wherever the theory was applied, especially in the banking system where new services are creatively introduced to satisfy customer needs (Adedeji & Adedeji, 2018). Such innovations become attractive to the consumers who will be willing to pay the price thereby making the organisation to maximise profit while ensuring customer satisfaction. This theory therefore, helps organisations understand how trends occur, and warns companies of the likelihood of success or failure of their new introduction.

The theory of diffusion of innovation is applicable to this study because most banks non-core income comes from innovative products and services especially with the application of technology in the banking sector. Thus, this study is anchored on the theory of diffusion of innovation.

Review of Empirical Studies

Brunnermeier, Gang, and Darius (2020) examined banks' non-interest income and systemic risk in U. S. and used a sample from 1986 to 2017 which consists of an unbalanced panel of 796 unique banks. The analysis was done using the summary statistics and regression. This paper finds non-interest income to be positively correlated with total systemic risk for a large sample of U.S. banks. Decomposing total systemic risk into three components, they find that non-interest income has a positive relationship with a bank's tail risk, a positive relationship with a bank's interconnectedness risk, and an insignificant or positive relationship with a bank's exposure to macroeconomic and finance factors.

Ahmed, Qasim, Tahar, and Rashid (2020) examined the impact of non-interest income (NII) and revenue concentration on banks' risk in South Asian countries such as Pakistan, Sri Lanka, India and Bangladesh. Panel data for eighty-five banks from 2009 to 2018 was used. Generalized Method of Moments (GMM) is employed to analyze the data. The study finds that non-interest source income and revenue concentration significantly affect bank risk in the overall analysis. While non-interest income reveals a significant impact on bank risk for Pakistan, India and Bangladesh, it is insignificant for Sri Lanka. Though, revenue concentration has a significant effect on bank risk in Pakistan and India it does not affect bank risk in Sri Lanka and Bangladesh.

Andrzejuk (2019) examined the relation between noninterest income and bank's profitability for Liechtenstein banks. The study examines 12 Liechtenstein banks which specialised in private banking and wealth

management services for the period 2014 to 2016. Data used in the study were gotten from the published financial statements of the banks. The relationship between profitability, proxied by return on equity (ROE) and return on assets (ROA), and noninterest to interest income ratio was analysed using Pearson correlation coefficient. Results showed a negative correlation between noninterest to interest income ratio and ROA. No relevant correlation was found between noninterest to interest income ratio and ROE.

Ammar and Boughrara (2019) investigated the effect of revenue diversification on bank performance, shedding light on the impact of the shift towards non-interest income sources. They used a sample of 275 banks from fourteen Middle East and North Africa countries over 1990–2011. The model estimation using the Generalised Method of Moments (GMM) system reveals that diversification, when taken as a whole, improves bank profitability. They also split the non-interest income and found that trading-generating business lines contribute the most to boosting profitability and stability. They found that engaging in non-interest-related activities worsen the benefit-cost trade-off of diversification, induced by the increased insolvency risk.

Gueyié, Guidara, and Lai (2019) examined the impact of noninterest income on Canadian banks' risk, performance and capital under the different significant regulatory changes made to the Bank Act of Canada using the big six Canadian chartered banks quarterly financial statements and daily stock market data from 1982 to 2018. The banks' quarterly financial reports and daily stock market data were analysed using descriptive statistics and regressions. Their results showed that Canadian banks' expansion into nontraditional activities had slightly decreased their risks and significantly improved their performance from income diversification. Moreover, while adhering to capital adequacy regulation, reshuffling banks' portfolio towards non-traditional activities did not reduce Canadian banks' capital ratio.

Mundi (2019) investigated the impact of changing streams of bank income on bank's profitability in selected banks in India. The focus is that in today's era of competition, income streams of bank are changing. The study examined two income streams of the banks: The fund income and fee income. A database of 74 banks of public, private, and foreign banks was studied over a period of 2005 -2014 and data were collected from the CMIE Prowess. The bank performance was measured using return on equity (ROE) and a control variable, return on assets (ROA). The impact of fund income and fee income on banks profitability was analysed using multiple regressions over the

period of study. The study revealed that fee income and fund income impacted moderately and positively on return on equity of banks.

Alubisia, Githii, and Mwangi (2018) examined the impact of technology based financial innovation on non-interest income in Kenyan commercial banks for 2012-2016. The study investigated how the adoption of ATMs and Cards, Internet and Mobile Banking and use of Funds Transfer Systems such as RTGS and EFT has impacted the non-interest income of commercial banks in Kenya. The study was based on primary and secondary data. The secondary data were sourced from Central Bank of Kenya, which collated data from all 43 banks, while the primary data were sourced from key stakeholders in the industry through techniques like in depth interviews and was used in qualifying the quantitative secondary data collected. Descriptive analysis was used to describe the nature of the data collected while a multiple regression analysis was conducted to illustrate the relationship between technology based financial innovation and non-interest income. The study found that technology based financial innovation has significant effect on the non-interest income earned by commercial banks in Kenya.

Adedeji and Adedeji (2018) examined the effect of noninterest income on the profitability of deposit money banks' in Nigeria. They used a sample of 5 deposit money banks from sixteen banks over 2006–2015. Percentages and multiple regression analysis were used for data analysis

The study reveals that noninterest income has a positive and significant effect on deposit money banks' profitability but the growth rate has been inconsistent.

Al-Tarawneh, Abu-Khalaf, and Al-Assaf (2017) investigated the impact of noninterest income on financial performance of banks in Jordan. They used 16 banks in Jordan during the period 2000 to 2015. Variables used were; Size, Loans, Capital adequacy, Overheads, Noninterest income margin as proxies for independent variables while profitability was used as a proxy for the dependent variable. Data was collected from each bank's annual reports, financial statements, and information available on the Amman Stock Exchange website. Data collected from these secondary sources were analysed using descriptive statistics and correlation matrix. Their findings showed that noninterest income has a significant impact on banks performance by increasing the equity capital adequacy which in turn positively affects profitability.

Gichure (2015) investigated the relationship between noninterest income and financial performance of commercial banks in Kenya using 42 commercial

banks operating between 2010 and 2014. The data collected from the annual reports and accounts of selected banks was analyzed using SPSS version 20, ANOVA, descriptive and regression analyses. Findings from the study showed that there was a negative relationship between noninterest income and financial performance occasioned by the variability in the ratio of non-interest income and net interest income of banks in Kenya.

Jaffar, Mabwe, and Robert (2014) investigated the changes in the bank income structure as a result of the 1986 deregulation and tease out the effect that these changes have had in relation to systemic risk and performance. Using the dataset of large British Banks for the period 1986-2012, the study on a micro analysis, larger banks are more able to sustain high levels of noninterest income. At aggregate level while interest income reflects a stable trend, they found a significant upward but slightly volatile trend in noninterest income for the period 1999-2008 before a sharp downturn induced by the financial crisis. Their study argues that in terms of financial stability, the banks' greater reliance on noninterest income particularly commission income is associated with higher systemic risk and greater performance.

Oyewole, Abba, and El-Maude (2013) examined the impact of e-banking on bank performance in Nigeria. Using panel data of 1999–2010 for eight (8) commercial banks, they found that e-banking has significant positive impact on the banks performance measured in terms of Return on Assets (ROA) and Net Interest Margin (NIM). However, the study found no impact on ROE.

3. METHODOLOGY

This study adopted the ex-post facto research design with great reliance on the secondary data collected from the corporate annual reports and the Nigerian Stock Exchange website for the selected banks listed in the Nigerian Stock Exchange as at 31st December, 2017. The 16 DMBs listed in the Nigerian Stock Exchange (NSE) as at 31st December 2017 form the population of this study. A sample size of eight (8) banks characterised by the Central Bank of Nigeria to be Domestic Systemically Important Banks (D-SIBs) (CBN, 2014) in the Nigerian banking sector was selected using the purposive sampling technique. A period of eleven (11) years spanning 2008-2018 was covered in this study. The statistical tools employed were the descriptive statistics and econometric analysis. The Multiple Regression Model was employed to capture nine (9) variables comprising Tobin's Q ratio and Market value added (as dependent variable); foreign exchange transaction income, other operating

income, electronic banking income, fee income, and commission income (as independent variables); firm size and firm age (as control variables). Data generated from the selected banks' corporate annual reports & accounts and NSE website were analysed using tables, charts, and panel data regression technique.

The models are expressed functionally as:

Tobin's Q ratio = f (Electronic banking income, Fee income, commission income, Foreign Exchange Income, Other Operating Income, firm size and firm age).

Market Value Added = f (Electronic banking income, Fee income, commission income, Foreign Exchange Income, Other Operating Income, firm size and firm age).

The econometric models are expressed thus:

$$TQR_{it} = \beta_0 + \beta_1 EB_{it} + \beta_2 FEE_{it} + \beta_3 COM_{it} + \beta_4 FET_{it} + \beta_4 OPI_{it} + \beta_5 FSIZE_{it} + \beta_6 FAGE_{it} + \epsilon_{it} \quad \dots(1)$$

$$MVA_{it} = \beta_0 + \beta_1 EB_{it} + \beta_2 FEE_{it} + \beta_3 COM_{it} + \beta_4 FET_{it} + \beta_4 OPI_{it} + \beta_5 FSIZE_{it} + \beta_6 FAGE_{it} + \epsilon_{it} \quad \dots(2)$$

Where;

TQR = Tobin's-Q Ratio; EB = E-banking Income; FEE = Fee Income; COM = Commission Income; FET = Foreign Exchange Income; OPI= Other Operating Income; FSIZE= Firm Size; FAGE= Firm Age; i ($= 1, 2, 3 \dots 8$) is the given deposit money banks; t = Time dimension of the variant; ϵ = error term; β_0 = the intercept coefficient; β_1, β_3 = the coefficients of the parameter estimate. Also, $\beta_1, \beta_2, \beta_3 < 0$.

Consistent with the study of Berger and Bonaccorsi (2006), we formulate a third model to examine the influence of financial performance on bank non-core income of listed DMBs in Nigeria. Here, bank non-core income was taken as the dependent variable while financial performance proxies were taken as the explanatory variables. The model maintains that non-core bank income (proxied by fee income) is a function of financial performance (proxied by TQ and MVA).

In order to avoid multicollinearity among the financial performance variables (here taken as independent variables) a recursive structure is devised for these estimations. This third model is specified in two equations as follows:

$$FEE_{it} = (\Omega_0 + \mu_i) + \lambda_1 TQ_{it} + \lambda_2 FSIZE_{it} + \lambda_3 FAGE_{it} + V_{it} \quad (3)$$

$$FEE_{it} = (\Omega_0 + \mu_i) + \lambda_1 MVA_{it} + \lambda_2 FSIZE_{it} + \lambda_3 FAGE_{it} + V_{it} \quad (4)$$

Equations (3 & 4) are specified in fixed effect form, which contain the firm specific effects term μ_i . After the tests for random effects are performed, the appropriate method of estimation will be employed for the analysis. It is expected that $\lambda_1, \lambda_2, \lambda_3 < 0$ for each of the equations. All the estimating procedures were programmed using E-views 9 Econometric software for windows.

4. DATA PRESENTATION AND ANALYSIS

As stated in section three of this study, the panel data regression technique was used for this analysis. Three general methods were used in the empirical analysis of this study to present a healthy investigation and analysis. Firstly, to provide a rich and effective background on the pattern of contributions of the income factors to bank revenues within the sample of the study and generate the initial characterisation of the data used in the study, statistical techniques are employed to examine the datasets. Secondly, to help in evaluating the underlying relationships and assess the study hypotheses, the regression analysis was performed and the results presentation. Thirdly, to investigate the strength of the contributions of the income variables to revenues and performances of the selected banks in Nigeria, the Principal Components analysis method was used. The E-views 9.0 Econometric software was used for the summary statistics as well as the Econometric estimations. The descriptive statistics of the data are presented in Table 4.1.

Table 4.1
Descriptive Statistics of the Data

	<i>Mean</i>	<i>Max.</i>	<i>Min.</i>	<i>Std. Dev.</i>	<i>Skew.</i>	<i>Kurt.</i>	<i>J-B</i>	<i>Prob.</i>
EBSH	5.76	32.86	0.72	6.16	2.21	8.24	172.71	0.000
FEESH	15.06	74.57	1.72	12.74	2.91	12.07	425.74	0.000
COMSH	8.91	49.32	0.14	8.38	2.76	12.76	461.05	0.000
FCTSH	12.01	85.83	-0.22	17.08	2.71	10.11	292.68	0.000
OPIH	3.07	20.90	-2.26	4.00	2.11	8.11	160.97	0.000
TQR	0.83	5.22	-0.01	0.80	2.17	11.49	332.95	0.000
MVALR	11.96	22.87	-18.59	34.65	4.43	23.71	1861.36	0.000
AGE	37.47	124.00	3.00	33.18	1.76	4.82	57.80	0.000
SIZE	14.29	16.89	11.16	0.76	-0.83	7.08	71.16	0.000

Source: Researchers' computation, 2021.

Presented in Table 4.1 are the annualised mean, standard deviation, and other summary statistics on the bank's non-core income and other variables for a sample of banks in Nigeria. The descriptive statistics shows that average share of fee income in total revenues for the banks is 15.06 percent, 12.01 percent for foreign exchange transactions, 8.91 percent for commissions, 5.76 percent for e-banking and 3.07 percent for other operating incomes. This shows that more of the banks' non-core incomes come from fees on transactions, followed by foreign exchange activities and commissions. Other operating incomes and e-banking income provide relatively lesser revenue contributions in terms of total shares. The Table also shows that some banks had up to 32.86 percent of total revenues in form of e-banking income and 85.83 percent of total revenues as foreign exchange transactions income. This suggests that individual banks have varied income proportions with respect to contributions of bank's non-core income activities. The standard deviations for each of the variables are relatively close to their respective mean values, suggesting that the average revenues shares of each of the income categories appear to be considerably stable across banks in the sample. Apparently, the patterns of non-core income sourcing by the banks do not change extensively over time or across banks. It appears the leading sources of non-core income for the different banks are essentially similar as well as the least sources of such income among the banks.

The descriptive statistics thus shows that overall, non-core income for the selected banks constituted 39.05 percent of total revenue over the period. This shows that for Nigerian banks, revenues from non-core sources provide significant contributions to overall revenues. This explains the constant focus of the banking sector in terms of increased drive for revenues that are outside of the core interest (or lending-based revenues). It can also be shown that non-core income of banks may have actually increased considerably over the last few years in Nigeria. The J-B tests for each of the income categories are high and easily passed the significance tests at the 1 percent level indicating that the datasets are non-normally distributed. These show clear cases of heterogeneity in the data sets across the banks. Essentially, the non-normal distribution shows that there are strong bank-specific influences on the outcome of each of the bank's non-core values reported in the Table.

For the performance variables, the summary statistics in Table 4.1 shows that average Tobin's Q for the banks is 0.83, suggesting relatively low performance of the banks in terms of significance in the market. The Table also shows that certain banks had very low Tobin's Q ratios for certain years, while some other

banks had values up to 5.22 percentage points. The average market value ratio for the banks is however high at 11.96 percent, with a standard deviation value of 34.45 which suggests very high degree of variations in the market value across the banks in the sample. Average age of banks is 37.4 years, while average size is 14.29. The characteristics of the banks shown in the Table suggests that while banks are relatively similar in terms of the relative importance of bank's non-core revenues, the banks are largely dissimilar in terms of market value performances over the period of the analysis. The relative importance of each of the non-core income to revenues of the sampled banks is also presented in Figure 4.1. As was noted earlier, income from fees dominate the non-core revenue stream for the banks in the sample, while income from other operating activities contributes the least to revenues for the banks.

Panel Estimation Analysis

The fixed effects estimates were reported and the results used to draw conclusions in this study. The results estimates are presented for models with control variables of firm age and firm size and without control variables. This aids in improving the robustness of the estimates (Greene, 2011). The result of the fixed effects model for bank financial performance (using Tobin's Q ratio as indicator) are presented in Table 4.2a. The goodness of fits statistics is impressive for the results. The adjusted R-squared value shows that about 51 percent of systematic variation in Tobin's Q is captured in the model with control, while 41 percent is captured in the model without control.

Table 4.2a
Non-Core Income and Banks' Financial Performance
(Dependent Variable is *Tobin's Q*)

Variable	With control			Without control		
	Coeff.	t-Stat.	Prob.	Coeff.	t-Stat.	Prob.
C	-7.226	-4.210	0.000	-4.880	-4.686	0.000
EB	0.381	5.238	0.000	0.271	3.732	0.000
FEE	0.278	2.281	0.026	0.192	1.554	0.125
COM	0.433	4.379	0.000	0.276	3.248	0.002
FCT	-0.141	-2.660	0.010	-0.133	-2.382	0.020
OPI	0.010	0.312	0.756	0.017	0.479	0.633
SIZE	0.023	0.164	0.870	--	--	--
AGE	-0.334	-3.505	0.001	--	--	--
Adj. R-sq.	0.513			0.411		
F-stat	6.381 (0.000)			5.055 (0.000)		

Source: Researchers' computation, 2021

The particular effect of the explanatory variables on Tobin's Q ratio is determined by observing the coefficients of the estimates in terms of signs and significance. From the result of the estimates with control, it can be seen that the coefficients EB, COM and FCT passed the significance test at the 1 percent level ($\text{prob} < 0.01$), while that of FEE passed the test at the 5 percent level ($\text{prob} < 0.05$). This shows that all the coefficients of banks non-core income significantly affect Tobin's Q of the banks, except that of other operating incomes which failed the test at the 5 percent level ($\text{prob} > 0.05$). This result therefore demonstrates that e-banking, fees, and commissions incomes have significant positive effect on the banks' Tobin's Q at any given time. A one percent rise in e-banking income leads to a 0.381 percent rise in Tobin's Q. A one percent rise in commissions leads to a 0.433 percentage rise in Tobin's Q. Fees income rising by 1 percent leads to improvement in Tobin's Q by up to 0.278 percent. However, the coefficient of foreign exchange transactions income has a significant negative effect on Tobin's Q. An increase in that structure of income leads to 0.141 percent drop in Tobin's Q. This shows that foreign exchange transactions (though it increases revenue) do not guarantee the expansion on the overall performance of the banks in Nigeria. Thus, income from foreign exchange tends to reduce the valuation of banks in Nigeria. On the other hand, increased income from e-banking, commissions and fees all tend to boost the valuation of banks in Nigeria. Results from the equation without controls also confirm those of the main results (with control) and suggest that while other incomes have positive effect on bank's valuation through Tobin's Q, income from foreign exchange transactions have negative effect.

Among the banks non-core income variables, only other operating incomes had a non-significant coefficient in the full model, suggesting that other non-core incomes for the banks, apart from the main ones do not necessarily affect performance especially in terms of valuation of the banks. The coefficient of bank size fails the significance test in the result, while that of bank age is significant and negative. This indicates that the age of banks matters in determining firm valuation, with older banks having lower valuation and performance.

In Table 4.2b, the result of the effects of banks non-core income and other variables on banks' market value is presented. The goodness of fits statistics is impressive with the adjusted R-squared value at 0.646 for the full model. The F-statistic values are also high and significant for both equations and indicate a significant relationship between the dependent variable and all

the independent variables combined. Again, we focus on the full equation (without controls for bank size and bank age) and use the equation without controls as robustness checks. A close look at the individual coefficients of the explanatory variables shows that all the banks non-core income variables have significant coefficients, except that of OPI, which like the previous result in Table 4.2a is insignificant at the 5 percent level. This again confirms that other operating incomes of the banks do not essentially affect the market performance of the banks in Nigeria.

Table 4.2b
Non-Core Income and Banks' Financial Performance
(Dependent Variable is Market Value)

Variable	With control			Without control		
	Coeff.	t-Stat.	Prob.	Coeff.	t-Stat.	Prob.
Constant	256.496	4.908	0.000	8.128	0.174	0.862
EB	13.953	4.330	0.000	11.381	3.052	0.003
FEE	11.354	2.541	0.013	6.513	1.154	0.252
COM	11.411	3.254	0.002	0.201	0.053	0.958
FCT	-7.834	-3.775	0.000	-13.140	-5.270	0.000
OPI	-2.224	-1.657	0.101	-5.389	-3.305	0.001
SIZE	-34.271	-7.446	0.000			
AGE	-1.461	-0.367	0.715			
Adj. R-sq.	0.646			0.400		
F-stat	23.66			12.58		

Source: Researchers' computation, 2021

For the significant variables in the results, the coefficients of income from e-banking, fees and commissions are positive, while that of foreign exchange transactions (FCT) is negative. The results therefore demonstrate that increasing banks non-core income, apart from FCT and OPI, will boost the market value of banks in Nigeria. This direct positive effect also shows how important non-core income is to banks, not only as a means of increasing revenues, but also to promote bank market values. Unlike the Tobin's Q result, the coefficient of bank size is significant, while that of age fails the test. The outcome of the bank size reveals that bigger banks may have lesser market value than smaller banks.

The results for the reverse effects of bank financial performance on non-core income of the sampled banks are presented in Table 4.3. The goodness of fit statistics is rather high and impressive, especially with the F-value

considered, which is significant in each of the equations. In particular, the results show that the coefficients of Tobin's Q for the banks are significant only for fee and foreign exchange transactions income equations. This indicates that larger valuations of the banks tend to increase fee income and income from foreign exchange transactions. Similar results are shown for the coefficients of market value added which are positive and significant in the fee and foreign exchange transactions equations. In general, the results show that banks that perform better tend to record higher income from fees and foreign exchange transactions.

Table 4.3

Reverse Effect of Financial Performance on Non-core Income of Banks in Nigeria

Variable	E-banking		Fee		Commission		Forex Trans.		Other operating	
	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
TQR	0.062	0.54	0.231	0.01	-0.146	0.46	0.231	0.03	0.021	0.93
MVAL	0.003	0.35	0.006	0.01	-0.008	0.18	0.012	0.00	-0.017	0.02
SIZE	0.500	0.00	0.637	0.00	1.033	0.00	0.589	0.00	0.271	0.52
LAGE	0.173	0.12	0.252	0.01	0.227	0.30	0.440	0.00	0.023	0.94
C	2.085	0.35	-0.979	0.59	-6.114	0.16	-1.527	0.50	3.811	0.50
Adj R-sq	0.384		0.518		0.395		0.521		0.259	
F-statistic	4.882 (0.00)		7.666 (0.00)		5.055 (0.00)		7.757 (0.00)		3.177 (0.00)	

Source: Researchers' computation, 2021

The coefficient of MVAL is however negative and significant in the OPI equation, suggesting that highly valued banks tend to record lower income from other operations. Apparently, bigger valued banks tend to focus on other non-core income channels that yield larger incomes and more steady revenue streams. The coefficient of size is significant in almost all the equations, which shows that larger banks essentially record more non-core incomes than smaller banks. The coefficient of bank age is however only significant for fee and foreign exchange transactions income. This shows that essentially, older and bigger banks tend to obtain more non-core income than newer and smaller banks in Nigeria.

The Principal Components Analysis (PCA)

One of the main objectives of this study is to determine the magnitude by which the non-core income variables affect firm financial performance over time.

This is achieved by conducting a comprehensive PCA to determine the pattern of categorisation of a set of variables and the variables which contribute more effectively to the movements in the main component (Manage & Scariano, 2013). This is to determine how many Components are necessary to describe a reasonable amount of the sample's variability and reduce the dimensionality. Analysis based on the magnitude of the eigenvalues and the proportion of the explained variability can support this decision (Bernat & Bueno, 2011). For the PCA in this section however, the focus is only on testing the relative importance of each of the relevant variables in the size of banking sector performance in Nigeria. This is done by examining the importance of each of the variables within the component selected.

The result for the variable importance estimation for bank Tobin's Q is reported in Figure 1a. It should be noted that the benchmark for the inclusion of variable importance is 50 percent contribution (Manage & Scariano, 2013). From the chart, it is seen that COM is the most important variable in the index for the determination of Tobin's Q with a relevance ratio of 73.3 percent, followed by income from e-banking activities and then other operating income. However, only the contributions by commissions and e-banking incomes are significant since they cross the 50 percent benchmark. Thus, the results show that financial performance of banks (or valuation of banks) is generally sensitive to the income from commissions and e-banking activities. These are the variables that contribute more significantly to the index of financial performance of the banks in the sample for the study.

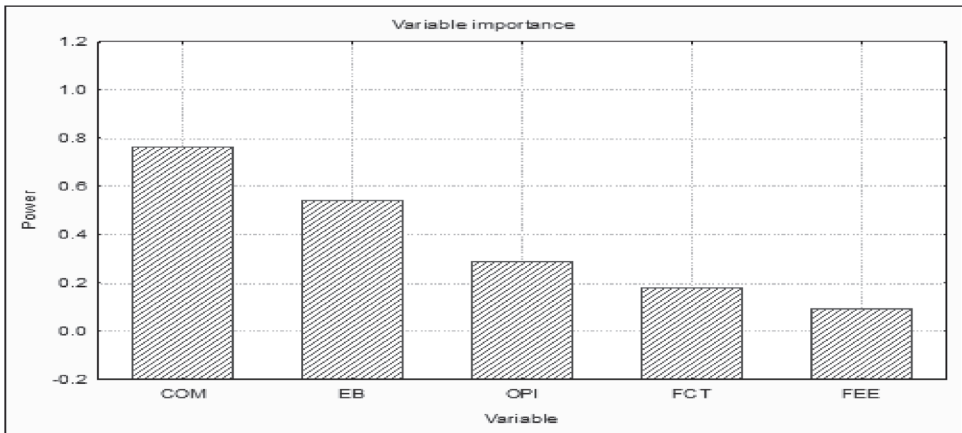


Figure 1a: Importance of Non-Core Income for Banks' Tobin's Q

Source: Researchers' computation, 2021

The PCA for evaluating the importance of non-core income on market value added of banks is shown in Figure 1b. It shows that the first component alone (e-banking) explains around 62 percent of the variability of the data for MVAL. The significance of each component proportion indicates that only the inclusion of e-banking and commission incomes component is significant for MVAL variability. The distance between commissions and OPI is however low, even though OPI cannot be considered a very important factor in terms of importance to the banks' MVAL. It is rather interesting to note that the e-banking income is shown to be highly important in terms of bank financial performance in Nigeria. First, this component of banks non-core income was shown to contribute more than most of the other components in terms of bank revenues. Second, the component is a recent aspect of non-core income for banks in Nigeria. Thus, it is seen that innovative aspects of bank non-core revenues have greater effect on bank performance than more traditional aspects of non-core income like fees and foreign exchange transactions. Banks that engage more in modern e-banking activities are more likely to perform better in Nigeria.

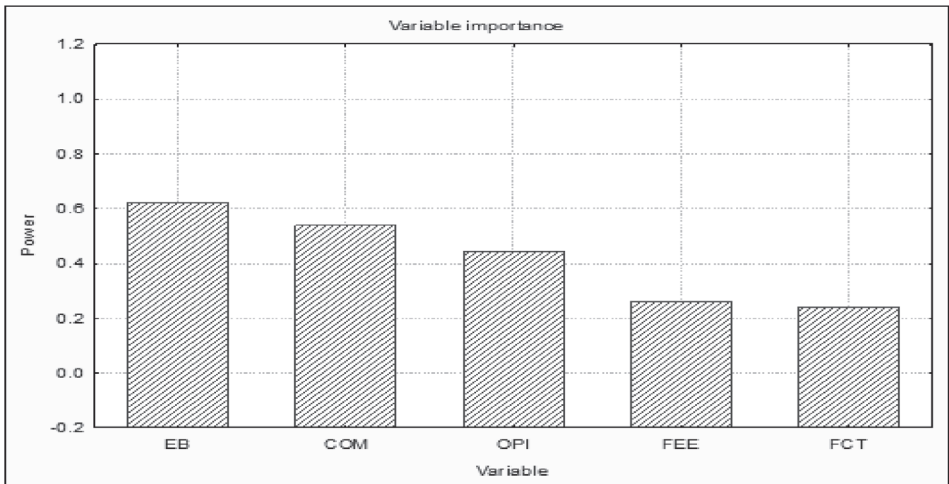


Figure 1b: Importance of Non-Core Income for Banks' Market Value

Source: Researchers' computation, 2021

The summary of the variable importance is presented in Table 4.4. As shown in the charts in Figs. 1a and 1b respectively, commission income and e-banking income each have the strongest power on revenues and banks financial performances for Tobin's-Q and Market Value Added in Nigerian

banks, followed by other operating income and fee income. Foreign exchange transaction income, which had negative effect on the measures of bank performance, is shown to have the least contribution. Though, looking at their degree of contributions to financial performance holistically in terms of percentages, commission income, e-banking income, other operating income, fee income and foreign exchange transaction income ranked first to fifth in that order in degree of effect on financial performance of Deposit Money Banks (DMBs) in Nigeria. However, the significance of each component proportion indicates that only the inclusion of e-banking and commission incomes component as shown in Table 4.4 is significant for financial performance of Deposit Money Banks (DMBs) in Nigeria because, both (commission income and e-banking income) passed the 50% benchmark for Tobin's Q and Market Value added respectively.

Table 4.4
Importance of Non-Core Income to Banks Financial Performance

<i>Variable</i>	<i>Tobin Q</i>		<i>Variable</i>	<i>MVAL</i>	
	<i>Power</i>	<i>Importance</i>		<i>Power</i>	<i>Importance</i>
COM	0.763	1	EB	0.621	1
EB	0.543	2	COM	0.539	2
OPI	0.286	3	OPI	0.444	3
FEE	0.180	4	FEE	0.262	4
FCT	0.096	5	FCT	0.241	5

Source: Researchers' computation, 2021

DISCUSSION OF FINDINGS

Given the relevant findings made in sections 4.2a, 4.2b, 4.3 and 4.4 respectively, the following discussions are hereby considered very essential for concise appreciation of the statistical relevance and possible implications of these findings.

E-banking income has a significant positive effect on financial performance (Tobin's-Q ratio and market value added) of Deposit Money Banks in Nigeria. From the result of the estimates with control as shown in Table 4.2a and 4.2b respectively, it is observed that the coefficient of e-banking passed the significance test at the 5 percent level for both Tobin's Q (TQ) and Market Value Added (MVA) (P-value 0.00 < 0.05; P-value 0.00 < 0.05) with coefficients

(β_1) of 0.381 and 13.953; t-values = 5.24 and 4.33 respectively. These results therefore demonstrate that e-banking income has a significant positive effect on the banks' Tobin's Q and Market Value Added at any given time. This means that a one percent rise in e-banking income leads to 0.381 and 13.953 percent rise each in Tobin's Q and Market Value Added of DMBs in Nigeria. E-banking income, apart from contributing to the total banks revenue, it had the second most important effect on financial performance of banks in Nigeria. As shown in the result analysis, the innovative aspects of bank non-core revenues have greater effect on bank performance than the traditional aspects of bank non-core income like fee and foreign exchange transactions. Thus, banks that engage more in modern e-banking activities are more likely to perform better in Nigeria.

This study results are in line with recent findings (for example, Oyewole, Abba & El-Maude, 2013; Köhler, 2015; Vekya, 2017; Alubisia, Githii, and Mwangi, 2018) for the banking sectors of both advanced and less developed economies which indicate that e-banking income significantly boosts the financial performance of Deposit Money Banks. However, this finding disagrees with the studies outputs conducted by Andrzejuk (2019) who recorded that e-banking income reduces banks financial performance.

Fee income has a significant positive effect on financial performance (Tobin's-Q ratio and market value added) of Deposit Money Banks in Nigeria. The result of the fixed effects model with control for bank performance (using Tobin's Q ratio and Market value added as indicators) as presented in Table 4.2a and 4.2b revealed that the coefficient of fee income passed the significance test at the 5 percent level for both Tobin's Q and Market Value Added (P-value $0.03 < 0.05$; P-value $0.01 < 0.05$) with positive coefficients of 0.278 and 11.354 respectively. This indicates that fee income has a significant positive effect each on Tobin's Q ratio and Market Value Added of DMBs in Nigeria. By implication, a one percent rise in fee income leads to 0.278 and 11.354 percent increase each in Tobin's Q and Market Value Added of DMBs in Nigeria. Though, fee income was seen to have contributed the largest proportion to banks' revenues and a significant positive effect on financial performance, it was however, shown that its positive effect on banks' Tobin's Q and Market Value was rather weak.

This study finding aligns with the reports of Mutuma and Mungatu (2016), Adedeji and Adedeji (2018), and Mundi (2019) who document that income from fee is significantly positive to financial performance of banks. However,

the study disagrees with the works of Mndeme (2015) and Karanja (2012) who found that non-core income from fee adversely affect banks' financial performance.

Commission income has a significant positive effect on financial performance (Tobin's-Q ratio and market value added) of Deposit Money Banks in Nigeria. The result of the regression analysis with control conducted as shown in tables 4.2a and 4.2b each revealed that the coefficient of commission income passed the significance test at the 5 percent level for both Tobin's Q and Market Value Added (P-value $0.00 < 0.05$; P-value $0.00 < 0.05$) with positive coefficients of 0.433 and 11.411 respectively. This indicates that commission income is positively skewed to performance (Tobin's Q and Market Value Added) of DMBs in Nigeria. Thus, the result shows that a one percent rise in commission income brings about 0.433 and 11.411 percent rise each in Tobin's Q and Market Value Added of DMBs in Nigeria. The study results have validated that commission income has a significant positive effect on the banks' Tobin's Q and Market Value Added in Nigeria. Commission income as revealed by our findings had the second highest contribution to bank revenues and was the biggest and most important contributor to the financial performance of the banks in this study. Thus, increased income from commission tends to boost the value of banks financial performance in Nigeria.

This finding is equally supported by studies outputs as conducted by Jaffar, Mabwe, and Webb (2014), Huseyin (2018), Gueyié, Guidara, and Lai (2019) who posit that commission income has a significant effect on financial performance of banks. However, this study disagrees with those conducted by Gichure (2015), Beak, Yong Lee, Wan Lee and Mohanty (2018) who found an insignificant effect between commission income and banks financial performance.

Foreign exchange transaction income has a significant negative effect on financial performance (Tobin's-Q ratio and market value added) of Deposit Money Banks in Nigeria. From the result of the regression analysis with control conducted and presented in Tables 4.2a and 4.2b respectively, it is observed that the coefficient of foreign exchange transaction income passed the significance test at the 5 percent level for both Tobin's Q (TQ) and Market Value Added (MVA) (P-value $0.01 < 0.05$; P-value $0.00 < 0.05$) with negative coefficients of -0.141 and -7.834 respectively. Thus, indicating that foreign exchange transaction income has a significant negative effect on financial performance (Tobin's Q ratio and Market Value Added) of DMBs in Nigeria. This implies that an increase in the income structure of foreign exchange

transaction leads to 0.141 and 7.834 percent drop each in Tobin's Q and Market Value Added of banks in Nigeria. This shows that foreign exchange transactions though increase revenue but do not guarantee the expansion on the overall performance of the banks in Nigeria. Thus, income from foreign exchange transactions is shown to tend to reduce the level of banks financial performance in Nigeria.

The findings is in consonance with studies conducted by Sun, Wu, Zhu and Stephenson (2017), Andrzejuk (2019) who posit that incomes from foreign exchange transactions have a significant negative effect on financial performance. This study however, negates studies by Mutuma and Mungatu (2016), Lambe (2018) who found a significant positive effect between foreign exchange rates and financial performance.

However, other operating income has no significant effect on financial performance (Tobin's-Q ratio and market value added) of Deposit Money Banks in Nigeria. The result of the fixed effects model with control for bank performance (using Tobin's Q ratio and Market value added as indicators) as presented in Table 4.2a and 4.2b showed that the coefficient of other operating income failed the significance test at the 5 percent level for both Tobin's Q (TQ) and Market Value Added (MVA) (P-value $0.76 > 0.05$; P-value $0.10 > 0.05$) with a positive coefficient of 0.010 for TQ and a negative coefficient of -2.224 for MVA. This indicates that other operating income has an insignificant effect each on Tobin's Q ratio and Market value added of DMBs in Nigeria. This shows that of all the non-core income variables, only other operating incomes had a non-significant coefficient in the full model, suggesting that other non-core incomes for the banks, apart from the main ones do not necessarily affect performance especially in terms of valuation of the banks. This confirms that other operating incomes of the banks do not essentially affect the market performance of the banks in Nigeria.

The study findings is in concordance with the works of LiLi (2014), Chien-Chiang, Shil-Jui, and Chi-Hung (2014) who observed that the inclusion of non-core income do not significantly increase the efficiency level of banks. However, this study disagrees with the works of Saunders, Schmid, and Walter (2016), DeYoung and Rice (2013) who document that other operating incomes increase banks financial performance. The overall results therefore demonstrate that increasing non-core income, apart from foreign exchange transactions income (FCT) and other operating income (OPI) will boost the market value of banks in Nigeria.

On the level of relationships, a significant degree of relationship exist between non-core income variables, Tobin's-Q ratio and market value added of Deposit Money Banks in Nigeria. The result of the regression analysis presented in Table 4.4 revealed a high degree of relationship between banks non-core income variables, Tobin's-Q and market value added of DMBs in Nigeria. This was seen in two of the five non-core income (that is, commission and e-banking) which showed to significantly boost Tobin's Q and Market Value Added of banks and also contributed significantly to the forward movements in both the Tobin's Q and market value of the banks with values above the 50% threshold (that is, contributions of 76% & 53% for commission and 62% & 54% for e-banking income respectively).

However, judging from our result in Tables 4.2a and 4.2b with respect to variables that significantly affect banks financial performance, it was observed that three out of the five indicators (that is commission, e-banking and fee) proved to have significantly and positively affect banks financial performance in Nigeria. Even though foreign exchange transaction income did not boost banks' financial performance, it contributes to the banks total revenue. In this regard, a high degree of relationship is seen to have been established by ranking between these variables and financial performance both in rank and importance.

In general, the results of the study also have certain implications. First, it is shown that it might be beneficial for retail-oriented banks in Nigeria to increase their share of non-core income by focusing on e-banking, commissions, and fees activities. This will enable the banks to expand its revenues and ensure more stability over time, since this allows them to better diversify their income structure and become more resilient in the financial market. Similar findings were made by De Young and Rice (2003) for the American economy, Kohler (2015) for the German economy, Abedifar, Molyneux and Tarazi (2014) for a group of advanced financial markets and Adedeji and Adedeji (2018) for Nigeria. In the same vein, it is known that a higher share of non-core income in total revenues and liquidity of more-retail-based banks makes them "less dependent on maturity transformation and interest rate risk.

The reverse effect of financial performance on non-core income of banks was also examined. The results for the reverse effects of bank financial performance on non-core income of the sample banks presented in Table 4.3 show that the coefficient of Tobin's Q and MVA for the banks are each significant only for the Fee and Foreign Exchange Transactions (FCT) incomes

with a high and impressive goodness of fit statistics. The results revealed that Tobin's Q (TQ) has a significant positive effect on Fee and Foreign Exchange Transactions with the coefficients (β_1) of 0.231 and 0.231 each and an associated probability of 0.01 and 0.03 respectively. The results also showed that Market Value Added (MVA) has a significant positive effect on Fee and Foreign Exchange Transactions incomes with the coefficients (β_1) of 0.006 and 0.012 each and an associated probability of 0.01 and 0.00 respectively. The coefficients of determination as revealed by adjusted R-squared (AR^2) indicate that 0.518 and 0.521 (i.e. 52% each) of the variations observed in the dependent variable (FEE and FCT) rates were explained by variations in financial performance (Tobin's Q & MVA). On the whole, the overall probability (F-statistics) is 0.0000 which is less than 0.05 and properly explains the significance of Tobin's Q & MVA each on Fee and Foreign Exchange Transactions of DMBs in Nigeria within the period under review. This indicates that larger valuations of the banks tend to increase fee and foreign exchange transaction incomes. By implication, banks that perform better tend to record higher income from fees and foreign exchange transactions.

Test of Hypotheses

The test of hypotheses was conducted using the p -value and 5% level of significance (α). If the p -value is less than or equal to the significance level, we would reject the null hypothesis (i.e., $p\text{-value} \leq \alpha$, then reject H_0). Otherwise, we would not reject the null hypothesis.

H_{01} - H_{05} : E-banking, fee, commission, foreign exchange, and other operating incomes each has no significant effect on Tobin's Q and Market Value Added of DMBs in Nigeria.

Based on the foregoing, the p -values of e-banking = 0.0000 & 0.0000; fee = 0.0026 & 0.0130; commission = 0.0000 & 0.0017; and foreign exchange transaction incomes = 0.0097 & 0.0003, for Tobin's Q and MVA respectively are less than the critical value of 0.05 (5%), thus, H_{01} , H_{02} , H_{03} and H_{04} all passed the 5% level of significance and therefore accepted. This study upholds that there are significant effects of e-banking, fee, commission and foreign exchange transaction incomes on Tobin's Q ratio and MVA of DMBs respectively in Nigeria. Though, while e-banking, fee, and commission incomes had significant positive effects, foreign exchange transaction income recorded a significant negative influence on banks Tobin's Q ratio and MVA respectively. This study therefore, rejects the null hypotheses which say e-banking, fee,

commission, and foreign exchange transaction incomes have no significant effects on Tobin's Q ratio and MVA of DMBs in Nigeria. However, other operating income with p -values of 0.7562 & 0.1014 in respect of Tobin's Q and MVA failed the significant test at the 5% level, thus H_{05} is not accepted. Other operating income therefore has no significant influence on banks Tobin's Q ratio and MVA in Nigeria.

H_{06} : Financial performance of banks has no significant influence on non-core income of banks in Nigeria.

The results for the reverse effects of bank financial performance on non-core income of banks revealed that Tobin's Q (TQ) and MVA each has a significant positive effect on Fee and Foreign Exchange Transactions of DMBs in Nigeria with (P-values = $0.01 < 0.05$; $0.03 < 0.05$; $\beta_1 = 0.231$ and 0.231) and (P-values = $0.01 < 0.05$; $0.00 < 0.05$; $\beta_1 = 0.006$ and 0.012) respectively. Therefore, we do not accept the null hypothesis H_{07} which says financial performance of banks has no significant influence on non-core income of banks in Nigeria.

H_{07} : There is no significant degree of relationship between bank's non-core income variables, Tobin's Q (TQ) and market value added (MVA) in Nigeria.

Lastly, the degree of relationship by ranking between banks non-core income variables, Tobin's-Q and market value added of DMBs in Nigeria is very high and significant for two of the five non-core income (that is, commission and e-banking) with values above the 50% threshold (that is, contributions of 76% & 53% for commission and 62% & 54% for e-banking income respectively). Thus, we do not accept the null hypothesis H_{06} which says there is no significant degree of relationship between non-core income variables, Tobin's-Q ratio and market value added of DMBs in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

Conclusion

The diversity of banking operations in recent times has become a subject of interest to the management of banking companies, regulators, bank customers and other stakeholders. This is because the banking environment has become more competitive, requiring constant innovation in maintaining heights required for sustainability. The role of non-core income on banks' financial performance examined based on evidence from a sample of Nigerian banks showed that certain elements of non-core banking are important for boosting the

financial performance of banks. The non-core income elements found to have contributed significantly and positively to the growth of financial performance of DMBs as revealed by the results of our analyses were e-banking income, commission income and fee income. Thus, banks are advised to expand their non-core operations in these directions with a view to boosting their revenue stream as well as further improve their financial performance. However, the situation was quite different for income from foreign exchange transactions and other operating income respectively. While income from foreign exchange activities seems to have boosted the banks' revenue, it was quite unimpressive for banks financial performance because, increases in banks revenues do not automatically guarantee the expansion of the overall financial performance of the banks. This was demonstrated by the significant negative effect of foreign exchange transactions income on banks' financial performance as revealed in our analysis outcome. Conversely, other operating income was found not to have any major effect on financial performance of banks. Thus, banks are encouraged to stop operations from other operating activities since it does not strengthen banks' financial performance.

While it is not expected that banks should focus on non-core activities (to the detriment of the core mandate of intermediation), this study has confirmed that diversifying into certain elements of non-core activities has helped to promote financial performance. This may also eventually boost stability for the smaller banks. There is however certain caveats that must be maintained in terms of non-core operations of banks in order to help the banking sector stability in Nigeria. As seen in the case of First Bank, larger and more investment-oriented banks should focus on increasing their share of interest income to become more stable and contribute more appropriately to the economy. With larger banks involvement in non-core income activities at the detriment of interest bearing activities may increase the risk of the banking sector and ultimately reduce the banks overall performance. Thus, banks should maintain an effective balance between the drive for increasing non-core income and focusing on the core intermediary functions of the banks to achieve financial performance in Nigeria.

Recommendations

This study recommends that it is more advisable for larger and more investment-oriented banks (as seen in the case offFirst Bank Plc.) to focus on increasing their share of interest income to become more stable and contribute more appropriately to the economy. When larger banks in the country go after

non-core income at the expense of interest bearing activities, the risk of the banking sector may escalate and performance may eventually drop for the overall system.

Furthermore, from this study the effect of non-core income on banks' financial performance depends on the activities used to generate non-core income for the banks, with electronic, fees, and commissions being the most effective means. Banks should therefore, be more mindful of the means of acquiring non-core income if the goal is to promote financial performance. Non-core income is not a stable revenue stream for banks, thus, it is more essential that adequate control measures in terms of properly guiding the banks in their non-core operations be put in place by the regulatory agencies in Nigeria.

Following the fact that e-banking income is revealed to be a robust and evolving element of non-core income that boosts banks' financial performance, there is need for DMBs to further develop reliable user-friendly electronic platforms with fast internet access to improve her income flow from e-banking since customers tend to place more confidence on banks with more innovative operations in relation to electronic banking. This will not only boosts e-banking revenues but would also help in stimulating the overall financial expansion of the banks following the outbreak of Coronavirus (Covid-19) pandemic which is currently having an adverse effect on the global economy due to government lockdown policy.

Banks should minimise their income from foreign exchange transactions in order to maximise their performance, since higher incomes from these transactions tend to inhibit the value of banks in terms of their financial performance in Nigeria. Lastly, banks should ensure that an effective balance is struck between the drive for increasing non-core income and focusing on the core intermediary functions of the banks since it is more beneficial for retail-oriented banks in Nigeria to increase their share of non-core income by focusing on e-banking, commissions, and fees activities.

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