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Fee-Based Income and Bank Profitability: A Study of Deposit Money Banks in Nigeria

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Abstract: The study examines how credit-related fees, account maintenance fees, and other fees and commissions influence the return on assets (ROA) of deposit-taking institutions in Nigeria. Using a causal-comparative design, the study extracted longitudinal data from the periodic reports of eleven (11) listed deposit money banks (DMBs) for the period 2014 to 2022 to assess the interplay between ROA and the study's explanatory variables. The Durbin-Wu-Hausman (DWH) test was conducted, and the Fixed-Effects model was found to be the most consistent and efficient estimator. The results indicate that credit-related fees, account maintenance fees, and other fees and commissions positively influence the ROA of DMBs. This affirms the crucial role of strategic diversification of fee-based income in banking resilience. Therefore, the study concludes that non-interest income is a significant determinant of the profitability and financial stability of DMBs in Nigeria. The study recommends expanding non-interest income as a policy to enhance financial stability and resilience. Banks should ensure that credit-related fees, other charges, and commissions are fair and transparent to support the long-term sustainability of fee-based income. As banks diversify their fee-based income activities, the Central Bank of Nigeria must strengthen its regulatory capabilities to stamp out predatory practices that could derail banking penetration and usage in Nigeria.

Keywords: Banking resilience, income diversification, non-interest income, profitability, Nigeria

1. Introduction

In performing its intermediation function of creating deposit and loan accounts, banks provide additional services (such as automated clearing, electronic funds transfer, and agency services) to their customers. Banks charge fees or commissions for these services. Aside from interest-based income sources, fee-based income, or non-interest income, has proven to be a consistent source of revenue for deposit money banks (DMBs) all over the world (David & Elizabeth, 2024).

Banking reforms, technological changes, and shifts in financial customer preferences have prompted banks to design products and services that are customer-friendly and efficient while meeting compliance standards (Ranjan, 2024). As they expand their traditional banking roles, banks have diversified their traditional income-generating base to a market-centred personalised business model (Shah et al., 2018). This significantly enhances non-interest income of DMBs in Nigeria. Specifically, fee-based income is driven by the cashless policy of the CBN, digital banking, and financial technology adoption (Nkechika, 2022), and other concomitant services, such as treasury and agency banking.

Non-interest income comprises commissions, fees, charges, and other income generated by banks as they provide a range of services to their customers. Some fee-based income includes ATM, USSD, and POS charges; account maintenance fees; excess over-the-counter withdrawal charges; SMS

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charges; dormancy charges; letter of credit charges; forex margin gains; remittance charges; underwriting charges; remittance partnership charges; loan processing charges; debit card charges; overdraft charges; and late payment penalties. While some of these fee structures are regulated by the CBN, others are set by the service provider, thereby enabling scalability (Shah et al., 2018).

Lending is fraught with credit risk, the risk of nonrepayment of the loan principal and interest. This risk is heightened during periods of general macroeconomic decline, such as declines in gross domestic product, market capitalisation, employment, purchasing power, and consumer spending. In such periods, nonperforming loans and provisions for bad debt rise (Uniamikogbe et al., 2020). This can lead to a decline in a bank's profitability, liquidity, and overall survival. While financial intermediation and the creation of loan accounts are important for a country's economic well-being, it is equally imperative that banking intermediaries diversify their income sources to maintain financial stability and meet the needs of the bank's various stakeholder groups. Non-interest income provides an added opportunity in this regard.

Stakeholders of the banks (including shareholders, prospective investors, regulators, and even customers) are keenly interested in bank profitability. As previously noted, profitability is an important KPI of the financial well-being and stability of deposit-taking institutions. For instance, consistent profit declarations signal dividend payments and capital gains to shareholders and prospective investors, while regulators and financial consumers perceive the bank as financially sound. As competition from neobanks, FinTechs, and traditional banking institutions intensifies for deposit products, credit products, and other banking services, revenue diversification is imperative for the continued existence of banks in Nigeria.

However, counterarguments to fee-based income highlight systemic risks, increased profit volatility and margin compression (DeYoung & Rice, 2004). It is a viable diversification option, with its own unique risks, and it is a fallacy to assume otherwise, given its tendency toward high earnings variability. While non-interest income can boost return on net worth, it does not improve risk-adjusted returns given higher earnings volatility. DeYoung and Rice (2004) further note that combining interest, non-interest, and some fee-based activities increases its exposure with little diversification benefit. Another argument is that non-interest income targets could lead banks to prioritize charges and fees over efficient customer service. Banks could also exploit gaps in consumer understanding by obscuring important product or service features to their advantage, thereby creating hidden charges (CFPB, 2023). This could undermine public confidence over the long run and attract regulatory fines, further reducing earnings.

Given the large volume of literature that assumes the homogeneity of non-interest income, the study decomposed fee-based income into credit-related fees, account maintenance fees, and other fees and commissions to determine the influence of these components on the ROA of deposit-taking institutions in Nigeria and recommend the best way to optimise it. This would effectively help tackle the issue of aggregation error in most of the literature.

2. Literature Review

2.1 Conceptual and Theoretical Foundations

The banking business is dynamic and highly competitive, especially with the advent of FinTech and agile start-ups offering financial products and services that were traditionally within the domain of conventional financial service providers. This makes it imperative for DMBs to expand their operations and reposition themselves to sustain their market share and diversify their income.

This study draws on the income diversification hypothesis. The principle behind the income diversification hypothesis stems from the Markowitz model. The model hypothesizes that a portfolio of negatively correlated asset classes minimises the unsystematic risk associated with investments. Diversifying investments across uncorrelated asset classes that are negatively affected by market forces can minimise the unsystematic risk of the portfolio.

Traditionally, the business model for banks is framed on margins. This margin is technically known as the net interest margin (NIM). This informs the buying of deposits and the selling of loans. The difference between the proceeds from selling loans (or creating loan accounts) and the expenses incurred in creating deposit accounts is the NIM. This typifies the hallmark of traditional financial intermediation. The business of lending is a risky enterprise. Any time a bank extends a loan, it is exposed to the risk of nonperformance (Markjackson et al., 2022). Banks minimise unsystematic risk through proper risk appraisal to assess the creditworthiness of borrowers, but the systematic component of risk, driven by factors beyond their control (such as government policy and macroeconomic dynamics), is undiversifiable. This means that when an economy is in a downturn, the likelihood of loan repayment decreases (Isiboge & Onuorah, 2025). This creates volatility in earnings from interest income.

The income diversification hypothesis posits that to ensure stability and avoid income volatility, banks should minimize this risk by engaging in activities that do not accrue interest, like credit products, and explore forex trading, international trade finance guarantees, treasury banking, and digital and electronic banking services.

2.2 Empirical Review

Extant studies on the topic in Nigeria abound with mixed conclusions. For instance, Babatunde-Kareem (2021) found that service charges pose a deleterious effect on returns. While electronic banking and foreign transaction income exert a negative effect on Tobin Q, this was not the case for fee income, which increased the earnings of deposit-taking institutions in Nigeria (Bayefa & Onwuchekwa, 2023). In another study, David & Elizabeth (2024) found that non-traditional income is not a crucial determinant of the net worth of DMBs. Conversely, extant studies have also found the stimulating role the variable plays in enhancing the ROA of banks in the country (Olowolaju, 2018; Uniamikogbo et al., 2020).

Furthermore, extant studies show that fee-based revenues increase exposure levels without a corresponding increase in returns of Eurobanks (Lepititi et al., 2008). In the study, the explanatory variable comprises earnings from trading, commissions, and fees. Rightfully so, given the level of market volatility, trading activities could pose more risk than banks' loan portfolios. In another study by Noor and Siddiqui (2019), it was found that fee-based income did not translate into higher earnings for deposit-taking institutions in Pakistan. It further concluded that when fee-based income falls below 61.1%, it positively affects profitability, but when it rises above this threshold, the effect becomes negative. At this point, volatility, complexity, and agency costs begin to outweigh the benefits. It buttresses the point that diversification into non-interest income spurs earnings up to a certain threshold, and that sustained exposure to volatile activities reduces the risk-adjusted profits of a bank (Stiroh & Romble, 2006). A recent study by Khalaf et al. (2024) concludes that as fee-based income increases, bank profitability in the MENA region improved tremendously.

The review indicated that the findings are mixed, and most studies erroneously presumed that non-interest income activities are homogeneous. They exert differing effects on the earnings of deposit-taking institutions. As a result, these studies were unable to clearly show the specific effects of these heterogeneous fee-income activities on bank performance. This accentuates the need to further examine the interplay between fee-based income and the ROA of the sampled banks. Specifically, the study examines the interactions between credit-related fees, account maintenance fees, and other fees and commissions and the ROA of the 11 sampled DMBs in Nigeria.

3. Methodology

Using the causal-comparative design, the study gathered longitudinal data from the periodic reports of eleven (11) listed deposit-taking institutions for the period 2014 to 2022 to ascertain the effect of credit-related fees (CRF), account maintenance fees (AMF), and other fees and commissions (OFC) on the ROA of the sample. The study used purposive sampling to select the sampled banks based on their tier 1 and tier 2 status and the market leadership role they play in the banking ecosystem.

The study conducted an exploratory analysis and further employed the Durbin-Wu-Hausman (DWH) test to determine the most suitable model between the Fixed-Effect (FE) and Random-Effect (RE) models. The no effect hypothesis posits that RE is efficient and consistent, whereas the substantive hypothesis posits that RE is neither efficient nor consistent. The rule of thumb is to retain the no effect hypothesis when p-value > 0.05 and reject it when p-value < 0.05, thereby using the FE model. Furthermore, a test of association and the model was estimated using panel regression analysis.

The panel econometric model is expressed as follows:

ROAti = a0 + a1logCRFti + a2logAMFti + a3logOFCti + Uti
Where ROA is return on assets, CRF is credit-related fees, AMF is account maintenance fees, and OFC is other fees and commissions. To avoid skewness and address scale differences, the study transformed the raw data for CRF, AMF, and OFC to their logarithmic forms, while ROA (already a ratio) was kept in its raw form.

4. Results and Discussion

4.1 Descriptive Statistics

Table 1: *Basic Statistics*

Parameters	Mean	Spread (σ)	Max.	Min.	Var.	Obs.
ROA	0.0198	0.01744	0.11	-0.02	0.0003	99
CRF	6.6925	0.69217	7.99	3.94	0.4791	99
AMF	6.6259	0.56394	8.96	4.74	0.3180	99
OFC	6.5941	0.83705	8.99	4.18	0.7007	99

Source: Authors' computation, 2026.

Table 1 indicates that the cross sections were balanced at 99. The ROA profile of the selected banks shows that the mean is 1.98%, the maximum value is 11%, the minimum value is -2%, and the variability or spread (σ) is 1.74. This implies that, on average, DMBs make a marginal ROA of 1.98% with a maximum profitability of 11% and a minimum loss threshold of 2%. The results further indicate low deviation, as the variance is less than the mean. This is indicative that the performance of DMBs over time is consistent in Nigeria.

The results show that banks earn credit-related fees (CRF) averaging 6.6925, with maximum and minimum returns of 7.99 and 3.94, respectively. The spread (σ) of 0.69 indicates modest dispersion in CRF earnings across the selected DMBs. Account maintenance fees (AMF) average 6.6 across the selected banks, with AMF income ranging from 4.7 to 8.96. The spread (σ) of 0.56 indicates that the dispersion is below the mean. This suggests that banks in Nigeria adopt similar account maintenance fees (AMF). Finally, other fees and commissions (OFC) data indicate a mean of 6.5, with a maximum of 8.99 and a minimum of 4.18 in OFC income. A spread (σ) of 0.84 reflects a modest degree of dispersion in OFC. Although it is below the mean, the degree of dispersion is the highest among the other variables.

4.2 Correlation Matrix

Table 2: *Pearson Correlation Results*

Variable	ROA	CRF	AMF	OFC
ROA	1			
CRF	0.010 (0.910)	1		
AMF	0.434** (0.010)	0.215 (0.131)	1	
OFC	0.023 (0.708)	0.0221 (0.327)	0.15 (0.041)	1

*Note: p-values in parentheses. ** p < 0.05.*
Source: Authors' computation, 2026.

The coefficients indicate that the associations between the ROA and the independent variables, CRF (r = 0.011), AMF (r = 0.434), and OFC (r = 0.023), are moderate. Aside from AMF, which has a meaningful association with the ROA, the other variables show no significant correlation with the selected DMBs in Nigeria. Furthermore, the results indicate weak correlations among the explanatory variables. This suggests that there are no severe multicollinearity concerns when conducting the regression procedures.

4.3 Panel Regression Results

Table 3: *Durbin-Wu-Hausman (DWH) Results*

Test Results	**χ^2 Statistic**	**χ^2 Degrees of Freedom**	**P-value**	**Decision**
RE	8.931691	3	0.0000	Use FE
Time Period Effects: FE vs RE				
Regressor	**FE coef.**	**RE coef.**	**Var.**	**P-value**
CRF	-0.002525	-0.001463	0.000003	0.5203
AMF	0.012209	0.011302	0.000001	0.2463
OFC	0.012307	0.013873	0.000000	0.0003

Source: Authors' computation, 2026.

The endogeneity test signifies that the RE model is neither efficient nor consistent (i.e., prob. < 5%). Therefore, the study estimates the FE model, which is preferable because it controls for unobserved time-variant characteristics that might be correlated with the independent variable.

Table 4: *FE Panel Regression Estimates*

Predictor: ROA				
Method: PLS (Fixed-Effects)				
Variable	**Estimates**	**S.E.**	**t-ratio**	**Sig.**
C	0.065	0.025	2.600	0.011
lnCRF	0.013	0.002	6.500	0.000
lnAMF	0.026	0.003	8.667	0.000
lnOFC	0.014	0.002	7.000	0.510
R^2 = 0.488		DW stat = 2.105		
$\bar{R}^2$ = 0.462		Fisher ratio = 7.322		
Prob(F-stat) = 0.000				

Source: Authors' computation, 2026.

The $\bar{R}^2$ indicates that 46.2% of the variation in the ROA of the sampled banks in Nigeria is explained by credit-related fees (CRF), account maintenance fees (AMF), and other fees and commissions (OFC). It is noteworthy that about 53.8% of the variation in ROA was not explained by the model. The results also indicate a significant fit to the data (Fisher's p-value = 0.000 < 0.05). Furthermore, all explanatory variables are reliable predictors of the ROA of the 11 sampled banks in Nigeria. Specifically, credit-related fees (CRF), account maintenance fees (AMF), and other fees and commissions (OFC) significantly influence the ROA of the selected DMBs by 0.013, 0.026, and 0.014, respectively.

4.4 Discussion of Findings

The findings indicate that the coefficient for the credit-related fee (CRF) is positive (0.013) and statistically significant. This means that a one-unit increase in CRF raises the ROA of selected DMBs by 0.013. More specifically, the results suggest that as management fees, commitment and non-drawing fees, facility restructuring fees, and credit reference reports increase, so do income and,

correspondingly, the ROA of the selected banks. This aligns with the a priori expectation of the study and the income diversification hypothesis. Congruent with our findings, Olowolaju (2018) held that the variable is beneficial and increases the risk-adjusted returns of banks. While scholars hold that non-interest revenues present some diversification benefits, it is imperative to note that credit-related fees, which are largely transactional, may expose the banks to cyclical fluctuations. This position is widely established by DeYoung and Rice (2004).

Furthermore, the study found that the coefficient of the account maintenance fee positively and significantly influences the ROA of the selected DMBs. This leads to the inference that for every 1 unit increase in bank AMF, ROA increases by 0.026. As expected, fees from routine banking transactions are non-volatile moderate contributors to the profit margins of banks. In fact, DeYoung and Rice (2004) characterised them as less volatile non-interest income. However, it is imperative to argue that while account maintenance fees provide initial diversification benefits to the ROA of selected banks, they tend to have a diminishing effect over time due to continued regulatory measures to protect customers by instituting attractive fee regimes to encourage banking penetration and usage in the country.

Finally, the coefficient for other fees and commissions (OFC) indicates that the OFC has a positive impact on the ROA of the selected DMBs in Nigeria. This implies that as banks diversify their operations into more non-routine activities, such as international, treasury, and electronic banking, their financial performance significantly improves. This aligns with the income diversification hypothesis and is supported by Chiorazzo et al. (2008), whose conclusion is that OFC improves the profitability of banks in Italy. Although OFC enhances banks' profits, it is argued that OFC activities, especially treasury banking, are risky and volatile (Stiroh & Romble, 2006). This implies that the diversification benefits are not automatic. It requires establishing systems of control, checks, and balances, with skilled managerial oversight, to avoid the risks of diversification and reap the benefits of returns (Laeven & Levine, 2007).

5. Conclusion and Recommendations

The study examines how non-interest income affects profitability, specifically how credit-related fees, account maintenance fees, and other fees and commissions influence the ROA of the 11 sampled institutions in Nigeria. The DWH test was conducted, and the FE estimate was found to be the most consistent and efficient estimator. The results indicate that credit-related fees, account maintenance fees, and other fees and commissions help in determining the ROA of the sampled deposit-taking firms in Nigeria. This means that aside from interest income, banks also rely on fee-based income to boost their returns. The findings strongly affirm that banking resilience is driven by strategic diversification into non-traditional income activities. Therefore, it is concluded that non-interest income is a dependable predictor of the profitability and financial stability of DMBs in Nigeria.

The study recommends maintaining non-interest income as a policy to enhance financial stability and resilience, and further ensures that credit-related fees, other charges, and commissions are fair and transparent to support the long-term sustainability of non-traditional income. As banks diversify their fee-based income activities, the Central Bank of Nigeria must strengthen its regulatory capabilities to stamp out predatory practices that could derail banking penetration and usage in Nigeria.

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