

Asset Structure and Financial Firm Performance in Nigeria: The Role of Financial Technology

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ABSTRACT

This study aimed at investigating the influence of asset structure and financial technology on financial firms' performance in the Nigeria Exchange Limited (NGX) from 2013 to 2023. Panel data of forty-six (46) financial firms were sourced from the NGX annual publication. The dynamic panel regression approach of system GMM methodology was adopted. The findings showed that first; financial firms practice adjustment policy and set target performance level to attain. They adjust fast to this desired performance whenever they deviate from it. Second; both components of asset structure significantly impacted performance whether there is financial technology (fintech) or not. Third; the mediating role of financial technology variable of electronic funds transfers engenders asset structure impact on performance more than its counterpart; instant payment. From the foregoing narratives, this study concluded that asset structure and financial technology variables considered in the model are significant determinants of financial firms' performance. The study recommended amongst others, that financial firms in Nigeria should constantly engage in asset component re-balancing for the effect of their asset structure on performance to remain significant.

INTRODUCTION

The performance of Nigeria's financial sector, reflected in the volume of financial activities and transactions has evolved into today's era of financial innovation facilitated by fintech (García-Gallo, Jiménez-Naharro, Torres-García, Guadix-Martín & Giesecke, 2021; Aggreh, Malgwi, & Aggreh, 2020). With the establishment of banking firms for the purpose of growth, wealth explorations and accumulation, through commodity and currency trading, the economy was exposed to the need to create and own more indigenous financial firms. Accordingly, Adewale and Afolabi (2013) suggested that the Nigerian financial firms have in no small measure witnessed significant transformation and improvements, both in structure and speed of service deliveries through various components of their assets; both tangible and intangible assets, current and non-current assets, research and development. Financial technology products and platforms, amongst others has contributed to firm's productivity in the wake of the innovation age. Moreover, by the turn of the millennium, financial technology had become a real phenomenon and had contributed significantly to development of various sectors, including the financial sector. Thus, financial technology can be seen as an infrastructural boost of a going concern, which comprises of the application of internet as well as information communication technology (ICT) and other asset stock that engenders productivity especially in the financial sector and in turn bring about economic wide growth (Nino & Nino, 2024; Aggreh, *et al*, 2020). The conception of the information age and growth led to the upsurge of knowledge and information assets, which have become a major driver of performance for most organizations including financial firms (Sharma & Dharni, 2019). Thus, Palvia, Baqir, and Nemati (2017) explored the idea of ICT-driven socio-economic development, and concluded that ICT enhanced financial transactions is essential to growth. These further buttresses the need for technological inclined operations in facilitating the performance of firms in the financial sector of Nigeria. Even though technological advancements are very instrumental in building the financial sectors' competitive performance, the sector has been bedeviled with records of failed banks, and /or banks been delisted from the Nigeria Exchange Limited (NGX) due to poor management of company's assets, poor performance, amongst others. Furthermore, there are some studies on asset structure and performance of selected non-financial firms in literature, but studies on the performance of the entire financial sector is very rare in this discourse. Moreover, there is hardly any known literature on the influencing role of fintech on asset structure and performance of the said sector in Nigeria. It is against this backdrop that the objectives of this study stand.

Objectives of the study

This study sets out to empirically investigate the effect of:

- i. asset structure on performance of financial firms in the NGX,
- ii. the mediating role of financial technology, on performance of financial firms in the NGX.

Hypotheses of the study

H₀₁: There is no significant effect of asset structure on performance of the Nigeria financial sector,

H₀₂: There is significant mediating role of fintech on the relationship between asset structure and performance of financial firms in the NGX.

The findings from this study will be of great relevance to all stakeholders, especially financial regulators and financial firms listed in the NGX

LITERATURE REVIEW

Conceptual Review

To begin with, Adongo, Atugeba, and Insah, (2020), refers to performance as the ability of firms to deploy available financial resources, including innovation technology to generate economic gains such as profits, market share, and growth in the industry that it operates in.

Performance of the financial sector on the one hand cannot be over reached, as performance management in the sector has been extended to include the integration and management of innovation and technological environment in the areas of financial innovative product deliveries, especially in this 21st century. According to Casu, Girardone, and Molyneux (2006) financial innovation contributes to the dynamic capabilities of financial service firms, which ultimately affects the managerial competence of the firms as well as the overall growth of the sector. Karpuz, Güryay, and Kirikkaleli (2021), however suggested a collective analysis of both financial and subjective factors, to test performance sustainability of the financial sector of Cyprus. And, thus highlighted human resource as a main factor that can be used for performance measurement as well as its sustenance. Nevertheless, to improve a process or a line of action, its performance must be measured to determine the level of increase or decrease necessary for optimal firm value (Yun, Ahmad, Jebran, & Muhammad, 2020).

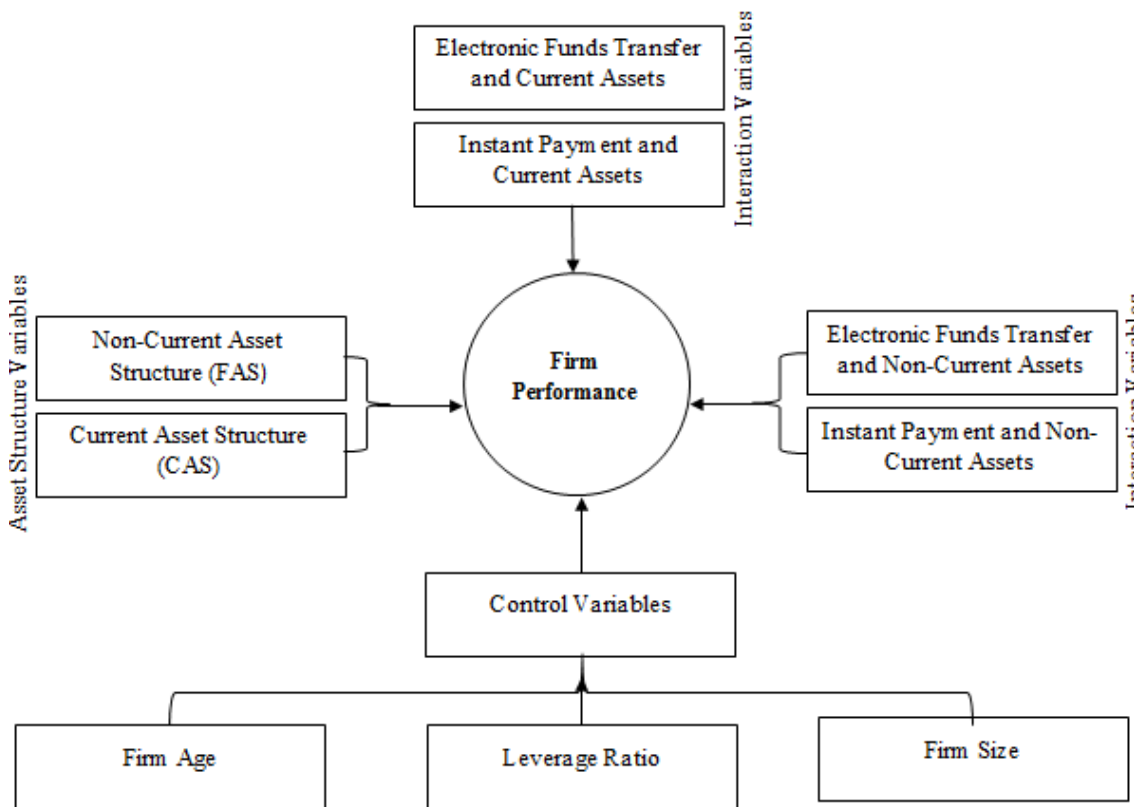
The concepts of asset structure on the other hand, has to do with the arrangement of distinct asset components Koralun-Bereźnicka (2013), while, Setiadharna and Machali (2017) defined it as the collateral worth of assets. Herbert, Nwala, Agwor, and Akani (2024) posited that asset classification is very key, especially in asset-based lending where liquidity is prioritized over profitability, and Mmuogbo, Onmonya, Kolawole, (2024) asserted that income generation can be based on asset growth.

Sharma and Dharni (2019) stated that the conception of the information age and economy, led to the upsurge of knowledge and information assets also known as intangible or intellectual assets. This has not only altered the asset structure or components of firms, but has become a major driver of performance for most organizations. Thus, some aspects of intangible assets in the innovation age in line with performance discourse, can be seen as the application of financial technology as a branch of firms' assets that improves performance. According to BIS (2021), financial technology ushered in economic modifications in the production of financial

services, with implications in firms’ asset structure, as well as industrial structure of finance service firms.

Fintech involves all financial products and services, technology and infrastructure that facilitates individuals and companies’ access to payments, savings, and credit facilities through the internet without the need to visit a bricks financial institution or having a direct contact with financial service providers (Shofawati, 2019). It enhances ease, accessibility and convenient financial transactions (Babarinde, Gidigbi, Ndaghu, & Abdulmajeed, 2020). This, thereby alters the competitive landscape and reduces financial firm boundaries. Hence, this study looks into the aggregate performance of the financial firms in Nigeria, in line with their asset structure, in the face of the use of electronic funds transfer and instant payment platforms; which are known for integrating seamless payment services that engenders the core value of the sector. Yehorycheva, Fysun, Hudz, Palchuk, and Boiko (2020) reported a positive influence of insurance technology (Insuretech) on the performance of leading insurance firms in Ukraine and this was attributed to ease in payments of premium and other service deliveries.

Figure 1: Researcher’s Framework



Source: Researcher’s Conceptualization (2026)

Figure 1 depicts the direction of relationship between endogenous and exogenous variables. Specifically, asset structure variables, interaction variables and control variables affected firm performance as indicated by the arrows moving from the exogenous variables to the endogenous variable.

Theoretical literature

Resource-Based View (RBV) Theory

This study follows and adapts the concepts established by RBV theory with the expressed purpose of attempting proactive management of internal resources into a more comprehensive model. The RBV was introduced by Barney (1986) and has been one of the most influential perspectives fueling improvements towards organizational performance. RBV analyzed and interpreted the contributions of internal resources of establishments, and prioritize assets and capabilities necessary for formulating organizational policies in achieving feasible and competitive advantages (Madhani, 2010). These resources are interpreted as inputs that boosts firms' activities. Internal resources and technical know-hows determine strategic selections made by firms while competing in their external professional environment. The core of RBV is centered on the ability of firms to put forth its resources and proficiencies in such a manner that help develop sustainable competitive advantages.

In addition, the work of Gilbreath and Galvin (2008) uncovered the importance of another aspect of assets as the RBV is more concerned with firms' intangible capital and performance. Their research submits that the strong point of some resources is reliant on arrangements and combinations with other resources and so no particular resources befit as most important to firm performance. Collis and Montgomery (2008), looked at the managerially-oriented aspect of RBV, Peteraf and Barney (2003) as well as Foss and Knudsen (2003), explored the RBV in testing the inter-firm variations in performance. Thus, the RBV of a firm's employed resources and capabilities are used to explain the variations in firms' financial position. Intuitively, fiscal performance is a function of a firm's resources and managerial competence, amongst others.

Empirical literature

To begin with, Al Ani (2014) experimented on a number of manufacturing firms in Oman from 2008 to 2012 and concluded that the build-up of assets is irrelevant to firm's ROE, having used multiple regression analysis. Although, it showed a positive response of tangible assets on ROA model.

On the other hand, Mwaniki and Omagwa (2017) found a negative association between intangible assets and performance from listed firms in Kenya Stock exchange having used the composite index of performance variables. Their study deployed a multiple regression analysis on SPSS 21 on commercial and service firms from 2010 to 2014 and found fixed tangible assets as well as long term investments to have direct and significant impact on the financial performance of firms. While, intangibles and current assets were not significant in any way to performance.

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Submitting evidences from Nigeria, Umobong and Agburuga (2019) studied the interconnection between asset formation and performance of banks, insurance as well as the manufacturing companies traded on the Nigerian stock market with data coverage from 2013 to 2017. Their result showed that intangible resources and current assets are positive and statistically significant with ROA, and same for ROE, except for tangible assets and long-term investment that returned negative, yet significant.

Asset tangibility was also seen to have a significant but negative effect on effective tax rate (ETR) in the study of Ajaya and Swagatika (2021), on the entire manufacturing sector in India with a sample size of 1,592 firms from 8 foremost manufacturing firms covering 2007 to 2017. The study, employed the GMM and panel vector auto-regression model to analyze their objectives. Tangible assets responded positively after an immediate shock to ETR. This goes on to show the elasticity of asset tangibility on firm tax rates.

The study of Park, Kim, Choi, and Choi (2021) focused on elements that affects sustainability through management and innovation capabilities of content firms in China, through the application of covariance-based structural equation models of structured questionnaire. From the 255 responses examined, it was deduced that content development ability, along with technical support and leadership as well as information technology infrastructure contributes significantly to the positive growth of innovation capabilities which in turn promotes sustainability in the focused sector.

Furthermore, the study of Herbert, Nwala, Agwor, and Akani (2024) used ROE as a proxy for performance and examined the effect of current and non-current assets as well as their turn-overs, on Nigeria's 25 listed fast-moving consumer goods firms from 2012 to 2021 with the OLS technique. It was discovered that the non-current asset components had a sizable direct effect on ROE unlike the current asset components.

Still on the Nigeria Exchange Group, a study on fourteen consumer goods firms were selected, with a dataset spanning from 2013 – 2022 by Mmuogbo, Onmonya, and Kolawole (2024) to examine asset growth on performance (ROA and ROE) of the selected firms. They found that both non-current as well as current asset growth, had a significant and positive effect on ROA likewise for ROE of consumer goods firms in Nigeria for the period studied. Although, net asset growth did not have any significant effect on performance measured by ROA but showed a positive and significant effect on ROE proxy for performance.

On performance of non-financial firms listed on the Nigeria Exchange Group, Ejoh and Onuorah (2025) analyzed the effects of asset structure as well as other financial indicators on the ROA of 20 sampled firms from 2014 to 2023, using the panel least squares technique. Financial asset ratio, together with non-current as well as current asset ratios were significant factors in the financial performance of the firms studied while, intangible asset ratio did not exert any significant influence on performance for the period studied.

The nobleness of this study lies in its addition to literature in the Nigeria clime, being among the early articles, to examine the association between asset structure, financial technology, and the role of financial technology on firm's asset structure and the aggregate performance of

quoted financial firms in the Nigerian financial sector. Having employed the system GMM estimator which is more suitable for dynamic panel data models, but rare in previous works of this discourse.

METHODOLOGY

Theoretical Framework

The underpinning theory of this study is the Resource based theory by Barney 1986, which states that the growth of firms is based on the internal structure and contributions from various firm’s assets. Thus, a firm’s performance and success are attributed to the internal productive resources of the firm as explained by RBV. These internal resources, specifically assets and capabilities are catalyst for formulating organizational policies to get sustainable competitive advantage (Madhani, 2010).

Intuitively, from the underlining position, financial performance is modeled as a function of a firm's resources and managerial competence amongst other factor inputs. This is given as:

$$R_t = f(D, G) \dots \dots \dots (1)$$

Where:

R = vector of endogenous (performance) variables at time t

D = vector of endogenous variables (assets variant)

G = other determinant of financial performance

This can be estimated with multiple linear regression and dynamic panel model by considering one lag of the dependent variable. The multiple regression model is given as:

$$R_t = \infty_0 + \beta_1 D_t + \beta_2 G_t + \epsilon_t \dots \dots \dots (2)$$

Where:

∞ = Constant

β_1 and β_2 Parameters to be estimated

ϵ = Error term

Other item remains the same as explained in Eq. (1)

The dynamic panel model reveals the speed at which firms adjust to equilibrium (optimal) level of performance. This is so because optimal performance differs across firms over time. And this is reflected as:

$$R_{i,t} - R_{i,t-1} = \lambda(R_{i,t}^* - R_{i,t-1}) + \epsilon_{i,t} \dots \dots \dots (3)$$

$R_{i,t}^*$ = optimal financial performance

\forall = Speed of Adjustment (SOA) this represents the quantum of desired adjustments between 2 (two) consecutive periods.

$\epsilon_{i,t}$ = error term.

This model assumes that there exist the combinations of input resources that maximizes financial performance. Any deviation from this optimal performance triggers adjustment behavior towards the optimal especially if the benefit exceeds the cost.

$\forall = 0$ no adjustment between 2 period

$\forall = 1$ full adjustment between 2 periods

Thus, SOA lies between 0 and 1 indicating that adjustment is not instantaneous

Data and Model specification

This study employed the longitudinal research design, as the phenomenon under study is historical in nature and was collected for a period of eleven years. All financial firms listed on the Nigeria Exchange Limited (NGX) as at December 31st 2023 constitute the population of this study. The sample size was however determined based on convenience, that is, filtering technique which was based on availability of data. And, hence a total of 46 firms with trend of 11 years (2013-2023) which totals at 616 observations, was employed in this study. All the data was sourced from the audited annual publication of the various firms and the Central Bank of Nigeria (CBN) statistical bulletin, 2020; for financial firms’ specific variables and financial technology variables respectively.

It is important to note here that this study employed variables that are common among financial firms, thus, only the non-current and current assets that cuts across financial firms, as well as fintech and control variables with such characteristics were used in this study.

To estimate the dynamic panel model in one step, Eq. (2) is put into Eq. (3) to enable the estimation of optimal financial performance and its SOA determinants to be estimated simultaneously. Thus, we have:

$$R_{i,t} = \infty \forall_{i,t} + (1 - \forall^*)R_{i,t-1} + \forall D_{i,t} + \cap_t + U_i + \epsilon_{i,t} \dots \dots \dots (4)$$

Where:

$$(1 - \forall^*) = \aleph_0 \text{ and } \infty \forall_{i,t} = \omega_0$$

Thus, Eq. (4) is re-stated as:

$$R_{i,t} = \omega_{0i,t} + \aleph_1 R_{i,t-1} + \forall D_{i,t} + \cap_t + U_i + \epsilon_{i,t} \dots \dots \dots (5)$$

$\omega_{i,t}$ = Constant

\aleph_1 = SOA (1 - \aleph_1)

$\forall D_{i,t}$ = financial performance determinant and its parameter to be estimated.

U_i = firm effect

Ω_t = time effect

Eq. (5) is the first order dynamic panel model due to first lag dependent variable on the right-hand side, which is estimated within the system GMM framework.

This study adapted the dynamic partial adjustment model in Eq. (5). Where “D” is substituted with independent variables which includes the firms’ assets, fintech together with the control variables while “R” is substituted with vector of performance variables which include two (2) accounting base measures of performance- Return on Asset (ROA), and Return on Equity (ROE). The functional forms of the models are given as:

$$ROA_{i,t} = f(FAS, CAS, LVR, FS, FA, EFTFAS, EFTCAS, ISPFAS, ISPCAS) \dots \dots \dots (6a)$$

$$ROE_{i,t} = f(FAS, CAS, LVR, FS, FA, EFTFAS, EFTCAS, ISPFAS, ISPCAS) \dots \dots \dots (6b)$$

The estimated versions of these recursive models are stated below in a stepwise pattern with:

Return on Asset (ROA) as dependent variable

$$ROA_{i,t} = \omega_{0i,t} + \alpha_1 ROA_{i,t-1} + \beta_1 FAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \Omega_t + U_i + \epsilon_{i,t} \dots \dots \dots (7a)$$

$$ROA_{i,t} = \omega_{0i,t} + \alpha_1 ROA_{i,t-1} + \beta_1 CAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \Omega_t + U_i + \epsilon_{i,t} \dots \dots \dots (7b)$$

$$ROA_{i,t} = \omega_{0i,t} + \alpha_1 ROA_{i,t-1} + \beta_1 FAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \beta_5 EFTFAS_{i,t} + \Omega_t + U_i + \epsilon_{i,t} \dots (7c)$$

$$ROA_{i,t} = \omega_{0i,t} + \alpha_1 ROA_{i,t-1} + \beta_1 CAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \beta_5 EFTCAS_{i,t} + \Omega_t + U_i + \epsilon_{i,t} \dots (7d)$$

$$ROA_{i,t} = \omega_{0i,t} + \alpha_1 ROA_{i,t-1} + \beta_1 FAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \beta_5 ISPFAS_{i,t} + \Omega_t + U_i + \epsilon_{i,t} \dots (7e)$$

$$ROA_{i,t} = \omega_{0i,t} + \alpha_1 ROA_{i,t-1} + \beta_1 CAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \beta_5 ISPCAS_{i,t} + \Omega_t + U_i + \epsilon_{i,t} \dots (7f)$$

Return on Equity (ROE) as dependent variable

$$ROE_{i,t} = \omega_{0i,t} + \alpha_1 ROE_{i,t-1} + \beta_1 FAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \Omega_t + U_i + \epsilon_{i,t} \dots \dots \dots (8a)$$

$$ROE_{i,t} = \omega_{0i,t} + \alpha_1 ROE_{i,t-1} + \beta_1 CAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \Omega_t + U_i + \epsilon_{i,t} \dots \dots \dots (8b)$$

$$ROE_{i,t} = \omega_{0i,t} + \alpha_1 ROE_{i,t-1} + \beta_1 FAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \beta_5 EFTFAS_{i,t} + \Omega_t + U_i + \epsilon_{i,t} \dots (8c)$$

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$$ROE_{i,t} = \omega_{0i,t} + \alpha_1 ROE_{i,t-1} + \beta_1 CAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \beta_5 EFTCAS_{i,t} + \eta_t + \mu_i + \epsilon_{i,t} \dots (8d)$$

$$ROE_{i,t} = \omega_{0i,t} + \alpha_1 ROE_{i,t-1} + \beta_1 FAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \beta_5 ISPFAS_{i,t} + \eta_t + \mu_i + \epsilon_{i,t} \dots (8e)$$

$$ROE_{i,t} = \omega_{0i,t} + \alpha_1 ROE_{i,t-1} + \beta_1 CAS_{i,t} + \beta_2 LVR_{i,t} + \beta_3 FS_{i,t} + \beta_4 FA_{i,t} + \beta_5 ISPCAS_{i,t} + \eta_t + \mu_i + \epsilon_{i,t} \dots (8f)$$

Where:

ROA = Return on Asset

ROE = Return on Equity

FAS = Non-Current Asset Structure

CAS = Total Current Asset Structure

LVR = Leverage ratio

FS = Firm Size

FA = Firm Age

ISPFAS = Interaction between Instant Payment (ISP) and FAS

ISPCAS = Interaction between ISP and CAS

EFTFAS = Interaction between Electronic Fund Transfer (EFT) and FAS

EFTCAS = Interaction between EFT and CAS

i, t = firm i at current period t

Leverage, firm size and firm age were included as controlled variables because they are significant determinants of firm performance with respect to asset factor inputs as seen in literature. EFT and ISP are used as the fintech variables because they cut across financial institutions and people (Okonkwo, Obinozie, & Echekeba, 2015).

ω_{0t} = Intercept

$$\alpha_1 = (1 - \alpha_1) = \text{the SOA}$$

The SOA refers to adjustment coefficient or adjustment speed. It shows the amount of adjustment to its target performance (Amin, Khan, Jaddon, & Tahir, 2020)

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are unknown parameter to be determine

η_t & μ_i = time and firm effect

$\epsilon_{i,t}$ = Error term

A priori expectation as derived from the theoretical literature is given as:

$\forall_1, \forall_2, \forall_3, \forall_4$ and $\forall_5 > 0$

This implies that asset structure, fin tech and controlled variables considered is expected to influence performance positively hence an increase in $\forall_1, \forall_2, \forall_3, \forall_4$ and \forall_5 will bring about an increase in performance of the sector (Barney, 1986).

Method of Data Analyses

The cause-effect direction and magnitude of relationship between the explanatory variables and explained variable is determined using the dynamic panel system GMM framework (Blundell & Bond, 1998; Arellano & Bover, 1995). The system GMM is preferred to levels and differenced GMM because it pulls momentum (instrument) from both levels and differenced GMM to resolve the downward and upward biases that are inherent in both techniques, see (Arellano & Bond, 1991; Arellano & Bover, 1995; Blundell & Bond, 1998; Ahn & Schmidt, 1995; Greene, 2008). Hence, the analysis is designed following their suggestions as seen in literature. This is followed by the post regression tests of the Sargen test, Wald test and the Arellano-Bond’s (1991) to authenticate the system GMM output. However, these tests are not without its preliminary statistical tests for checking the properties of the data, which include and not limited to the panel unit root test.

DATA PRESENTATION AND ANALYSES

Table 4.1: Panel Unit Root Test

Methods	L, L & C	B, t-stat	Im, P&SW	ADF	PP-F
Variables	All Variables are Integrated in Order (1)				
ROA	-42.260*	-3.4798*	-6.0541*	237.323*	563.426*
ROE	-38.673*	-3.1638*	-6.3565*	260.024*	564.115*
FAS	-12.215*	2.5033	-1.36210***	145.302*	353.716*
CAS	-12.215*	2.5033	-1.36210***	145.302*	353.716*
LVR	-3.674*	-0.5230	-1.4732***	145.180*	405.507*
FS	-10.377*	0.8523	-0.8984	133.523*	354.930*
FA	-21.655*	9.0282*	-215.78*	847.351*	847.351*
ISPFAS	1030.38**	19.803**	3.3425**	10.6170*	8.00920*
ISPCAS	4.7456***	-31.267*	7.7742**	66.9910**	135.744*
EFTFAS	-8.6713*	9.4871*	1.2822**	103.910***	215.184*
EFTCAS	17.556*	19.758*	5.5277*	15.2970*	62.4590***

*=1%, ** = 5% and *** = 10% Significant Level. () = Prob values
 L, L & C = Levin, Lin & Chu t, B, t-stat = Breitung t-stat, Im, P & W = Im, Pesaran and Shin W-stat
 ADF = Augmented Dicky-Fuller - Fisher Chi-square, PP-F = Philip-Peron Fisher Chi-square

Source: Researcher’s Estimation Using E-views 12.0 (2026)

Only the unit root test results that are germane to the estimation of the cause-effect relationship in the system GMM result is reported in table 4.1. The five (5) different unit root test

techniques contained in table 4.1 unanimously confirmed that all the variables are stationary at order I(1) after taking their first difference at mixed significant level. This means that the fluctuation attribute of these variables during the studied period did not change. As such the variables can be used for further estimation without generating a spurious result.

Table 4.2: Kao Panel Co-integration Test Result

Variable	ADF Statistics	Prob	Remark
Residual (ADF)	-8.19688	0.0000*	Co-integration Found

* =1% Significant Level.

Source: Researcher’s Estimation Using E-views 12.0 (2026)

To determine the long run relationship among the variables of interest, Kao panel co-integration test becomes imperative. Table 4.2 shows that the ADF residual statistics of 8.20 approximately is significant at 5% confidence level. This indicates the variables are co-integrated. Any variable deviations due to short run shock are adjusted to equilibrium in the long run.

Discussion of Findings

System GMM Result using ROA as Dependent Variable

Table 4.3 shows the cause-effect relationship between all the explanatory variables (asset structure variables, its interaction with financial technology variables, and firm specific indicators) and firm performance (ROA) as revealed by the system Generalized Method of Moment (GMM) techniques. When ROA (equations 7a to 7f) is used as dependent variable, the J-statistics for the entire model is > 0.25 with 46 and 47 reported ranked instruments as suggested by Roodman (2009). This shows that the validity of the Instrumental Variable (IV) used is satisfactory because they are exogenously related to their corresponding error term. This is further confirmed by the absence of second order serial correlation AR(2) in the models. The entire explanatory variables coefficient is significantly related to ROA as indicated by the models corresponding Wald test that is significant at 5% significance level.

The lag values of dependent variable; ROA_{t-1} in equations (7a to 7f) was seen to have a consistent significant influence on current year ROA at less than 1% confidence level, throughout the model. However, it was wrongly signed as it did not meet the apriori expectations of positive effect on ROA_t . Intuitively, past period performance affects current period performance inversely. Thus, an increase in past performance will cause a fall in current performance level. This can be attributed to the fact that most managers tend to operate with slack or loose hands haven recorded a successful performance in the previous accounting year. Similarly, all the explanatory variables pass their significant test at 5% confidence level as indicated by the corresponding probability values which is < 5%.

Table 4.3: System GMM Result using ROA as Dependent Variable

Dependent Variable = ROA						
Variables	Model 7a	Model 7b	Model 7c	Model 7d	Model 7e	Model 7f
ROA ₍₋₁₎	-0.4941* (0.0000)	-0.4942* (0.0000)	-0.4867* (0.0000)	-0.4849* (0.0000)	-0.4935* (0.0000)	-0.4947* (0.0000)
SOA	0.51 (51%)	0.51 (51%)	0.51 (51%)	0.52 (52%)	0.51 (51%)	0.51 (51%)
FAS	-2.3169* (0.0000)		-2.2036* (0.0000)		5.1288* (0.0000)	
CAS		2.3175* (0.0000)		1.6644* (0.0000)		4.8438* (0.0000)
LVR	0.0779* (0.0000)	0.0004* (0.0000)	0.0223* (0.0000)	0.0509* (0.0000)	0.0395* (0.0000)	0.0145* (0.0000)
FS	-1.0852* (0.0000)	0.0024* (0.0000)	-0.4144* (0.0000)	0.8098* (0.0000)	-2.4776* (0.0000)	-1.3930* (0.0000)
FA	-0.0242* (0.0000)	0.0002* (0.0000)	-0.1338* (0.0000)	-0.2006* (0.0000)	0.2160* (0.0000)	0.0879* (0.0000)
EFTFAS			0.1654* (0.0000)			
EFTCAS				0.0348* (0.0000)		
ISPFAS					-1.3981* (0.0000)	
ISPCAS						-0.6241* (0.0000)
Model Summary (diagnostic Tests)						
J-Stat	45.5607 (0.3262)	46.3223 (0.2986)	43.3578 (0.3301)	41.8547 (0.4336)	44.0919 (0.3027)	42.9821 (0.3447)
AR(1)	-1.182819 (0.2369)	-1.213597 (0.2249)	-1.023274 (0.3062)	NA	-1.009451 (0.3128)	-1.0110 (0.3120)
AR(2)	-0.816446 (0.4142)	-0.798241 (0.4247)	-0.995113 (0.3197)	-0.311250 (0.7556)	-1.007452 (0.3137)	-1.006101 (0.3144)
Wald Test	2.17E+10* (0.0000)	2.74E+10* (0.0000)	1.30E+09* (0.0000)	1.07E+09* (0.0000)	7.63E+08* (0.0000)	8.02E+08* (0.0000)
No. of Inst. Rank	47	47	46	47	46	46
*, ** = 1% & 5% Significance Level Respectively. SOA = Speed of Adjustment Inst. = Instrument Values in () = Probability values NA = Not Available						

Source: Researcher's Estimation using E-views 11.0 (2026)

Worthy of note is the change in the direction of impact of non-current asset on performance after the inclusion of the fin tech interaction variable of electronic funds transfer. In other words, the non-current asset (FAS) was seen to have exerted a statistically significant effect on performance in the current period at less than 1%, but with a negative relationship. Showing

that a 1% increase in non-current assets of listed financial firms in Nigeria resulted to a fall in performance of -2.3169 and this could be attributed to the fact of lacking increasing importance of non-current asset to generate profit in the Nigeria financial sector and low proportion of fixed asset required to transform their inputs into output. This finding is synonymous with the submission of Al Ani (2014), Umobong and Agburuga (2019), and Ajaya and Swagatika (2021) in the literature who reported that non-current asset structure has significant influence on the operations and performance of firms as against the submission of Masood, Aktan, Turen, Javaria, and ElSeoud (2017). With the introduction of interaction variable of electronic fund transfer it was still negative while retaining its statistically significant level of 5% of confidence. But it became positive when instant transfer was introduced. A careful study of the result also revealed that EFTFAS was positive and statistically significant at 5%, but it was not so for ISPFAS. Thus, the adoption of financial technology by listed financial firms has revealed interesting information because a unit increase in the usage of Electronic Fund Transfer (EFT) will make FAS significantly increase firm performance by 0.1654 units. This further shows that EFT is a significant conduit via which FAS spur firm performance measured with ROA in Nigeria during the period under focus. This result is in tandem with evidence from China in Park, Kim, Choi, and Choi (2021).

On the other hand, current asset was consistently positive and significant throughout the model. Intuitively, CAS in models 7b, 7d and 7f with coefficients of 2.3175, 1.6644, and 4.8438 respectively, maintained a direct and a statistically significant effect on performance at less than 5% level. This submission is also similar to the findings of Umobong and Agburuga (2019), Mmuogbo, Onmonya, and Kolawole (2024) and Ejoh and Onuorah (2025). Moreover, when the interaction variable (EFTCAS) was introduced, the result still supported a positive impact on the relationship between current asset structure on performance just as seen with the fixed asset structure. This showed that financial firms were able to use their current asset structure to significantly influence performance with 0.0348 units as a result of a unit change in CAS through the moderating role of electronic fund transfer (EFT) in Nigeria.

Although, when interacted with fintech variable of instant payment, it became negatively signed but still maintained its level of statistical significance of less than 1% level of significance.

The study revealed that LVR, FS and FA were positive and statistically significant on performance. This implies that a unit increase in these variables significantly promotes firm's performance with 0.0004, 0.0024 and 0.0002 units respectively. Thus, LEV, FS and FA are significant determinants of financial firm performance during the studied period. The statistically significant direct impact of LVR on ROA, could imply that listed financial firms in Nigeria were able to use debt-equity mix to significantly enhance their performance during the year under focus. Leverage financing especially, is a critical strategy for financial firms to maximize their shareholders wealth. Moreso, the interaction of financial technology variables of EFTCAS and ISPCAS only changed the directional effect of FA and FS from positive to negative respectively and they were still significant at 5% confidence level as shown in equations 7d and 7f respectively.

The Speed of Adjustment (SOA) to optimal performance level due to deviation is relatively fast and lies within 51% to 52% maximally with ROA.

System GMM Result using ROE as Dependent Variable

For ROE (equations 8a to 8f) as the dependent variable, the J-statistics for the entire model is > 0.25 with 47 and 46 reported ranked instruments. This shows that the validity of the Instrumental Variable (IV) used is satisfactory as well, and they are exogenously related to their corresponding error term. Therefore, satisfy the orthogonality condition for their use. This is further shown by the second order serial correlation (AR(2)) that is absent from the models. The entire explanatory variables coefficient is significantly related to ROE as indicated by the models corresponding Wald test that is significant at 5% confidence level. The dependent variable lag values in equations (8a to 8f) significantly impact current year ROE at 5% confidence level. Similarly, all the explanatory variables pass their significant test at 5% confidence level as indicated by their corresponding probability values that is < 5%.

Table 4.4 shows that ROE_{t-1} was consistent throughout the model, with an inverse impact on current periods' performance of the Nigerian financial sector, during the period studied, though it was statistically significant at less than 1% level of significance. The same behavior was reported for ROA_{t-1} in ROA model. Non-current asset was statistically significant at less than 5% level of significance, with an inverse impact on performance throughout the model as seen on models 8a, 8c and 8e. This submission is against that of Herbert, Nwala, Agwor, and Akani (2024).

However, this situation reversed to have a positive effect on performance when interacted with both fintech variables of EFT and ISP, and the initial level of statistical significance at less than 1% was maintained. This implies that a unit increase in FAS of listed financial firms in Nigeria through fintech will result to 0.0796 and 0.2749 units increase in firm performance (ROE). Thus, fintech application can boost non-current assets impact on financial firms' performance.

Table 4.4: System GMM Result using ROE as Dependent Variable

Dependent Variable = ROE						
Variables	Model 8a	Model 8b	Model 8c	Model 8d	Model 8e	Model 8f
ROE ₍₋₁₎	-0.4779* (0.0000)	-0.4780* (0.0000)	-0.4770* (0.0000)	-0.4800* (0.0000)	-0.4777* (0.0000)	-0.4787 (0.0000)
SOA	0.52 (52%)	0.52 (52%)	0.52 (52%)	0.52 (52%)	0.52 (52%)	0.52 (52%)
FAS	-5.7609* (0.0000)		-3.9066* (0.0000)		-4.8066* (0.0000)	
CAS		4.9042* (0.0000)		6.2029* (0.0000)		13.1299* (0.0000)
LVR	-0.1430* (0.0000)	-0.1844* (0.0000)	-0.2559* (0.0000)	-0.2226* (0.0000)	-0.2627* (0.0000)	-0.2379* (0.0000)
FS	-6.9118* (0.0000)	-6.2690* (0.0000)	-5.0714* (0.0000)	-8.3487* (0.0000)	-4.3389* (0.0000)	-7.3587* (0.0000)
FA	0.1975* (0.0000)	0.2155* (0.0000)	0.2052* (0.0000)	0.3594* (0.0000)	0.1804* (0.0000)	0.4405* (0.0000)
EFTFAS			0.0796* (0.0000)			
EFTCAS				-0.0620* (0.0000)		
ISPFAS					0.2749* (0.0000)	
ISPCAS						-1.8419* (0.0000)
Model Summary (diagnostic Tests)						
J-Stat	45.3471 (0.33423)	45.1082 (0.30417)	44.8136 (0.27696)	43.5167 (0.32409)	43.8540 (0.31140)	42.3770 (0.36884)
AR(1)	-1.019580 (0.3080)	-1.00853 (0.3132)	-1.00851 (0.3130)	-1.011870 (0.3116)	-1.00873 (0.3131)	-1.00517 (0.3148)
AR(2)	-1.04621 (0.2955)	-1.03712 (0.2997)	-1.04487 (0.2961)	-1.03231 (0.3019)	-1.04370 (0.2970)	-1.03456 (0.3009)
Wald Test	6.50E+09* (0.0000)	6.57E+09* (0.0000)	5.33E+08* (0.0000)	4.96E+08* (0.0000)	1.36E+09* (0.0000)	7.06E+08* (0.0000)
No. of Inst. Rank	47	46	46	46	46	46
*, ** = 1% & 5% Significance Level Respectively. Inst. = Instrument Values in () = Probability values						

Source: Researcher's Estimation using E-views 11.0 (2026)

For Current Asset Structure (CAS) in model 8b table 4.4, the coefficient was positive and significant when LVR, FS and FA are controlled for. This implies that a unit increase in CAS and FA significantly promotes firm's performance (ROE) with 4.9042, 0.2155 respectively and decrease ROE with -0.1844 and -6.2690 units respectively. Thus, CAS, LEV, FS and FA are significant determinants of financial firm performance measured with ROE in Nigeria during the studied period. Umobong and Agburuga (2019), together with Mmuogbo, Onmonya, and

Kolawole (2024) documented similar finding in their study in the literature. But this was not in line with Mwaniki and Omagwa (2017).

Furthermore, CAS in models 8d and 8f still maintained a statistically significant level of less than 1% with inverse effect on performance. With the introduction of interactions of both financial technology variables of EFTCAS and ISPCAS did not change the directional effect of LVR, FA and FS respectively and they were still significant at 5% confidence level as shown in model 8d and 8f respectively. EFTCAS and ISPCAS coefficients were negative and significant at 5% confidence level. This shows that a unit change in financial firms' current asset structure significantly reduces performance (ROE) with -0.0620 and -1.8419 units through the adoption of fintech.

The Speed of Adjust (SOA) to optimal firm value level due to deviation is relatively fast with an average speed of 52% maximally with ROE.

SUMMARY, RECOMMENDATION AND CONCLUSION

This study examined the impact of asset structures on financial firm performance, and the moderating role of financial technology from 2013 to 2023 on a Panel data of forty-six (46) financial firms which were sourced from the annual financial reports of the firms listed in NGX. The dynamic panel regression approach of system GMM methodology was adopted to achieve the objectives of this study. The findings show that asset structure variables, moderating variables of financial technology and firm specific factors considered in the model exert different significant magnitude of effect on firm performance in Nigeria. Specifically, among other things the findings reveal that financial firms in Nigeria have adjustment policy and a desired level of performance to achieve. They adjust at a high speed of approximately 51% and 52% to optimal level of performance when measured with ROA and ROE respectively after deviation. The instantaneous adjustment of firms to desired firm value is about a year and one week. Furthermore, asset structure of non-current and current assets was seen to have a significant effect on financial firm performance in Nigeria during the studied period. In the same vein, both financial technology mediating variables of electronic fund transfer and instant payment, have significant influencing impact on asset structure of current and non-current assets on financial firm performance in Nigeria during the studied period. Alos, electronic funds transfer exerted far reaching impact then instant payment in the financial sector.

From the foregoing narratives, this study concludes that asset structure, financial technology variables and firm internal factors considered in the models are significant determinants of financial firm's performance, irrespective of the measure of performance used. As asset structure and financial technology and firms' internal factors changes, financial firm's performance will change significantly.

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From the foregoing, this study recommends the following:

- i. financial firms in Nigeria should constantly engage in asset component re-balancing for the effect of their asset structure on performance to remain significant.
- ii. financial firms should employ more of fintech products via financial technology of electronic funds transfer in changing market condition to spur their performance through asset structure.
- iii. financial sector regulators should impose more stringent regulations for financial technology especially with instant payment (real time transactions) to contribute positively in influencing firm performance via asset structure.

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