
Effect of Financial Technology (fintech) on Revenue Generation: A Case Study of Kano Electricity Distribution Company

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Abstract

Technological advancements have given rise to new kinds of financial institutions and financial technology (Fintech) companies that want to deliver the next generation of digital banking and payment services. The study examines the effect of financial technology (Fintech) on the revenue generation of Kano Electricity Distribution Company (KEDCO) using quarterly data from 2017q1 to 2024q2. The unit root test indicated that revenue generation, point of sales, mobile banking, and bank transfer are stationary at the first difference in other words is the $I(1)$ process. The ARDL model shows the point of sales has a positive and statistically significant effect on the revenue generation of Kano Electricity Distribution Company (KEDCO). The mobile bank has a positive but statistically insignificant effect on the revenue generation of Kano Electricity Distribution Company (KEDCO). Bank transfer has a positive and statistically significant effect on the revenue generation of Kano Electricity Distribution Company (KEDCO). The study recommends that Kano Electricity Distribution Company (KEDCO) should work on the challenges that hinder the successful operation of point of sales, mobile bank, and bank transfer by striving to meet international best practices. Moreover, the number of points of sale should be increased and made available with easy accessibility to the users.

Keywords: Electricity Distribution, Fintech, Revenue Generation and ARDL

1. Introductions

Kano Electricity Distribution Company (KEDCO) is one of the eleven (11) electricity distribution companies successfully privatised and handed over to new investors on November 1, 2013, as part of the electricity power sector reform program implementation (BPE, 2013). Kano Electricity Distribution Company is located in the north-western geopolitical zone of Nigeria, KEDCO is licensed by the Nigerian Electricity Regulatory Commission (NERC) to generate, distribute, and market electricity to customers within Kano, Katsina, and Jigawa States, covering a geographical area of 67,128 km². These customers are served by fourteen (14) regional offices, through fourteen (14) transmission stations and forty-three (43) injection sub-stations across the franchise area (NERC, 2023).

Furthermore, in July 2022, KEDCO was restructured by the Federal Government and appointed an interim Board and Management to steer the Company's affairs for transition to new investors (Ministry of Power, 2022). On November 1st, 2023, Future Energies Africa (FEA) Limited took over the affairs as the core investor in Kano Electricity Distribution Company. Its mandate is to rebuild a modernized electricity distribution system that will enhance service delivery, reduce

Aggregate Technical Commercial Collection (ATC & C) losses, and improve financial performance by leveraging network investment and digital transformation for optimal efficiency (NERC, 2023).

The customer of Kano Electricity Distribution Company are classified into Maximum Demand and Non-Maximum Demand, that are categorize into Post and Pre-paid that all customer belong to the class of band from A to E tariff classes.

Revenue generation is the process through which businesses or organizations earn income by selling products, services, or leveraging assets. It is critical for sustainability and growth. Companies adopt various strategies like pricing models, subscription services, advertising, and partnerships to maximize revenue. Effective marketing, customer engagement, and innovation play pivotal roles in enhancing revenue streams. Revenue can also come from investments, royalties, or government grants, depending on the organization's structure. Monitoring and analyzing revenue performance is vital for making informed decisions. Sustainable revenue generation balances profit with customer satisfaction and market trends (Kotler et al. 2016).

Revenue Generation is the amount of money a company receives in exchange for its goods and services or conversely, what a customer pays a company for its goods or services (Kotler et al. 2016).

Mobile Banking enable customers to perform banking activities using smartphones or other mobile devices. These transactions include transferring funds, paying bills, checking account balances, and more, all facilitated through mobile banking apps or SMS-based services. They offer convenience, speed, and accessibility, eliminating the need for physical bank visits. With advancements in security features like biometric authentication and encryption, mobile transactions are increasingly safe. This innovation is particularly transformative in regions with limited access to traditional banking services, promoting financial inclusion. However, concerns about cyber threats and the digital divide remain significant (Jain & Ghosh, 2021).

Bank transfer is a secure method of transferring funds electronically between bank accounts. It is commonly used for personal, business, and international transactions. Transfers can be initiated through online banking, mobile apps, or at bank branches, requiring details like the recipient's account number and bank code. Methods include Automated Clearing House (ACH) for domestic payments and the SWIFT network for international transfers. Bank transfers are reliable and traceable but may involve processing times and fees, depending on the service type. Innovations like real-time payments and blockchain technology are enhancing speed and efficiency in bank transfers (Mishkin, 2021).

Point of Sale (POS) system is where retail transactions occur, allowing businesses to process sales and accept payments. Modern POS systems integrate hardware like cash registers, card readers, and barcode scanners with software for inventory management, customer data, and sales analytics. They accept various payment methods, including cash, cards, and digital wallets. POS systems enhance operational efficiency and improve customer experiences by streamlining the checkout process. Advanced cloud-based POS solutions also enable remote access to data and scalability for growing businesses. These systems are vital for retail, hospitality, and service industries (Laudon & Traver, 2021).

One of the key components and instruments influencing and advancing financial innovation is fintech. Fintech uses information technology applications to increase the effectiveness and quality of financial services (Acar & Citak, 2019). Fintech is also utilized in third-party payments, distributed ledger technology, and peer-to-peer (P2P) lending. One type of Fintech that is pushing the financial industry toward digital banking and stifling traditional banks is Fintech products (FTPs) (Gai, Qiu & Sun, 2018). Fintechs provide a range of technical solutions designed to improve operational efficiency, expedite turnaround times, and provide convenience (Allen, Klapper & Peria 2016). A number of stakeholders in the financial sector have been impacted by fintechs, which have enhanced asset management services by providing wealth management services to retail customers through the simplification of systems and the proposal of algorithms that will facilitate the application of artificial intelligence and robots in portfolio management and decision-making (Ndagijimana, 2017). The World Bank estimates that 54.0% of adults worldwide are financially excluded (do not have access to or use financial services), and the problem is much worse in developing economies, as some countries, such as Nigeria, had financial exclusion levels below the global average standard in 2011, 2014, and 2017 (World Bank, 2019). Globally, achieving widespread financial inclusion has proven challenging. International financial institutions, financial regulatory bodies, and academia have come to a consensus regarding the development of Fintech since the global financial crisis and the ongoing advancement of computer technology. The government and financial authorities hold a positive outlook on the advancement of Fintech, as they feel it has the potential to stimulate financial growth and enhance financial standards and effectiveness. Consequently, they have actively endorsed and augmented investments in Fintech.

For the first time in more than 25 years, Nigeria witnessed its first full-year economic recession in 2016. The gross domestic product of Nigeria (GDP) fell from 6.3% in 2014 to 2.7% in 2015, and to - 1.6% in 2016 (World Bank, 2016). The recession was mainly due to global fall in oil prices and unreliable power supply for the manufacturing sector. The power sector has been experiencing a lot of challenges. The aggregate technical, commercial and collection (ATC&C) loss in some dis-coms is over 74% (Distribution, 2019). As a result, dis-coms have been recording insurmountable losses. From November 2013 to December 2016 the accumulated financial deficit was NGN784 billion (US\$2.178 billion, equivalent) (World Bank, 2016). Furthermore, the Nigeria Electricity Supply Industry (NESI) report of 2017 (Gershon, 2017), indicated that over NGN534 billion (US\$1.4 billion) was lost in 2016 by the power sector. In the third quarter report of the Nigerian Electricity Regulatory Commission (NERC) of 2018 (NERC, 2016), the commission stated that the 11 dis-coms cumulatively billed their customers a total sum of ₦173billion/\$567million (USD \$1 ~ ₦305), but were only able to collect ₦106.7billion/\$347million (65.5%). This left the dis-coms with a collection deficit of ₦66billion (\$216million). Subsequently, the dis-coms were invoiced ₦162.5billion for energy received from Nigerian Bulk Electricity Trader (NBET) and for service charged by the Market Operator (MO) but were only able to remit a total sum of ₦54.1billion (33.3%) (NERC, 2016). Globally, stable power supply is synonymous with economic growth and development, and vice versa. The lack of it may render a nation's economy handicapped and greatly reduce its GDP potential.

Globally, grid electricity is being used for agriculture and manufacturing (both large and SMEs). However, the limited grid infrastructure, and unreliable power supply situation in Nigeria has rendered farmers and manufacturers handicapped and limited to the use of irrigation pumps and diesel generators. These pumps and generators have high maintenance cost. They contribute to the

carbon emissions of almost 500 million tonnes per year in Nigeria (Change, Response & Buhari, 2015). But, as this is the main source of income for most households in Nigeria, a country where 40% or 83 million of its population live below the poverty line of \$1.90 per day, 84.6% of which are residents in rural areas of the northern part of the country and mostly engaged in agriculture, the citizens would rather they invest in buying, operating, and servicing these machines at the expense of other cardinal needs such as electricity. The paper examined the effect of financial technology (Fintech) on the revenue generation of Kano Electricity Distribution Company (KEDCO). Several benefits like Agboola et al (2023) and Festus (2023) are expected to be driven from this study and its findings eventually, the study's findings will demonstrate the apparent effect of Fintech on the electrical distribution company's ability to generate income. The rest of the paper is organized as follows: literature review which is the second part of the paper, methodology which discussed the model employed in the study and is the third part of the paper, part four of the paper is presentation and analysis of the empirical findings and the part five discussed the conclusion and recommendations of the study.

2.0 literature review

2.1 Financial Technologies (Fin-techs)

Fintech, short for financial technology, refers to the use of technology to facilitate financial transactions and services within the financial industry. Over the last twenty years, the Internet and online commerce, together with improvements in information technology (IT), have greatly altered worldwide economic activity (Putri et al., 2018). Furthermore, the proficient utilization of Fintech might impact several macroeconomic aspects, including the accessibility of the workforce, since technological improvements lower the expenses of machinery and equipment. Consequently, firms are incentivized to transition from human labour to capital. Studies have characterized Fintech as a pioneering advancement in which organizations combine technical advancements with financial services (Dorfleitner et al., 2017). To be more precise, "Fintech" denotes novel financial solutions that use technology in inventive and imaginative manners (Kammoun et al., 2020).

2.1.1 Digital Financial Services

The World Bank Group (2020) report defined DFS as financial services that rely on digital technologies for their distribution and utilization by clients. DFS is a term for a group of affordable and poverty-fighting financial products, according to Rashid (2020). Fintech, which makes it possible, helps to reach rural poor people more easily and at lower prices while also being accurate, quick, and transparent.

2.2 Empirical literature

Okolo et al. (2025) examine the effects of value-added tax from digital economy, and information technology funds on revenue generation in Nigeria, using the unified theory of acceptance and use of technology as a framework on the overall effects of digital taxes on Nigeria's taxation landscape. Method: the research utilised a survey design involving 500 respondents, including 50 members of the Federal Inland Revenue Service and 450 internet users from a total population of 4.4 million phone users. Results: findings reveals that electronic transfer funds significantly enhanced revenue generation. Additionally, the digital economy positively affected aggregate revenue streams, while digital taxes also promoted technological utilization in Nigeria. Conclusions: the study among others concluded that effective implementation of digital taxation, value added tax, and technology funds has improved revenue generation in Nigeria.

Adanna, Omoruy, Amodu, and Adebayo (2023) utilized the autoregressive distributed lag (ARDL) approach to investigate the effects of digital financial services (DFS) on the growth of savings in Nigeria between 2009 and 2021. The lack of digital savings facilities is cited in this study as the reason for the funding gap to fulfill Nigeria's development goals, which is a phenomenon in the country's financial system's history and is manifested in rising interest rates, an expanding budget deficit, the failure of national development plans, etc. The results showed that whereas web transfers (WT), mobile transfers (MT), and point of sale (POS) have a negative long-term impact on total savings (TS), automated teller machines (ATM) have a favorable long-term impact on TS. It suggests that ATMs may eventually increase a saver's saving ability, possibly due to technological aptitude and instinct. Digital technology may lead to savings in Nigeria, according to the study, which supports the technology acceptance theory. In light of these conclusions, the Central Bank of Nigeria must establish favorable conditions and regulations to support the development of additional digital savings platforms in order to diversify and boost savings. In order to encourage saves and inform bank service customers about the advantages of utilizing ATM savings systems, financial institutions ought to create user-friendly interfaces. Tax incentives ought to be offered to encourage ATM savings. It is recommended that further research be done on the development of savings using various techniques to evaluate the effectiveness of all digital platforms.

In another study, Augustine, Jonah, Chinedu, Victor and Onuabuchi (2023) used content analysis and a descriptive quantitative approach for data analysis to investigate the effect of point of sale (POS) businesses on employment creation in Nsukka urban, Enugu state, Nigeria, from 2012 to 2021. The Diffusion of Innovation (DOI) was applied in this study. According to the study, the implementation of mobile banking and point-of-sale (POS) has significantly decreased youth unemployment in Nsukka urban between 2012 and 2021 and boosted the expansion of small businesses. Therefore, the study indicated that sufficient sensitizations and education should be carried out by the various financial institutions on the varied operations and security of the conducting business with POS, therefore, helping to encourage people to do more with POS in Nsukka urban.

Similarly, Agboola, Adelugba, and Eze (2023) investigated the extent to which Fintech lending affects micro-enterprises survival and sales revenue in Nigeria. The study employed a survey design by administering a structured questionnaire on owners/managers of micro-enterprises in Lagos, Nigeria. Two hypotheses were developed and evaluated based on the study's aims. The intended respondents were given the study tool (questionnaire) in February 2023. Twelve (312) surveys were returned, nine (9) of which had incorrect responses from respondents. A total of 303 questionnaires, or 76% of the total, were ultimately deemed suitable for analysis. The results show that the survival and sales income of microenterprises are greatly impacted by Fintech loans. According to the R-Square, the survival of microenterprises has changed by 24.9% as a result of Fintech loans. Additionally, the results of the second hypothesis test show that Fintech financing changed the sales income of microenterprises by 30.8%.

Ezeala et al. (2024) Investigate the nexus between electronic taxation and revenue generation efficiency in Nigeria. The data of the study was mainly primary through the use of a 5-point Likert scale questionnaire deployed to assess respondents' perceptions and opinions related to the study's objectives. The study deployed Kolmogorov-Smirnov test for analysis of data for the study. Result showed that electronic tax system has significantly reduced tax fraud in Anambra state, Nigeria electronic tax system has significantly improved revenue generation with regards to personal

income tax in Anambra state, Nigeria electronic tax system has significantly improved revenue generation through company income tax in Anambra state, Nigeria.

Festus (2023) employed Pearson correlation, variance decomposition, and vector autoregression (VAR) techniques to examine how digital finance affected Nigerian banks' credit distribution from 2009Q1 to 2019Q4. The study primarily intends to investigate the effects of digital finance on the overall sectorial credit distribution of deposit money banks in Nigeria, as measured by the value of Automated Teller Machine (ATM), Point of Sale (POS), and Web Payment (WEBPAY) transactions. This study finds no long-run relationship between digital finance and credit allocation of deposits of money banks in Nigeria. Furthermore, digital finance and banks' credit allocation were found to have a high and favorable link in Nigeria. There is a strong and positive correlation between digital finance and banks' credit allocation, but the former (digital finance) does not have a significant impact on the latter (credit allocation function of deposit money banks) in Nigeria during the study period. It is also revealed that, in contrast to the value of POS transactions, which have negative and non-significant impacts, the value of ATM and WEBPAY transactions has positive but non-significant impacts on banks' credit allocation in Nigeria. Therefore, it is necessary to accelerate the current pace of digital finance adoption in Nigeria in order to achieve the desired impact on banks' credit allocation function in the country.

Qin and Lu (2023) investigated using a panel regression model how fintech affects the electric power industry's financial viability. The outcome demonstrates that fintech greatly enhanced electric power companies' financial viability. Further data suggests that by improving company risk-taking capacity, raising operating profitability, and relieving financing limitations, fintech might support financial sustainable development. Heterogeneity study subtly demonstrates that commercial electric power companies confront a harsher funding environment than state-owned ones. However, new financing channels made possible by financial technology allow private businesses to access greater credit capital. Therefore, it is impossible to overlook fintech's contribution to reducing ownership discrimination in the financial system. Furthermore, we discover that fintech plays a more important role in assisting small and medium-sized electric power companies with their financial sustainability than it does for large corporations.

Muhammad (2023) examined how can Kaduna Electricity Distribution Company (KAEDCO) and other power dis-coms alike generate more revenue utilizing renewable energy. The study used a multidisciplinary mixed methods strategy that included a fieldwork in Nigeria where a questionnaire was used to collect quantitative data and stakeholder interviews were used to gather qualitative data. Only 10 (6.9%) of the respondents paid more than 50% of their bills, according to the findings. These ten responders were all commercial farmers with monthly savings of at least \$300. Conversely, 92 (63.8%) of the respondents who said they saved \$50 or less a month paid between 11% and 30% of their bills. Every month, all 92 respondents said they spent their entire income on household expenses and had no money left over. Accordingly, low bill payment was ascribed to both poor service delivery, which made consumers disinterested in paying their bills, and customers' lack of funds (savings) at the end of the electrical billing cycle.

Adiga, Adigwe, Okonkwo, and Ogbonna (2022) evaluated the performance of Nigeria's banking and financial technology industries. Based on the Technology Acceptance Model (TAM), Central Bank of Nigeria (CBN) statistical bulletin, and Nigeria Deposit Insurance Corporation (NDIC) report from different years, the study tested the relationship between independent variables (payment system, automated clearing services, and remittance services) and dependent

components (return on equity, return on asset, interest income, and non-interest income) at the 5% level of significance using the Auto Regressive Distributed Lag (ARDL) technique. With the exception of interest revenue variance, financial technology was a key factor in explaining the diversity in Nigerian DMBs' ROA, ROE, and non-interest income. According to the study's findings, the variation in the banking sector's performance components—ROA, ROE, and non-interest income—was strongly explained by financial technology. Since there is conflicting evidence on the impact of financial technology on banking sector performance, it is impossible to conclude that financial technology improved and had the necessary influence on banking sector performance over the study period. Therefore, the study suggests, among other things, that deposit money banks should do more to encourage their clients to use financial technology products by making services simpler, guaranteeing their security, and making sure they are quick and efficient. This will help to improve the activities conducted through payment systems, international remittances, and the value of automated clearing, all of which will improve the performance of the banking industry.

Adebayo and Thomas (2021) examined the impact of regulation of FinTech services on the performance of Deposit Money Banks in some selected banks in Kwara State Nigeria. Quantitative methods were utilized in the gathering and analyzing data. 220 employees from five (5) Deposit Money Banks were selected in Ilorin Metropolis. Consequently, data were generated on accounts of ethical practice in the regulatory framework of FinTech service from the banks using well-structured questionnaire. The participants were chosen from among the senior employees and managers of the institutions. ANOVA, multiple regression, and Pearson Moment Correlation were the statistical methods employed to assess the study's premise. According to the study, at the 5% level, PayStack ($\beta=0.705$), Branch ($\beta=0.602$), PiggyVest ($\beta=0.602$), Mines ($\beta=0.235$), and NetPlus ($\beta=0.227$) all directly improve Deposit Money Bank performance. Furthermore, at the 5% level, there is a strong correlation between the performance of Nigerian banks and the regulation of digital innovation in the banking sector ($F=532.130$, $R=0.960$, $R^2=0.922$; $p=0.00$).

Vergara and Agudo (2021) examined the various areas where Fintech and sustainable finance collaborate, as well as the relationship between the two. According to the findings, Fintech and sustainable finance have many characteristics, and by encouraging green finance, Fintech can help financial firms become more environmentally friendly overall. Additionally, this study emphasizes the significance of international and European regulation, primarily from the standpoint of consumer protection.

Kiyawa and Bin Bardai (2021) studied how the population of self-employed, bankable adults in Nigeria who have formal accounts with the full-fledged Islamic banks Jaiz and Tajbank as well as Sterling Plc, a conventional bank with an Islamic Banking Window in the Northwest geopolitical zone of Nigeria that includes the seven states, might be able to eradicate poverty through fintech-Islamic banking. 400 respondents were chosen for the study using purposive and multistage sampling methods in four Northwest states that were chosen at random. Hierarchical regression analysis with predictor and criteria variables was used to analyze the data. According to the study's findings, poverty reduction is directly predicted by financial inclusion, knowledge, and use of Islamic banking, whereas major predictors are the interactions between financial inclusion and fintech, knowledge and fintech, and culture & norms and fintech. According to the study's findings, if taken into account when designing a program to reduce poverty in northern Nigeria, financial inclusion, awareness of and support for Islamic banking, and cultural standards can all work

together to abolish poverty. Therefore, it is advised that these factors be taken into account practically when creating programs to eradicate poverty in Nigeria.

Meyliana et al. (2019) examined the relationship between trust and risk in relation to FinTech product adoption in Indonesia. The study used the technology acceptance model, which has become widely used in technology adoption studies, to investigate the degree to which perceptions of risk and trust impede the uptake of FinTech services.

D'Acunto et al. (2019) further emphasizes the employment of robo-advisors by Indian home investors. According to the study's findings, investors' portfolio diversification is enhanced when they employ robo-advisors. Additionally, robo-advisor users are more engaged in the financial markets than their non-user counterparts, according to the data. Concerning borrowing and lending.

Ahn and June-Suh (2019) examined the main issues surrounding FinTech innovation in that nation. The writers looked into some of the issues that prevent FinTech adoption while recognizing the value of FinTech in lowering fraud, enhancing customer satisfaction, and expediting the payment process. According to the study, the main issues influencing the uptake and use of FinTech services are customer money security, investment protection, FinTech companies' inexperience, consumer data protection, privacy issues, and hacker and cracker cyberattacks. Therefore, it was suggested that one way to guarantee that customers are shielded from any kind of misuse is through the establishment of an efficient and effective regulatory system.

Kim et al. (2016) studied the main determinants of FinTech payment platforms using the TAM. The study observed that the credibility of the payment platform, the usefulness FinTech platforms, and the ease with which the payment platform can be assessed and used are some of the major significant elements affecting the acceptance of payment FinTech in Korea. The study also found that the self-efficacy of the consumers significantly moderated "the relationship between the dependent and independent variables".

2.3 Theoretical Framework

Fintech Business Models Theory

According to Wambari and Mwaura (2009), the success of any mobile/branchless banking model targeting low-income individuals relies on the presence of banking agents. These agents work on behalf of financial institutions to carry out financial transactions. They contend that agent banking is an integral component of the Fintech business model, serving to establish a connection between banks and their customers. Fintech companies are introducing innovative business models that reshape the market for financial services by supplying current items such as savings, credits, and transactions. The theory of banking business models categorizes branchless banking into three categories: the bank cantered model, the bank-led model, and the non-bank-led model.

3 Methodology

3.1 Model Specification

The model of the study is adapted from the work of Adanna et al (2023) and Augustine et al (2023)

$$TS = F(POS, MT, MBT) \dots \dots \dots (3.1)$$

The model of this study is modified as

$$RG = F(POS, MT, MBT).....(3.2)$$

Where;

RG = Revenue generation

MBT = Mobile banking transaction

BT = Bank transfer

POS = Point of sales

3.2 ARDL Model and Error Correction Mechanism

Testing for the "adjustment effect," or ECM, which indicates how much of the disequilibrium is being adjusted over time, is necessary if the variables are co-integrated (Asteriou and Hall, 2007). Since the disequilibrium error factor is a stationary variable and does not explode over time, ECM has the advantage of eliminating the spurious regression problem by removing trends in the variables involved (Asteriou and Hall, 2007). The general autoregressive distributed lag (ARDL) ECM is presented in the equation

$$\Delta y_t = \mu + \sum_{i=1}^{n-1} a_i \Delta y_{t-i} + \sum_{i=0}^{m-1} \gamma_i \Delta x_{t-i} - \pi \hat{e}_{t-1} + \varepsilon_t.....(3.8)$$

Where Δ is the difference operator, y_t is a vector of dependent variables, x_{t-l} is the matrix of lag values of explanatory variables and π is the adjustment effect or error correction coefficient which is expected to be negative for the error to be corrected. Specifically, the ECM model to be tested is specified in the equation.

$$\Delta RG_t = \mu + \sum_{i=1}^{n-1} a_i \Delta RG_{t-1} + \sum_{i=0}^{m-1} \beta_i \Delta POS_{t-i} + \sum_{i=0}^{m-1} \gamma_i \Delta MOB_{t-i} + \sum_{i=0}^{m-1} \beta_i \Delta BTR_{t-i} - \pi \hat{e}_{t-1} + \varepsilon_t.....(3.9)$$

A single period is required for 100% of the adjustment to occur (instantaneous/full adjustment) if $\pi = 1$. No change is made if $\pi=0$. A value of π nearer 1 indicates rapid adjustment, whereas a value nearer 0 indicates sluggish adjustment. As a result, any other value is read appropriately. Lag lengths are automatically selected using the Akaike Information Criterion (AIC) to determine which model is the best fit. The null and alternative hypotheses for the bound test concerning the cointegration test is:

Ho: $a_i=\beta_i=\gamma_i=1=u_i = v_i = \omega_i = 0$ (No long-run relationship).

H1: $a_i \neq \beta_i \neq \gamma_i \neq 1 \neq u_i \neq v_i \neq \omega_i \neq 0$ (there is a long-run relationship).

4 Result and discussion

4.1 Descriptive statistics

Table 4.1 Descriptive statistics

Statistics	LRG	LPOS	LMOB	LBTR
Mean	10.38067	9.944215	8.759899	9.948804
Median	10.41007	10.18878	9.613319	9.978734
Maximum	10.56901	10.28050	9.804229	10.09046
Minimum	10.07498	9.247416	5.649257	9.812780
Std. Dev.	0.173655	0.409555	1.488259	0.092557
Skewness	-0.626233	-0.880035	-0.257228	-0.031771
Kurtosis	2.094631	1.946753	3.106771	1.791422
Jarque-Bera	2.786425	4.908371	7.389543	1.708816
Probability	0.248276	0.085933	0.024853	0.425535
Sum	290.6589	278.4380	245.2772	278.5665
Sum Sq. Dev.	0.814216	4.528849	59.80271	0.231304

Observations	32	32	32	32
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Source: Researcher computation using E-views 12.

Table 4.1 presents the result of descriptive statistics of the study, it indicates that the standard deviations of the variables of used in the study are not far away from their means. The Skewness of the distribution in the table shows that all the variables such as revenue generation, point of sales, mobile banking and bank transfer are negatively skewed and less than, this implies that all the variables employed in the study are normally distributed. The Kurtosis shows that all the variables employed are normally distributed except for agricultural output because are less than or equal to 3. The Jarque-Bera test for normality is also estimated. It shows that revenue generation, point of sales, and bank transfer are normally distributed as their p-values are greater than 5% while mobile banking is not normally distributed.

4.2 Unit Root Test

Table 4.2 Augmented Dickey-Fuller (ADF), and Phillips Perron (PP)

Variables	Test at Level		Test at first difference	
	ADF test	PP test	ADF test	PP test
LRG	-0.990392	-0.996772	-5.932391	-6.050843
LPOS	-1.480771	-1.515322	-5.437204	-5.438078
LMOB	-2.047823	1.322719	-4.175184	-5.000000
LBTR	-0.123813	-0.123813	-5.101959	-5.385165

Source: researcher computation using E-views 12.

Table 4.2 presents the results of the unit root test of Augmented Dickey-Fuller (ADF), and Phillips Perron (PP). The result shows that revenue generation, point of sales, mobile banking, and bank transfer are stationary at the first difference in other words are I(1) process or integrated of order one.

4.3 Bound Test for Long run

The test is conducted to ensure that the variables employed are related in the long run.

Table 4.3 Result of Cointegration Bound test

Statistics	Value		Critical bound			
F-statistics	6.697181		1%	2.5%	5%	10%
		I(0) Bound	3.65	3.15	2.79	2.37
		I (1)Bound	4.66	4.06	3.67	3.2

Source: Researcher computation using E-views 12.

From Table 4.3, the result of the cointegration bound test indicates a higher value of F-statistics than any of the critical values of all bounds. Therefore, there is strong evidence of cointegration in the model. This provides evidence of adopting Autoregressive Distributive Lag model (ARDL) in the study.

4.4 Results of Autoregressive Distributed Lag (ARDL) Model

After conducting the unit root tests, it suggests the use of the ARDL model, this section presents the results of the model as demonstrated in chapter three. The appropriate model (number of lags) is selected automatically using the Akaike Information Criterion (AIC) which is seen as more

parsimonious. Below, both short-run and long-run parameters of the model are presented. The results of the diagnostics checks are also presented.

4.4.1 Short Run Relationship

Table 4.4 presents the short-run parameters of the ARDL tests conducted. AIC suggests a 1, 1, 0, 1, model after testing for up to 8 different models.

Table 4.4 Short run parameters of the ARDL Model

Variables	Coefficient	Std error	t- statistics	Prob.
D(LPOS)	0.382224	0.019896	19.21157	0.0000
D(LBTR)	0.570910	0.050452	11.31597	0.0000
ECM	-0.367148	0.101374	-3.621706	0.0016
R-squared	0.993883			
Adjusted R-squared	0.992135			
S.E. of regression	0.015400			
Sum squared resid	0.004981			
Log likelihood	81.15131			
F-statistic	568.6654			
Prob(F-statistic)	0.000000			
Durbin-Watson stat	1.801873			

Source: Researcher computation using E-views 12.

The result from table 4.4 presents the short run relationship among the variables employed, it shows that point of sales has a positive and statistically significant effects on revenue generation of Kano electricity distribution company (KEDCO), this implies that single digit increase in point of sales will cause 38% increase in revenue generation of Kano electricity distribution company (KEDCO) all things being equal. Bank transfer indicates positive and statistically significant effects on the revenue generation of Kano Electricity Distribution Company (KEDCO), this means that a single-digit increase in bank transactions will cause 57% increase in revenue generation of Kano Electricity Distribution Company (KEDCO). The error correction term (ECT) meets all the theoretical and statistical requirements both in the sign and size. The ECT coefficient is -0.367148 and the significance at 5%. This indicates that at 36.71% of the disequilibrium due to the shock in the previous years is adjusted back to the long-run equilibrium in the current year. The R-squared and its adjusted value are very high The R-squared and its adjusted value are very high 0.993883, this implies that the 99% change in revenue generation is explained by point of sales, mobile banking, and bank transfer. The p-value of f-statistics indicates (0.000000), which means that point of sales, mobile banking, and bank transfer have a 100% significant influence on revenue generation in Kano Electricity Distribution Company (KEDCO).

4.4.2 Long Run and Error Correction Result

Evidence from the bound test result in Table 4.6, indicates a long-run relationship among the variables in the ARDL model; hence, the next task is to compute the cointegrating and long-run form of the model. This is done to enable the researcher to observe whether there exists a long-run among trade openness, industrial output, and economic growth in Nigeria. Thus, the result is presented in table 4.7.

Table 4.5 ARDL Cointegrating and Long run Form Results

Variables	Coefficient	Std error	t- statistics	Prob.
LPOS	0.389045	0.059191	6.572763	0.0000
LMOB	0.020046	0.015752	1.272616	0.2171
LBTR	0.408129	0.106048	3.848527	0.0009

Source: Researcher computation using E-views 12.

The result from Table 4.5 indicates that point of sales has a positive and statistically significant effect on the revenue generation of Kano Electricity Distribution Company (KEDCO), this implies that single digit increase in point of sales will cause 38% increase in revenue generation of Kano electricity distribution company (KEDCO). The positive finding is in line with the appriori expectation which established a positive relationship between point of sales and revenue generation. Mobile bank shows positive but statistically insignificant effects on the revenue generation of Kano Electricity Distribution Company (KEDCO), this means that a one-unit increase in the mobile banks will cause a 2% increase in in revenue generation of Kano Electricity Distribution Company (KEDCO). Furthermore, bank transfer indicates positive and statistically significant effects on the revenue generation of Kano Electricity Distribution Company (KEDCO), this implies that a single-digit increase in mobile transfer will cause 40% increase in revenue generation of Kano Electricity Distribution Company (KEDCO). The positive finding concurred with the apriori expectation which assumed a positive relationship between bank transactions and revenue generation of Kano Electricity Distribution Company (KEDCO).

4.4.2 post-estimation tests

Table 4.6 post-estimation tests

Tests	P-value
Serial correlation	0.9267
Heteroscedastic	0.2193
Normality	0.0018
Ramsey test	0.0000

Source: Researcher computation using E-views 12.

The model passed such as serial correlation and Heteroscedasticity as their probability values are greater than 5% while failed Normality and Ramsey reset test.

5 Conclusion and Recommendations

The study examines the effect of financial technology (Fintech) on the revenue generation of Kano Electricity Distribution Company (KEDCO). The study employed the following variables; revenue generation, point of sales, mobile banking, and bank transfer. The unit root test indicated that revenue generation, point of sales, mobile banking, and bank transfer are stationary at first difference in other words are I(1) processes. The bound test indicated that there is a long-run relationship among the variables employed. The short-run relationship among the variables employed shows that point of sales has a positive and statistically significant effect on the revenue generation of Kano Electricity Distribution Company (KEDCO). Bank transfer has a positive and statistically significant effect on the revenue generation of Kano Electricity Distribution Company (KEDCO). The long-run relationship indicates that the point of sales has a positive and statistically significant effect on the revenue generation of Kano Electricity Distribution Company (KEDCO). The mobile bank has a positive but statistically insignificant effect on the revenue generation of Kano Electricity Distribution Company (KEDCO). Bank transfer has a positive and statistically

significant effect on the revenue generation of Kano Electricity Distribution Company (KEDCO). The study recommends that Kano Electricity Distribution Company (KEDCO) should work on the challenges that hinder the successful operation of point of sales, mobile bank, and bank transfer by striving to meet international best practices. Moreover, the number of points of sales should be increased and made available with easy accessibility to the users. Kano Electricity Distribution Company (KEDCO) should do more in getting their customers to use financial technology products by simplifying the services, ensuring the security of the services, and ensuring the speed and efficiency which will aid the improvement in the activities carried out via payment system by so doing this will enhance the electricity sector performance. Policymakers should continue to provide the enabling environment, including policy direction and regulation, to enhance FinTech development in the country.

References

- Acar, O., & Çıtak, E. (2019). Fintech integration process suggestion for banks. *Procedia Computer Science*, 1(2), 971-978.
- Adanna, I. O., Omoruy, E. P., Amodu Y. S. & Adebayo, S. N. (2023). Impact of Digital Financial Services on Savings Development in Nigeria. *Gusau Journal of Accounting and Finance (GUJAF)*, 4(2), DOI: <https://doi.org/10.57233/gujaf.v4i2.11>.
- [Adam](https://www.investopedia.com/terms/p/point-of-sale.asp) Hayes. [investopedia.com/terms/p/point-of-sale.asp](https://www.investopedia.com/terms/p/point-of-sale.asp)
- Adebayo, O. S., & Thomas, A. W. (2021). Impact of Regulation of Financial Technology (Fintech) Services on the Performance of Deposit Money Banks in Nigeria. *Al-Hikmah International Journal of Finance (AHIJof)*, 1(1), 26 – 40.
- Adiga D. L., Adigwe P. K., Okonkwo V. I., & Ogbonna S. K. (2022). Financial technology and the banking sector performance in Nigeria (2005-2020). *Discovery*, 2022,
- Agboola, O., Adelugba, I. A. & Eze, B. U. (2023). Effect of Financial Technology on the Survival of MicroEnterprises. *International Journal of Entrepreneurial Knowledge*, 11(1), 1-13. doi: 10.37335/ijek.v11i1.188.
- Ahn, K., & June-Suh Cho. (2019). Major concerns of FinTech (financial technology) services in the korean market. *Journal of Business and Retail Management Research*, 14(1) doi:<http://dx.doi.org/10.24052/JBRMR/V14IS01/ART-11>.
- Allen, F., Klapper, L., & Peria, M. (2016). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Journal of financial Intermediation*, 2(7), 1-30.
- Augustine, O. O., Jonah, O., Chinedu, E. C., Victor, N. A., & Onuabuchi, O. E. (2023). Point of Sale (POS) and Job Creation in Enugu State, Nigeria: A Study of Nsukka Urban, 2012-2021. *CENTRAL ASIAN JOURNAL OF SOCIAL SCIENCES*
- Central bank of Nigeria. (2023). Money Market Indicators. Retrieved from <https://www.cbn.gov.ng/rates/mnymktind.asp>.
- Change, C., Response, P. & Buhari, P. M. (2015). “Nigeria’s Intended Nationally Determined Contribution 1 Summary,” 1–23.

1. D'Acunto, F., Rossi, A. and Weber, M. (2019). Crowdsourcing financial information to change spending behaviour, Manuscript.
2. Dorfleitner, G., Hornuf, L., Schmitt, M., & Weber, M. (2017). *The FinTech Market in Germany*. Berlin: Springer.
3. Festus, B. G. (2023). Impact of Digital Finance on Banks' Credit Allocation in Nigeria. *Journal of Public Administration, Finance and Law*, 29, 69-80, <https://doi.org/10.47743/jopafll-2023-29-06>.
4. Gai, K., Qiu, M., & Sun, X. (2018). A survey on Fintech. *Journal of Net Computer* 103 (2),
5. Kim, Y., Choi, J., Park, Y. Yeon, J. (2016). The adoption of mobile payment services for “FinTech”. 11(1), 1058-1061.
6. Kiyawa, K. A., & Bin Bardai, B. (2021). Mediating Role of Fintech Islamic Banking in Poverty Reduction Determinations: A Perception Study of Self-Employed in the Northwest Geopolitical Zone, Nigeria. *EPRA International Journal of Economics, Business and Management Studies (EBMS)*,8(2), 12-19, DOI: 10.36713/epra1013|SJIF Impact Factor (2021): 7.473.
7. Mayliana, M., Fernando, E. and Surjandy, S. (2019). The Influence of Perceived Risk and Trust in Adoption of FinTech Services in Indonesia, *Communication & Information Technology Journal*, 13(1), 31–37.
8. Muhammad, Y. (2023). “A Study for Increased Revenue Generation for Distribution Companies in Nigeria Through the Application of Renewable Energy. Case Study: Kaduna Electricity Distribution Company (KAEDCO)”. Loughborough University.
9. Ndagijimana, N. (2017). Effect of mobile lending on the financial performance of commercial banks in Kenya (Doctoral dissertation, University of Nairobi).
10. NERC (Nigerian Electricity Regulatory Commission), “Nigerian Electricity Regulatory Commission,” 2016, [Online]. Available: <http://www.nercng.org/%5Cnhttp://www.nercng.org/index.php/aboutus%5C>
11. Qin and Lu (2023). How fintech affects financial sustainability in the electric power industry?—evidence from Chinese companies. *Front. Environ. Sci.* 11:1297030. doi: 10.3389/fenvs.2023.1297030.
12. Qin L and Lu M (2023), How fintech affects financial sustainability in the electric power industry? evidence from Chinese companies. *Front. Environ. Sci.* 11:1297030. doi: 10.3389/fenvs.2023.12970
13. Rashid, M. H. (2020). Prospects of digital financial services in Bangladesh in the context of fourth industrial revolution. *Asian Journal of Social Sciences and Legal Studies*, 2(5), 88-95.
14. Vergara, C. C. & Agudo, L. F. (2021). Fintech and Sustainability: Do They Affect Each

-
- Wambari, A., & Mwaura, P., (2009). “Mobile Banking in Developing Countries (A Case Study of Kenya)”. Information Technology, Vaasan Ammattikorkeakoulu
- World Bank (2016). “Nigeria-Power-Sector-Recovery-P4R-Concept-Stage-PID,” 1–12, 2016.
- World Bank (2019) Financial inclusion is a key enabler to reducing poverty and boosting prosperity, from <https://www.worldbank.org/en/topic/financialinclusion/overview>.
- World Bank Group, (2020). Digital Financial Services, World Bank. <http://pubdocs.worldbank.org/en/230281588169110691/Digital-FinancialServices.pdf>
- World Bank Group, (2020). Digital Financial Services, World Bank. <http://pubdocs.worldbank.org/en/230281588169110691/Digital-FinancialServices.pdf>