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NEO-ARTIFICIAL INTELLIGENCE (AI) AND LIQUIDITY OF FINANCIAL SECTORS IN NIGERIA: NEXUS IN CLIMATE FINANCE

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Abstract

This study analysed the neo-artificial intelligence (AI) and liquidity of financial sectors in Nigeria: Nexus in Climate Finance from 2012-2023. The specific objectives were to evaluate the effect of Real-time gross settlement and Electronic funds transfer, on the liquidity of financial sectors in Nigeria. Ex-post facto research design was used based on secondary data collected for the study, the study financial service sector in Nigeria. The variables were liquidity of financial sectors as the dependent variables while real-time gross settlement and Electronic funds transfer, were the independent variables. Panel Least Squared (PLS) method of data analysis was used. The study also employed descriptive statistics to check the normality data collected for the study, while hausman test was used to check for Regression analysis between dependent variable and independent variables and correlation in this study was used to check the relationship between dependent variable and independent variables. From the analysis result the study found that; Real time gross settlement has significant effect on liquidity of financial sector in Nigeria. (t=3.583072=0.009); Electronic fund transfer has no significant effect on liquidity of financial sector in Nigeria (=0.569002, p=0.5721); The study recommended amongst others that; financial sectors should ensure adequacy of real time gross settlement services, regardless of location to enhance customer access. They should also ensure availability of electronic fund transfer services so that customers can have seamless and round-the-clock access.

Keywords: Electronic funds transfer, Financial sectors, Liquidity, Neo-artificial intelligence, Real-time gross settlement,

INTRODUCTION

1.1 Background to the Study

The use of artificial intelligence is the use of human cognitive processes by machines, particularly computer systems, to perform a variety of administrative and operational tasks in the workplace to the advantage of businesses and their clients. Intelligent tools and cutting-edge technologies have revolutionized business change. These machines are programmed to be able to carry out operations that, until recently, could only be carried out by humans with specific knowledge, unique skills, and in-depth training. Right now, the modern era and corporate world represent the most exciting time in human history. Inventions, ideas, and technical advancements are happening now very quickly. The world is gradually becoming acclimated to

the sight of specialized security cameras, robots working in the workplace, self-driving cars, machines conducting business, and more; bringing about some of the innovations the world has seen as a result of the development of artificial intelligence (Wisskirchen et al., 2017).
Artificial intelligence (AI) has great promise, and people are considering it to be the fourth insurgency of our time. Like any major advance in technology, it comes with a number of opportunities as well as challenges. Artificial Intelligence (AI) apart from being an interdisciplinary sector which remains at the edges of knowledge it also suffuses contemporary human life in all features. This day Artificial Intelligence has solved various enigmas in business and in day- to -day life. Overall, execution of tasks that currently involves human intelligence is being improved by AI whereby computer system is provided with freedom including limited human intrusion or supervision (Alford, 2019).

The reason for the high interest in AI for banks is vast and irresistible even in developing nations like Nigeria. The strategic adoption of AI's many technologies -- including machine learning, natural language processing and computer vision can drive meaningful results for banks, from enhancing employee and customer experiences to improving back-office operations (Tucci, 2020). The adoption of artificial intelligence in the enterprise is profoundly changing the way businesses work. Companies are integrating AI technologies into their business operations with the aim of saving cost, increasing efficiency, generating insights, increase productivity and creating new markets.

AI adoption in Nigeria is still at its infant stages and not widespread. Neo-artificial intelligence (AI) is transforming Nigeria's financial sector, impacting operational efficiency, customer satisfaction, and risk management, with implications for climate finance. AI adoption, while promising, faces challenges like high implementation costs, regulatory gaps, and the need for skilled personnel. Climate finance in Nigeria is also evolving, with a growing focus on leveraging AI and blended finance to address climate risks and promote sustainable growth. It is still limited to the function of enhancing services to customers. Most especially, it is applied for diversifying and optimizing customer services. They are applied mostly through upgrades to existing infrastructure. Take for instance; banks now have Automatic teller machines with finger print assisted banking and broader services. However, the adoption of AIs is much deeper and wider in some countries. The technological advancement of the banking sector in the modern era is based on the type of services provided as per the requirements and facilitation of customers backed by an innovative process of financial services along with the right use of artificial intelligence (Omoge et al., 2022).

1.2 Objectives of the Study

The broad objective of the study was to analyse the neo-artificial intelligence (AI) and liquidity of financial sectors in Nigeria: A new nexus in climate finance. The following was the specific objectives that will guide this study:

i. To evaluate the effect of real-time gross settlement on the liquidity of financial sectors in Nigeria
ii. To analyse the effect of electronic funds transfer on the liquidity of financial sectors in Nigeria.

1.3 Research Hypotheses

The following null hypotheses will guide the course of the study:
Ho: Real-time gross settlement has no significant effect on the liquidity of financial sectors in Nigeria.
Ho: Electronic funds transfer has no significant effect on the liquidity of financial sectors in Nigeria.

REVIEW OF RELATED LITERATURE

2.1 Conceptual Review

2. 1. 1 Neo-Artificial Intelligence

Neo-Artificial intelligence is the imitation of human mental processes by technology, particularly computer systems (Burns, 2020). Artificial Intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience. As the sophistication of artificial intelligence and intelligent algorithm technologies has increased, they now have the potential to revolutionize traditional banking models and deliver a shift to digital banking which is faster, more agile, and more customer centric. AI has the potential to transform all aspects of banking-from the way we save to the way we invest and spend-making possible a model of banking that is smarter, faster and more customer friendly (Franck, 2021).

AI is the process of human intelligence implemented by machines. AI promotes the sustainable and effective use of resources (Nikitas et al. 2020). Artificial intelligence (AI) is the field of science that deals with rivalling the capabilities of modern computer systems to resolve issues using human-like complex capabilities of reasoning, learning and self-correction (Mata et al., 2018). Artificial intelligence stems from Information Technology (IT). It is habitually applied mutually with concepts such as robotization or automation. As stated by Jarek and Mazurek (2019), AI refers to advancement of systems of computer with capacity to undertake tasks that require human acumen. The technology created on AI is competent to mimic the cognizable affairs which are characteristic to human brain, plus potential to crack challenges while assimilating (Syam & Sharma, 2018). AIs purpose is to identify and process data in order to undertake specific tasks (Sterne, 2017). Currently, AI plays a vital role in autonomous decision-making processes, monitors assets and processes in real time, and enables value creation (Alcácer and Cruz-Machado 2019), and the benefits will increase going forward (Cockburn et al. 2018). In the rapidly evolving landscape of the banking sector, the integration of AI holds significant potential for enhancing decision-making processes and improving financial performance.

2.1.2 Liquidity

Liquidity is the ability of a firm to pay its short-term obligations to its creditors or customers. The importance of liquidity management as it affects firm operation in today's business cannot be over emphasis. Liquidity plays a significant role in the successful functioning of a business firm (Eljelly, 2004). According to Karani **(**2013**)** liquidity requirement of a firm depends on many factors including the volume of operation, nature of the firm, however there is no specific rule for determining the optimal level of liquidity that a firm can maintain in order to ensure it meet organizational goals. Liquidity management therefore involves series of activities targeted at achieving desired level of short-term reserve money without distorting the profit-making ability and operations of the firm. This will require the daily assessment of the money require to meets obligations which depend mostly on the volume of operating activities and obligations that are due (Nwaezeaku, 2008).

2.1.3 Climate Finance

In contemporary global capitalism, both finance and climate change reach into every aspect of our lives. These two phenomena are increasingly coupled together as "climate finance". Finance is core to calculating and resourcing decarbonization and climate repair. Climate change is also now central to the way money flows across governments, businesses and households. Climate finance has, in short, become integral to the political economy and economic geography of climate change. As finance has been positioned as the solution to climate change, different actors have engaged with climate finance to take competing positions on what the future of climate change and capitalism might look like. The different tools of climate finance that have emerged both reflect struggles over climate change and are actively shaping climate transition pathways.

A sustainable future can only be predicated on a financial system that enables the rapid transition of key industries to green practices whilst accelerating the innovation of new market makers defining breakthrough business models. Climate change is unprecedented in its challenge for humankind and calls for action across all stakeholders – traditional finance, policymakers, big business and of course the innovators breaking barriers. Fink wrote that he believed "we are on the edge of a fundamental reshaping of finance" (Fink 2020).

We argue that climate finance is an indicator and mediator of climate futures. In doing so, we follow a real shift taking place in global capitalism: climate change is becoming increasingly central to the operation of finance. Simultaneously, finance is becoming increasingly central to climate change. We trace a wide range of climate finance developments from the creation of new climate asset classes, climate disclosure, carbon pricing, climate tech start- ups, green monetary policy, and claims for repayment of climate debts. Across these and many other examples, we show how different configurations of climate finance are being positioned as the solution to climate change and how climate politics is taking place on and through the terrain of finance

2.2 Theoretical Review

Technology Acceptance Theory (TAT)
Davis, Bagozzi, and Warshaw (1989) came up with the TAT model in a bid to explain the user's acceptance and intention in the use of technology. TAT looks at a technology perceived ease of use and usefulness. The perceived usefulness of a technology is the belief by the user that the technology will improve his or her on job performance. The perceived ease of use looks at how easily the user can learn to use the new system or the technology (Gefen et al.,2003). According to the model, if the new technology ease of use is achieved it is likely to positively lead to perceived usefulness. There are external variables like the environment that can affect the perceived ease of use and usefulness.

This theory is often used when researching on information technologies and its main emphasis is on the two perceptive factors. Liu and Arnett (2000) looked at the important factors affecting the developing of a website based on this model. Gefen et al. (2003) used both TAT and rust and came up with a more evolved model that could be used to explain the online behaviours of customers. Pavlou (2003) suggests the use of thee-commerce acceptance model on online customers that uses survey and experiment techniques. Horst, Kutts chreuter and Guttering (2007) did a follow up study that examined if it was prudent for the Netherlands government to use-government to serve its people like in other nations. The study considered TAT factors, faith, perceived risk and public experiences. The findings of the study showed that the public trusted the government and resonated with information technology. The empirical study further revealed that TAT is not only useful for examination of information technology but it also useful ion examining the acceptance of intention behavior related to information technology and further explains the behaviour issues faced by online users of technology (Liu and Arnett, 2000; Gefen et al., 2003).

2.3 Empirical Studies

Nnaomah, et al. (2024) assessed how AI technologies are adopted and implemented in risk management practices across these diverse banking environments, identifying the benefits achieved and the challenges faced. The review synthesizes existing literature, including case studies, industry reports, and academic research, to outline the current state of AI in risk management. It delves into various risk types such as credit, market, operational, and compliance risks, exploring the specific AI tools and techniques employed to address these risks in each country. Key findings suggest that U.S. banks have a more mature implementation of AI in risk management, characterized by the adoption of advanced analytics, machine learning models, and natural language processing for enhanced decision-making, fraud detection, and compliance monitoring. In contrast, the Nigerian banking sector is at a nascent stage of AI adoption, with efforts hampered by challenges like inadequate technological infrastructure, regulatory hurdles, and a lack of skilled professionals in AI.

Abdulhamid & Abubakar (2024) examined how AI can be used to advance business operations in SMEs in Nigeria. To this effect, a methodical approach to literature review was used. The key conclusions are that artificial intelligence may be utilized to keep a safe distance from others, do business from a secure location, improve customer delivery, bring in business for organizations, and give a competitive edge to SMEs. It was noted that artificial was already being used by major companies like Google, Facebook, TikTok, Netflix, and Amazon, but now smaller businesses could also make use of this resource to increase their production and operational operations to compete and advance in the current environment.

Moela, N; Matlala, L; Ma, J; Maphutha, D; and Twinomurinzi, H. (2024) said that climate Finance has bring about financial inclusion which was the greatest challenges in Africa due to barriers such as literacy levels, lack of infrastructure, geography, and lack of proper documentation. One such area of innovation that has improved financial inclusion is within fintech solutions, particularly mobile-based platforms. This technology has opened the finance sector to individuals in remote areas who traditionally would not have had access to financial services, thus improving economic growth in the process (Chinoda & Mashamba, 2021). Financial services are also becoming an increasingly competitive market with ever-changing expectations and demands from customers. With that, AI has driven many new changes and disruptions in banking channels (ATM, mobile, internet, etc.), services (chatbots, voice and facial recognition, etc.), as well as solutions (fraud detection, credit scoring, etc.) (Fares et al., 2023). In the past twenty years, Artificial Intelligence (AI) have rapidly grown in industry and have transformed the ways in which businesses operate. Once a luxury, digitization has now become the norm in most sectors including the financial services industry. Nigeria has seen great growth in the maturation of the financial sector given its unique challenges and opportunities. Specifically, it seeks to answer the research question: How has AI been used for financial services in Africa? AI combines advanced computational technologies of varying maturity to perform cognitive functions such as reasoning, learning, interacting and problem solving (Geetha, 2021). This is different from conventional statistical methods as this is data driven whereas those are model driven. AI has the potential to enhance efficiency, reduce costs, improve decision-making and provide better customer experience in the financial industry. The capabilities of AI have grown exponentially with the increased ability to collect, store, and access data in real time as well as improved computational power (Babina et al., 2024). Innovative solutions for existing problems have been created and implemented in our everyday lives such as facial recognition and song detection. AI has the ability to solve complex problems which otherwise may require manual intervention. The financial industry has particularly been at the forefront of implementing such technologies to improve customer digital security and to understand customers better.

Shiyyab, Abdallah., Qais and Hashem (2023) determine to what extent Jordanian banks refer to and use artificial intelligence (AI) technologies in their operation process and examines the impact of AI-related terms disclosure on financial performance. Content analysis is used to analyse the spread of AI and related information in the annual report textual data. Based on content analysis and regression analysis of data from 115 annual reports for 15 Jordanian banks listed in the Amman Stock Exchange for the period 2014 to 2021, the study reveals a consistent increase in the mention of AI-related terms disclosure since 2014. However, the level of AI-related disclosure remains weak for some banks, suggesting that Jordanian banks are still in the early stages of adopting and implementing AI technologies. The results indicate that AI-related keywords disclosure has an influence on banks' financial performance. AI has a positive effect on accounting performance in terms of ROA and ROE and a negative impact on total expenses, which supports the dominant view that AI improves revenue and reduces cost and is also consistent with past literature findings.

Rabbani, Lutfi, Ashraf, Nawaz and Ahmad (2023) role of AI in the association between a bank's innovative financial process and the bank's market share. The data were analysed using SPSS and SmartPLS software. The estimations were performed using structural equation modelling estimation techniques such as the measurement model, outer loading, convergent validity, discriminate validity, and SEM estimations. The initial estimations indicated factor as well as construct reliability and validity. The study concluded that an innovative financial process plays a vital role in enhancing the bank's market share. However, artificial intelligence could not significantly moderate the relationship. The policymakers in the banking industry of Pakistan need to consider the up gradation in the system of their financial process by innovation and artificial intelligence usage awareness in their existing staff as well their banking customers. Future research may include a similar model for Islamic as well as commercial banks in a comparative model.

Obi and Anaege (2023) examined the current landscape of the adoption of AI in accounting practice within the Nigerian context. A survey research design was adopted for this study which involved the use of a questionnaire administered to a purposive sample of 20 respondents who are knowledgeable in the application of artificial intelligence. Data collected was analysed using logistic regression and independent sample t-test at significance level; $p < 0.05$. The findings indicate that accounting professionals in Nigeria currently lack a sufficient level of awareness and understanding of AI technologies in accounting. It was also found that AI adoption in accounting practice in Nigeria has a positive influence on efficiency and decision-making. It was recommended that educational institutions and professional bodies should collaborate to develop and offer comprehensive AI education and training programs tailored to accounting professionals. Also, government and regulatory bodies can engage with policymakers to ensure that regulations and policies are conducive to AI integration while safeguarding data privacy and security.

Eketu, Nwiyii, and Uelee, (2023) investigated the relationship between Artificial Intelligence adoption and organizational performance of Money Deposit Banks in Rivers State. The objective of the study was to empirically investigate how Artificial Intelligence relates with organizational performance of Money Deposit Banks in Rivers State in terms of customer satisfaction, economic performance and effective decision making. The study utilized the cross-sectional exploratory survey research design. The population of the study consisted of twenty-two (22) deposit money banks in Rivers State. The sample size of the study consisted of one hundred and ten (110) top managers from the head office of the individual deposit money banks (22 banks). The above sample size was conveniently selected by selecting five (5) top managers from the headquarters of each of the banks. The selected top managers included General Managers, ICT Manager, Operations Manager, Marketing Manager, and Customer Relations Manager. One hundred and ten (110) copies of the questionnaire were distributed to the target sample elements. However, the researcher was able to retrieve 97 copies of the distributed questionnaires. The test of hypotheses was done using Spearman's Rank Order Correlation Coefficient via the Statistical Package for Social Sciences (SPSS) version 20.0. The Spearman's (rho) correlation was used to analyse the relationship between independent and dependent variables at $P < 0.05$ (two-tailed test). The study revealed the following: i. Artificial Intelligence has a very strong positive correlation with customer satisfaction of Money Deposit Banks in Rivers State; ii. Artificial Intelligence has a strong positive correlation with economic performance of Money Deposit Banks in Rivers State, and iii. Artificial Intelligence has a very strong positive correlation with effective decision making of Money Deposit Banks in Rivers State.

METHODOLOGY

3.1 Population of the Study

The population of this study consists of fourteen (14) financial institutions, while seventeen (17) were insurance companies. The study covers twelve years annual reports and accounts of these banks from 2012 to 2023.

3.2 Sample Size and Sampling Technique

This study selected ten (10) financial services in Nigeria for the study. They were chosen because of availability of data

3.3 Model Specification

This study adapted and modified the model of Ibenta and Anyanwu (2017). The original model of Ibenta and Anyanwu (2017) is stated as:

$$EFR = f(VTATM,\ VTWEB, VTPOS, VTMOB, MPR, CRR) \qquad 1$$

Where:
EFR = Efficiency Ratio
VTATM = Value of Transaction on Automated Teller Machines
VTWEB = Value of Transaction on Web/Internet
VTPOS = Value of Transaction on Point of Sale,
VTMOB = Value of Transaction on Mobile Banking
MPR = Monetary Policy Rate
CRR = Cash Reserve Ratio
The model is modified in the following equation below

Algebraically, therefore
LFS = F (RTGS, EFT,)
Where
LFS = Liquidity of financial sector
RTGS= Real-time gross settlement
EFT= Electronic funds transfer

F = Functional Notation

Our model is now restated in an econometric form as:

LFS - $BO + B_1RTGS + \beta_2EFT + u$ ----------------(2)

LFS = Liquidity of financial sector

RTGS= Real-time gross settlement

EFT= Electronic funds transfer

Bo= constant

β_1-β_2 is parameters to be estimated

3.4 Techniques for Data Analysis

The models were estimated using the panel least square regression model, while data analysis was done with E-views 12.0 software application.

Descriptive Statistics

The descriptive statistics of the core variables are explained to provide insight into the nature and activities of the chosen quoted firms. The means, standard deviations (SD), minimum and maximum of all the employed variables were provided. The mean is the average value of the series; the maximum and minimum values of the series are the highest and lowest values of the series; and the standard deviation measures dispersion in the series.

Correlation Analysis

Finding the degree of relationship between the variables and identifying any multi-collinearity issues are the two main goals of utilizing a correlation matrix. Shukeri and Islam (2012) cite Tabachnick and Fidell (2007) as saying that the problem of multi-collinearity ends if independent variables have a strong or perfect correlation with each other, with correlation values reaching 0.90%. In order to ascertain the nature or degree of association, i.e., positive or negative correlation, and the significance of the relationship between dependent variable and independent variables, Pearson's correlation matrix was used to examine the degree of association between Neo-Ai and liquidity of the listed financial sector in Nigeria.

The Hausman

In a regression model, the Hausman Test (also known as the Hausman specification test) identifies endogenous regressors, or predictor variables. The values of endogenous variables are set by other variables inside the system. Ordinary least squares estimators will not work in a model with endogenous regressors since one of their underlying assumptions is that the error term and a predictor variable are uncorrelated. An alternative in this situation is to utilize estimators of instrumental variables. However, before you can decide on the best regression method, you first have to figure out if your predictor variables are endogenous.

Panel Regression

In this study, the regression approach of data analysis was used. Specifically, the connection between the independent variables (Neo-AI) and dependent variable (liquidity of financial sector) in the model was analysed using Panel Least Square regression techniques. The three main statistical techniques employed to analyse the data were multiple regression analysis, descriptive statistics, and correlation analysis.

3.5 Variables and Measurement

Variable	Measurement	sources

Dependent Variable Liquidity	Current Assets / Current Liabilities	(Setiawan&Gestanti, 2022)
Independent Variable Real-time gross settlement	Measured by the total amount of transactions done through RTGS on an annual basis	Hafez, B., Kaddumi, T. A., Nassar, M.D. & Muqattash, R. S. (2023).
Electronic funds transfer	This is measured by the annual turnover on the total number of transactions carried out via EFT channels.	Ibenta and Anyanwu (2017).

3.6 Decision Rule

The null hypothesis was accepted if the probability ‘ P-value ‘ of T-stat is greater than the stated 5% level of significance otherwise reject. P>0, 0.5, Accept Ho. P< 0.05, Reject Ho

DATA PRESENTATION AND ANALYSIS

4.1 Descriptive Statistics Analysis

Table 4.1, which displays the number of observations, mean, standard deviation, minimum and maximum values of the explained variable, and each of the explanatory variables, provides the descriptive statistics for all the variables in the model. The descriptive data of the chosen service sector that comprise our sample are displayed in the table below.

Table 1 Descriptive Statistics

	LLFS	LRTGS	LEFT
Mean	0.102727	16.26176	17.57151
Median	0.030000	17.44278	19.43901
Maximum	0.610000	20.12964	30.43941
Minimum	0.010000	7.414573	10.21899
Std. Dev.	0.127638	3.172703	3.777851
Skewness	1.604184	-0.843594	-0.448847
Kurtosis	5.214986	2.387396	2.969313
Jarque-Bera	69.66568	14.76699	3.697816
Probability	0.000000	0.000621	0.157409
Sum	11.30000	1788.794	1932.866
Sum Sq. Dev.	1.775782	1097.199	1555.665
Observations	120	120	120

Source: Researcher’s summary of descriptive result (2025) using E-view 10

The mean values for each variable, along with their maximum and lowest values, standard deviation, and Jarque-Bera values—which indicate the data's normality and nature—are displayed in the descriptive statistics result in table 4.1 above. The outcome sheds some light on the characteristics of the chosen listed financial sector from Nigeria that were employed in the research. The objective of the descriptive statistics was to characterize the overall distributional characteristics of the data and to pinpoint any anomalous observations or anomalous patterns of observations that would pose issues for the data's further analyses. The data generated for the study was thus described and summarized by an initial analysis of the data using basic descriptive methods. According to the study's goal, the descriptive statistics are provided in this part. The liquidity had a maximum value of 0.61% and a minimum value of 0.01% throughout the review period. The significant variance between the highest and lowest liquidity suggests that the chosen components artificial intelligence vary widely from one another, and this implies that the firms are not homogenous across the period under examination. The financial service standard deviation was 0.12. The return on asset's skewness was 1.60, suggesting that the data were skewed to the right and that most values were therefore clustered to the left of the distribution. The kurtosis for performance was 5.21 that are more than 3 hence the distribution is said to be leptokurtic hence it may have few outliers.

Table 4.1 above presents the descriptive analysis of Real Time Gross Settlement (RTGS), 16.26% was the minimal number for the Real Time Gross Settlement (RTGS), Additionally, it can be seen that the Real Time Gross Settlement (RTGS), reached a level of 16.26%. The standard deviation was 3.17, indicating that the available resources or size of the ten listed financial service in Nigeria were dispersed around the mean by around 3.17%. With a skewness of -0.84, the Real Time Gross Settlement (RTGS), was negatively skewed, suggesting that the majority of its values were clustered to the left. The kurtosis for point of sales was 2.38% which are less than 3 hence it is platykurtic and may have few outliers.

Electronic fund transfer (EFT) which is 17.57 % of their average value. The mean of Electronic fund transfer (EFT) was 17.57 % suggesting that the average number of Electronic fund transfer (EFT) for the 10 listed financial sector studied was about 17%, implying that the Electronic fund transfer (EFT) were exactly quarter of the profit. The standard deviation of 3.77% suggests that there is high return on electronic fund transfer (EFT) amongst the member selected financial service, with a minimum and maximum value of about 10.21% and 30.43% respectively.

In addition, the JB Probability values of 0.0000 demonstrate that, with the exception of the Electronic fund transfer (EFT), which is not normally distributed, all the variables are normally distributed at the 1% level of significance. This suggests that the variables are distributed according to the Gaussian standard distribution. This suggests that the distribution of all the variables is roughly normal. This indicates that there are no outlier-containing variables, or if there are, they are not expected to affect the outcome and can thus be trusted when making generalizations. This further supports the application of panel least squares estimation methods. Therefore, recommendations that are provided in a significant way will reflect the traits of the actual research population.

4.2: Pearson Correlation Matrix

In order to ascertain the nature or degree of association, i.e., positive or negative correlation, as well as the magnitude of the correlation between dependent variable (liquidity of financial service) and independent variables with other explanatory variables, Pearson's correlation matrix was used to assess the degree of association between Neo-artificial intelligence and liquidity of financial service. The direction and strength of the relationship between two or more variables are measured by the correlation coefficient. At this stage, it is important to remember that correlation quantifies association rather than causation. Positive (>0) or negative (<0) correlations are both possible. When two variables have a positive correlation, they are moving in the same direction; when they have a negative correlation, they are moving in the other way. As a consequence, we used the Pearson correlation coefficient (correlation matrix) to investigate the relationship between the variables, and the outcomes are shown in table 4.2. below.

Table 2: Correlation Analysis Result

	LLFS	LRTGS	LEFT
LLFS	1.000000	0.309547	0.359617
LRTGS	0.309547	1.000000	0.860353
LEFT	0.359617	0.860353	1.000000

Source: researcher's summary of correlation result (2025) using E-view 10

The correlation coefficient's result revealed a mixed correlation. The finding of this link supports the idea that there is a linear relationship between our variables. Additionally, the Pearson product-moment correlation, which measures the strength of the relationship between variables, revealed that the association between the variables is relatively small and falls below the 0.80 threshold, indicating that multicollinearity is not a problem for the predictor variables. The pairwise correlations between the variables of the Neo-Artificial intelligence (AI) component and the liquidity of financial sector in Nigeria are presented and discussed in this section. Although there are still some reasonably strong correlations between some of the study's variables, Table 2 demonstrates that the majority of correlation coefficients between the variables are quite low. The aforementioned findings indicate that the Neo-Artificial intelligence (AI) component and liquidity have a very weak but positive correlation. The correlation table above revealed that none of the explanatory variables were completely or highly correlated, ruling out the possibility of an outlier when the study was looking for multicollinearity. This suggests that the model utilized for the analysis does not have a multi-collinearity issue. This further supports the application of panel regression analysis.

Table 3: Panel Least Regression Result

Dependent Variable: LFS
Method: Panel Least Squares
Date: 02/16/25 Time: 05:40
Sample: 2012 2023
Periods included: 12
Cross-sections included: 10
Total panel (balanced) observations: 120

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.502159	0.019774	0.109194	0.9135
LRTGS	0.160554	0.000950	3.583072	0.0009
LEFT	0.290588	0.001033	0.569002	0.5721

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.616141	Mean dependent var	0.022273

Adjusted R-squared	0.557591	S.D. dependent var	0.014336
S.E. of regression	0.010558	Akaike info criterion	6.018756
Sum squared resid	0.005128	Schwarz criterion	5.355224
Log likelihood	218.6189	Hannan-Quinn criter.	5.756563
F-statistic	9.886092	Durbin-Watson stat	2.117084
Prob(F-statistic)	0.000085		

Source: Researcher's summary of regression result (2025).

The panel regression study of ten quoted financial service is displayed in table 4.3 above. The aforementioned table indicates that the model was well-specified in explaining Neo-Artificial intelligence (AI) as seen by the F-statistics value of 9.886092 and their P-value of 0.000085, which indicate that the total analysis of our variables in the regression model was generally significant at the 1% level of significance. Based on the aforementioned findings, the study found that the R-squared adjusted value was 0.616141 (61%) and the R-squared value was 0.557591 (55%). The coefficient of determination, or R-squared, was found to be 61%. This indicates that 61% of the systematic fluctuations in the individual dependent variables could be described by the model, with the other 39% being explained by the stochastic error factor. This shows that over a twelve year period, the Neo-Artificial intelligence (AI) of our sampled banks in Nigeria can be explained by the independent variables together to the extent that they account for around 61% of the system variation. The stochastic error term captures the remaining 39% of the overall variations. Furthermore, the Neo-Artificial intelligence (AI) model that was employed for the analysis was statistically significant at the 1% level, as indicated by the F-statistics value of 9.886092 and its probability value of 0.00085. This attests to the suitability of our model for the analysis. The Durbin Watson statistics value of 2.1 showed that the model is well spread since the value is approximately 2 and that there have not been self or auto correlation problem and that error are independent of each other.

Hypotheses

Ho_1: Real-time gross settlement has no significant effect on the liquidity of financial sectors in Nigeria.

Table 4.3.2 above's panel regression result revealed that the Real-time gross settlement had a positive coefficient value of 0.160554 and a P-value of 0.0009. Based on the model's outcome, the Real-time gross settlement of Nigeria's quoted financial service showed a statistically significant and positive correlation with the liquidity, which indicated the number of performance ratios. This implies that the Real-time gross settlement has a positive correlation with liquidity of financial service, as indicated by the positive coefficient and likelihood, but that this correlation is statistically negligible and sufficient to influence the liquidity of financial service of Nigerian bank. This suggests that a 1% increase in the Real-time gross settlement causes a 5% increase in liquidity of financial service, supporting the idea that raising the Real-time gross settlement is crucial for liquidity of financial service. The Nigeria Exchange Group's increased level of inspection and monitoring is generally predicted to improve liquidity of financial service when the point of sales rises. We accepted our alternative hypothesis as a result of the strong link we found, and as a result, we can say that the Real-time gross settlement has significant effect on liquidity of financial service in Nigeria.

Ho_2: Electronic funds transfer has no significant effect on the liquidity of financial sectors in Nigeria.

In Nigeria, the Electronic funds transfer of the liquidity of financial sectors is positively and significantly impacted as demonstrated by the study's 0.569002 positive coefficient value and 0.5721 p-value ($\beta 2$=-0.290588, $p = 0.5721 > \alpha = 0.05$). The positive coefficient value of $\beta 2$ indicates that the Electronic funds transfer of Nigeria's Neo-artificial intelligence (AI) is positively impacted on liquidity of financial sectors. As a result, Electronic funds transfer rises by 29% units for every 1% increase in liquidity. This indicates that, although being not statistically significant among Nigerian financial sector has a favorable impact on the level of liquidity. The analysis's findings led the study to accept the second null hypothesis, which leads it to the conclusion that Electronic funds transfer has no significant effect on the liquidity of financial sectors in Nigeria.

CONCLUSION

Following from the findings of the study, it is concluded that within the scope of this research, Neo-artificial intelligence variables (Real time gross settlement, Electronic fund transfer,) have significant effect on the liquidity of financial sector in Nigeria, and that the models developed to determine the nexus of Neo-artificial intelligence and liquidity of financial sector in Nigeria is adequate. The integration of Neo-artificial intelligence into financial sector has had a significant impact on financial performance in Nigeria. Neo-artificial intelligence solutions have enabled financial sector to increase operational efficiency, improve customer experience, and expand their customer base. The use of digital channels, such as mobile banking and instant payment system, has made financial services more accessible to a broader range of customers, including those in rural areas or underserved markets. However, challenges remain, such as cyber security risks, regulatory concerns, and the need for continued investment in technological infrastructure and customer education.

RECOMMENDATIONS

The recommendations of the study are as follows:

1. Financial sector should ensure adequacy of real time gross settlement services, regardless of location to enhance customer access.
2. They should also ensure availability of electronic fund transfer services so that customers can have seamless and round-the-clock access. Adequacy and availability of electronic fund transfer services are essential elements of performance.

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