EFFECT OF FINANCIAL INCLUSION ON LIQUIDITY OF THE NIGERIAN CAPITAL MARKET

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Abstract
The Nigerian capital market faces liquidity challenges, hindering capital mobilization and economic stability. Low trading volumes and limited access to capital affect individual investors despite improvement efforts. Thus, this study examines the effect of financial inclusion on the liquidity of the Nigerian capital market. The study adopted an ex post facto design, this study used quarterly time series data which was obtained from Statistical Bulletin of the Central Bank of Nigeria (CBN) and Nigeria capital market for the period of 2014 to 2023. Regression analysis was used to analyze the data obtained with the aid of Eviews software. The study found that that access to financial services has positive and statistically significant effect on the liquidity of the Nigerian Capital Market at 5% level of significant. While usage of financial services and affordability of financial services platforms have positive but statistically insignificant effect on the liquidity of the Nigerian Capital Market at 5% level of significant. The study concluded that financial inclusion influences the financial the liquidity of the Nigerian capital market. The study therefore study recommends among others that Nigerian Capital Market management and policymakers should improve on access to usage of financial services. This can be achieved through developing programs to increase financial literacy and awareness about available financial services, particularly investment-related services.
Keywords: *Access, Affordability, Capital Market, Financial Service, Financial Inclusion, Liquidity, Usage*

INTRODUCTION

The liquidity of capital markets is a critical component in maintaining the stability and efficiency of financial systems globally. Liquidity refers to the ease with which assets can be bought or sold in the market without significantly affecting their price, thereby reflecting the depth and flexibility of financial markets (Adrian & Shin, 2021). Well-functioning liquid capital markets foster economic growth by providing an efficient platform for resource allocation, supporting long-term investments, and offering a venue for hedging and risk management (Goyenko & Sarkissian, 2020). Global markets in developed economies, such as the U.S. and Europe, have consistently shown high liquidity due to sophisticated financial infrastructure and robust financial inclusion policies. The relationship between financial inclusion and market liquidity has been demonstrated as financial inclusion enhances access to capital markets and increases market participation (Beck et al., 2022).

In Africa, capital markets have historically struggled with low liquidity levels, primarily due to limited access to financial services, low investor participation, and underdeveloped financial systems (Agyemang, 2021). Countries like South Africa and Kenya have made strides in improving their capital market liquidity through increased financial inclusion and the adoption of mobile banking technology (Mutua & Kinyanjui, 2021). These advancements are largely attributed to financial inclusion initiatives that aim to bring more individuals and small businesses into the formal financial system. Enhanced financial inclusion in African economies has been linked to increased market activity and participation, leading to a positive impact on liquidity as more market participants are able to invest and trade (Adegbite & Ayinde, 2023). This suggests that increased financial inclusion could be a viable strategy to improve liquidity levels in African capital markets.

In Nigeria, the capital market faces challenges related to low liquidity, attributed to limited access to financial services, low financial literacy, and a small investor base (Olowookere et al., 2022). Despite being one of the largest economies in Africa, Nigeria's capital market liquidity lags behind due to insufficient participation, particularly from retail investors who are often excluded from the formal financial system (Ayodele & Babatunde, 2021). Financial inclusion in Nigeria remains a pressing issue, with a significant portion of the population lacking access to basic financial services, including banking,

credit, and investment platforms (Ebi & Ndikom, 2023). The Central Bank of Nigeria (CBN) and other regulatory bodies have initiated financial inclusion strategies to bridge this gap, which is expected to boost participation in the capital market by enabling more individuals and businesses to access and utilize financial services.

Financial inclusion, defined through key proxies such as access to financial services, usage of financial services, and affordability of financial service platforms, is increasingly recognized as a significant factor influencing the liquidity of capital markets, including the Nigerian capital market. Access to financial services ensures that individuals and businesses can participate in the financial system, which directly impacts trading volume and market depth, thereby enhancing liquidity (Onyema et al., 2022). Additionally, the usage of financial services, measured by the frequency and breadth of financial product consumption, is essential for sustaining an active investor base, which is crucial for a liquid capital market (Adeyemi & Eze, 2023). When financial services are accessible and widely used, the capital market benefits from increased liquidity, enabling smoother trading processes and price stability. Financial inclusion to capital market liquidity in Nigeria is essential, as improved access to financial services can expand the investor base, increase trading volumes, and enhance overall market depth. Financial inclusion not only supports economic stability but also provides avenues for individuals and businesses to participate in capital markets, potentially increasing liquidity (Fasina & Omotayo, 2022).

The Nigerian capital market, as a critical component of the country's economic growth, faces challenges of liquidity, which limit its capacity to support effective capital mobilization and economic stability. Liquidity is essential for efficient market operations, as it facilitates price discovery, reduces transaction costs, and enhances market participation (Okoye & Eke, 2022). Despite recent efforts to improve market liquidity, the Nigerian capital market continues to suffer from relatively low trading volumes and limited access to capital for small and medium-sized enterprises (SMEs) and individual investors (Ademola & Abubakar, 2023). Financial inclusion, encompassing access to financial services, usage of financial services, affordability of financial service platforms, and financial literacy, is increasingly viewed as a means to address liquidity constraints by broadening participation and enhancing the financial literacy of potential investors (Uche & Ogbonna, 2023). However, empirical studies examining the direct impact of financial inclusion on capital market liquidity are limited, leaving a gap in understanding how improved financial access and awareness might drive liquidity in the Nigerian context.

While a growing body of literature explores the relationship between financial inclusion and various aspects of economic development, it was discovered that there is no much of studies specifically addressing the effect of financial inclusion on liquidity in the Nigerian capital market. Existing research primarily focuses on the general effects of financial inclusion, such as poverty reduction, access to credit, and overall economic growth (Adegbaju & Akinbobola, 2023; Okoye & Nwokocha, 2021; Adeniran & Adegbaju, 2018; Olokoyo & Ogunmuyiwa, 2017).

This study seeks to investigate the effect of financial inclusion on the liquidity of the Nigerian capital market, focusing on aspects such as access to financial services, usage of financial service and affordability of financial service. The specific objectives of this study are to:

i. evaluate the effect access to financial services on the liquidity of Nigeria capital market;
ii. assess the effect usage of financial services on the liquidity of Nigeria capital market; and

LITERATURE REVIEW

Liquidity

Liquidity can be defined as the ability of an asset, security, or market to be easily bought or sold without causing significant disruptions to its price. It represents the degree to which an asset can be converted into cash quickly and with minimal price impact (Acharya et al., 2017). High liquidity implies that there are sufficient buyers and sellers in the market, resulting in tight bid-ask spreads and low-price volatility, while low liquidity indicates limited trading activity and potential difficulties in executing trades without

impacting prices (Acharya et al., 2017). According to Hasan et al. (2020) liquidity refers to the degree to which an asset, security, or market can be bought or sold quickly and with minimal price impact. It represents the ease with which an asset can be converted into cash without causing significant changes in its market price. In other words, liquidity measures the ability to enter or exit a position in a financial instrument or market without causing disruption or incurring substantial transaction costs (El Said et al., 2020).

High liquidity typically implies that there are a large number of active buyers and sellers in the market, resulting in tight bid-ask spreads and low-price volatility. It facilitates efficient price discovery and enhances market efficiency. In liquid markets, investors can easily buy or sell assets at the prevailing market prices, and the transaction is executed quickly (Hasan et al., 2020). Conversely, low liquidity indicates a limited number of buyers and sellers, leading to wider bid-ask spreads and higher price volatility. Illiquid markets may have fewer participants or face restrictions that hinder the free flow of trading. In such markets, it can be more challenging to buy or sell assets without impacting their prices. This may result in increased transaction costs, wider price spreads, and potential difficulties in executing large trades (Hasan et al., 2020).

Liquidity of Nigerian Capital Market

Liquidity in the Nigerian capital market is defined as the ease and speed with which securities can be traded without significantly affecting their price. A liquid capital market implies that a high volume of transactions can occur with minimal price fluctuations, fostering a stable environment for both short-term and long-term investors (Ademola & Abubakar, 2023). High liquidity is essential for efficient price discovery, as it ensures that asset prices reflect their true market value based on supply and demand dynamics (Okoye & Eke, 2022). In Nigeria, liquidity is influenced by several factors, including market depth, investor participation, and transaction costs. For instance, market depth—the extent to which the market can absorb large transactions without significant price changes—is a critical factor for liquidity, often limited by low retail investor engagement and a reliance on a narrow range of blue-chip stocks (Uche & Ogbonna, 2023).

Furthermore, liquidity is fundamental to attracting both domestic and foreign investors, as it assures them of the ability to enter and exit the market with minimal impact on asset prices (Ibekwe & Onuoha, 2022). However, the Nigerian capital market has faced challenges related to illiquidity, including low trading volumes, high volatility, and market concentration, which hinder its growth and appeal (Chinedu & Afolabi, 2023). Increasing liquidity through financial inclusion initiatives and regulatory reforms could enhance market stability and efficiency, ultimately contributing to economic development and financial resilience in Nigeria.

Financial Inclusion

Financial inclusion is defined as the delivery of financial services, such as savings, credit and insurance to the disadvantaged and low-income segments of the society at affordable costs (Mbutor & Uba, 2016). It could also be defined as a process or situation that allows for ease of access to, or availability and usage of, formal financial system by economic agents. It describes a process where all members of the economy do not have difficulty in opening bank accounts and can afford access to credit conveniently, and consistently use financial products and facilities without difficulty (Kama & Adigun, 2013).

Financial inclusion is the degree to which people, most especially the rural populace, the poor, the illiterate and those financially excluded from the formal financial services, have access to, make use and afford to enjoy financial services to enjoy the basic social facilities (Babarinde et al., 2021). Ogbeide and Igbinigie (2019) also describe financial inclusion as the provision of contact to and usage of different and affordable financial services. Financial inclusion is the provision of, and access to, financial services to all members of population, particularly the poor and the other excluded members of the population (Ozili, 2018). Therefore, financial inclusion is the availability, accessibility and affordability of financial services to people, especially those vulnerably excluded from the formal financial services in an economy.

Financial inclusion is a term commonly used to represent the deliberate attempt which makes the poor, marginalized people and those vulnerable to low economic power to engage in formal economic process through ownership and usage of formal financial service at regular interval (Aina and Oluyombo, 2014). Also, World Bank (2012) defines financial inclusion as the range, quality and availability of financial services to the underserved and financially excluded. Financial inclusion is a multidimensional concept that encompasses various aspects related to individuals' access to and usage of financial services. Several variables are commonly used to measure financial inclusion, and these variables can be categorized into different dimensions which include access to financial services, usage of financial services, affordability and accessibility of financial services platforms, financial literacy and awareness, trust and confidence of financial institutions (Demirgüç-Kunt et al., 2018).

However, this study adapts the definition of financial inclusion offered by Demirgüç-Kunt et al. (2018) because the definition is more comprehensive. Therefore, this study defined financial inclusion as the accessibility and availability of financial services to business, individuals and communities, especially those who are marginalized or underserved by traditional financial institutions.

Access to Financial Services

Access to financial services refers to the availability of a range of financial products, services, and institutions by individuals and businesses (Scherr et al., 2020). It encompasses the ability of individuals to conveniently access formal financial services such as savings accounts, payment systems, credit facilities, insurance, investments, and other related products (Scherr et al., 2020). Access to financial services also includes the availability of financial institutions and infrastructure, such as banks, microfinance institutions, digital payment platforms, and physical branch networks, that enable the delivery of these services (Oyetoyan et al., 2021).

The aims of access to financial services are to ensure that all individuals and businesses, particularly those who have been traditionally underserved or excluded, have access to and can effectively use financial services to meet their financial needs. It recognizes that access to financial services can play a crucial role in promoting economic development, reducing poverty, and fostering inclusive growth (Oyetoyan, 2015). Access to financial services is the ability of individuals and businesses to obtain and use affordable financial products and services that meet their needs, such as savings, credit, payments, and insurance. It is a critical component of financial inclusion, which aims to ensure that everyone, particularly the underserved and marginalized, has access to a range of financial services that enable economic participation and stability (Demirguc-Kunt et al., 2022). Access to financial services encompasses both physical and digital access points, such as banks, ATMs, mobile banking, and agency banking, particularly relevant in rural or underserved areas. Without adequate access, individuals and businesses may struggle to participate in the economy, limiting their ability to save, invest, and manage risks (Allen & Carletti, 2021).

Expanding access to financial services has been linked to improved economic outcomes, as it enables people to invest in businesses, support their families, and manage financial risks more effectively (Sahay et al., 2022). However, significant barriers to access remain, including high transaction costs, limited infrastructure, regulatory restrictions, and lack of financial literacy. In Nigeria, for instance, efforts to improve financial access have included promoting mobile banking, increasing the presence of microfinance institutions, and adopting regulatory frameworks aimed at reaching unbanked populations (Ifeanyi & Musa, 2023). Access to financial services is crucial for economic inclusion and resilience, helping to foster economic growth and reduce poverty, especially in developing economies where traditional financial infrastructure is limited.

Usage of Financial Services

Usage of financial services refers to the extent to which individuals and businesses actively utilize and engage with formal financial products, services, and resources that are available to them. It encompasses the frequency, intensity, and variety of interactions individuals and businesses have with financial

institutions and the extent to which they make use of different financial tools and services (Okonkwo & Nwanna, 2021).

While access focuses on the availability and accessibility of financial services, usage looks at the actual utilization and engagement with those services. It considers factors such as the number and types of financial products used, the frequency of transactions, the depth of engagement (e.g., savings, borrowing, investing), and the level of financial sophistication demonstrated by individuals and businesses (Okafor, et al., 2021). Usage of financial services is an important indicator of the effectiveness and impact of financial inclusion efforts. Higher usage levels suggest that individuals and businesses are actively benefiting from and leveraging financial services to meet their financial needs, manage risks, save, invest, and achieve their financial goals (Ogunleye, 2022).

Usage of financial services refers to the regular and consistent engagement of individuals and businesses with financial products such as savings accounts, credit, insurance, and payment systems. Unlike access to financial services, which focuses on availability, usage emphasizes the depth and frequency of interaction with these services. Effective usage is essential for individuals to benefit fully from financial inclusion, as it helps them manage their finances, plan for future needs, and invest in income-generating activities (Ozili, 2022). It extends beyond mere access by ensuring that financial services are actively adopted, beneficial, and relevant to users' economic lives (Beck & Maimbo, 2021).

The frequent use of digital payment platforms can significantly enhance business transactions and contribute to financial transparency (Anwar & Daniel, 2023). In Nigeria, however, challenges such as limited financial literacy, high transaction costs, and insufficient digital infrastructure can inhibit usage, even when access is available (Oloruntoba & Aluko, 2023). Thus, strategies to boost usage must address these barriers by creating more user-friendly, affordable, and widely accessible services tailored to local needs and preferences.

Empirical Review

Access to Financial Services and Liquidity

Bala et al. (2022) explored the impact of liquidity on the financial performance of listed insurance companies in Nigeria, employing a descriptive research design. The study's population comprised 20 insurance firms listed on the Nigerian Stock Exchange as of September 2021, and sample 7 out of the population, covering data from 2014 to 2019. Using a sample of seven companies, selected through simple random sampling, the study applied the Generalized Least Squares (GLS) random effects regression method to analyze the data. The study found that capital adequacy ratio as the primary factor influencing the financial performance of listed insurance firms. The study's relatively small sample size of seven companies may limit the generalizability of its findings across the broader insurance sector. Given that 20 insurance firms were listed on the Nigerian Stock Exchange during the study period, the exclusion of 13 firms may reduce the robustness of the results and potentially introduce selection bias. Additionally, the focus on capital adequacy as the primary determinant of financial performance might overlook other significant liquidity factors such as cash flow, liquidity ratio, and asset turnover, which could provide a more comprehensive analysis of liquidity's role.

Babarinde et al. (2022) examined the relationship between financial inclusion and capital market liquidity in Nigeria, using a Vector Autoregression (VAR) technique on quarterly time series data from 2008Q1 to 2018Q4, sourced from the Central Bank of Nigeria and World Development Indicators. Results indicated that while financial inclusion variables like deposit penetration, bank penetration, and credit penetration had a positive but non-significant effect on the stock market turnover ratio, only bank and credit penetration showed positive (but non-significant) influence on the value of shares traded ratio, with deposit penetration showing a negative but non-significant impact. The study concluded that financial inclusion has an insignificant influence on stock market liquidity in Nigeria. The reliance on traditional proxies for financial inclusion, such as deposit, bank, and credit penetration, may also limit

the study's scope, as newer forms of financial inclusion, such as mobile money accounts and digital payment platforms, could present different effects on capital market liquidity.

Epaphra and Kiwia (2021) examined the factors determining the participation of individuals in the financial markets using the logistic regression model. Categorical data covering a sample of 484 were collected from individuals residing in Arusha, Tanzania. Male and married individuals, as well as people with financial knowledge have a better chance of investing in the financial market despite their education level. Other variables such as risk attitude and level of income play a significant role in influencing individuals' participation in the financial markets. The policy implication of these results is that increasing training, awareness of the benefits and operations of the financial markets will result in people opting to participate in the financial market, which will, in turn, lead to increased trading of financial assets and hence create a ripple effect to the economy. The study's focus on Arusha, Tanzania, limits the generalizability of its findings to broader populations, as regional socioeconomic conditions may not reflect those in other areas of Tanzania or other countries.

Usage of Financial Services and Liquidity

Ngaikedi et al. (2023) explored the impact of financial inclusion indicators on monetary policy fundamentals in Nigeria over a 36-year period (1986–2021), using data from the Central Bank of Nigeria. The study employed an Ex-post facto design and the Auto-Regressive Distributed Lag (ARDL) method to examine the relationships, anchored in the Finance-Growth Nexus Theory. Results from the Granger Causality test revealed that commercial bank savings deposits significantly affect the liquidity ratio ($p = 0.05$), while other factors such as commercial bank loans to SMEs, currency in circulation, number of commercial bank branches, and rural branch deposits showed no significant effect on liquidity, cash reserve ratio, open market operation, or loan-to-deposit ratio. Additionally, a significant negative relationship was identified between commercial bank savings deposits and liquidity ratio ($p < 0.05$), while loans to SMEs, currency in circulation, and rural branch deposits had positive but insignificant relationships with cash reserve ratio, open market operation, and loan-to-deposit ratio. While the study utilized indicators like commercial bank savings deposits, loans to SMEs, currency in circulation, and rural branch deposits, it did not include other potentially relevant dimensions of financial inclusion such as digital financial services, mobile banking penetration, or fintech solutions. These modern financial inclusion channels have been growing in importance and could influence monetary policy and liquidity differently from traditional banking services.

Francis and Henry (2023) explored the long-term relationship between financial inclusion, financial development, and economic growth in Nigeria from 1990 to 2022. The study aimed to assess how financial deepening and inclusion impact economic growth over the long run. The study used the ratio of credit to the private sector to GDP and broad money supply to GDP as proxies for financial development, while deposits and loans from rural branches of commercial banks served as indicators of financial inclusion. Economic growth, the dependent variable, was measured using Nigeria's annual GDP. An ADF test checked for variable stationarity, revealing that GDP was stationary at levels while other variables were stationary at first difference. An ARDL model was used to examine short- and long-term dynamics. Findings indicated that both financial deepening and financial inclusion had statistically insignificant effects on economic growth in the long run. However, the study lacked a clear definition of rural bank branches, raising questions about the appropriateness of the financial inclusion proxies. Additionally, the study did not report a bounds test for cointegration or specify the lag selection process in the ARDL model, which affects the robustness of the results.

Afolabi (2020) investigated the effect of financial inclusion on inclusive growth in Nigeria covering the periods of 1981 to 2017. It adopts the Auto-Regressive Distributed Lag (ARDL) model, using annual series from CBN statistical bulletin and World Development Indicators (WDI). The variables adopted include; rural loan, number of bank branches, money supply-GDP ratio, private sector credit to GDP ratio and GDP per capita. The study found financial inclusion, in the form of rural loan, number of bank branches and level of liquidity have a positive and significant effect on inclusive growth in the short and

long run, while interest rate impede inclusive growth. The study recommends more and improved financial services be made available to rural dwellers and the economy in general to help them participate and contribute more to national productivity. However, these financial services should be carefully monitored to make sure they are used productively. This should help reduce inequality in the country and put the country in a path of inclusive growth.

Information-Base Theory

This study is anchored on Information-Based Theory. The Information-Based Theory, developed by Stiglitz and Weiss (1981), emphasizes the critical role of information in financial markets, particularly in reducing information asymmetry among participants. According to the theory, financial inclusion initiatives can enhance market liquidity by increasing access to financial information and reducing the effects of adverse selection and moral hazard, which occur when some market participants possess more information than others (Diamond, 1984; Grossman & Stiglitz, 1980). By providing individuals and businesses with access to reliable financial services and market information, financial inclusion can empower them to make more informed investment decisions, thus contributing to increased trading activity and overall market liquidity (Glosten & Milgrom, 1985). Further contributions to this theory by Allen and Gale (1994) emphasize the role of financial intermediaries in reducing information asymmetry and promoting liquidity by acting as information producers.

This theory posits that when some market players possess more information than others, it can lead to inefficiencies in trading and allocation of financial resources. Diamond (1984) expanded on this by explaining how financial intermediaries, such as banks, can act as delegated monitors to reduce information asymmetry, thereby promoting more efficient capital allocation. Grossman and Stiglitz (1980) further contributed by suggesting that perfectly efficient markets are unattainable due to the costs associated with obtaining information, thus highlighting the limitations of market efficiency. Allen and Gale (1994) examined how financial intermediaries serve as information producers, enhancing market liquidity by reducing asymmetry between informed and uninformed investors. However, the theory has faced criticism for assuming rational behavior among investors, as real-world markets often reflect behavioral biases and irrational decision-making (De Bondt & Thaler, 1985). Additionally, it presumes that information is accurate and reliable, which may not hold true, as information can be incomplete, manipulated, or misleading (Kyle, 1985). Despite these limitations, Information-Based Theory remains a useful framework for understanding how information access impacts market liquidity. (Allen & Gale, 1994).

The Information-Based Theory is particularly relevant to a study on the effect of financial inclusion on the liquidity of the Nigerian capital market because it underscores the importance of information access in enhancing market efficiency and liquidity. Financial inclusion initiatives aim to broaden access to financial services, which, according to Information-Based Theory, reduces information asymmetry by providing previously excluded individuals and businesses with critical market information and financial literacy. This inclusion enables more participants to make informed investment decisions, increasing trading activity and market liquidity. In a market such as Nigeria's, where many potential investors lack access to essential financial services and information, financial inclusion can play a transformative role in bridging this gap, enhancing liquidity, and fostering economic growth (Stiglitz & Weiss, 1981; Allen & Gale, 1994).

The theory's emphasis on reducing adverse selection and moral hazard through information symmetry is particularly relevant for the Nigerian capital market. When more investors, especially in underserved regions, gain access to reliable financial information and services, they are likely to engage more actively in market transactions, increasing liquidity. Thus, Information-Based Theory provides a robust framework to understand how financial inclusion can drive liquidity by addressing information gaps and fostering an inclusive market environment conducive to efficient trading and investment.

METHODOLOGY

This study adopted ex post facto research design. An ex post facto research design is justified in studies examining causal relationships where the independent variables cannot be manipulated, such as in the case of investigating historical data or naturally occurring variables. This design is particularly suitable for examining the Effect of Financial Inclusion on Liquidity of the Nigerian Capital Market, as it allows researchers to analyze existing data on financial inclusion metrics and capital market liquidity without manipulating or influencing these variables. This study used quarterly time series data for the period of Ten (10) years spanning from 2014 to 2023. The justification using the 10 years period was based the fact that a decade-long period offers a substantial number of data points, allowing for a robust analysis of trends, patterns, and fluctuations within the dataset.

This study used secondary data which was collected on quarterly basis during the study's duration or period covered. In other words, this study used time series data covering the period of 2014 to 2023. In specific terms, data on the independent variable which are access to financial services, usage of financial services and affordability of financial service platforms of financial institutions was obtained from the Statistical Bulletin of the Central Bank of Nigeria (CBN) for the period of 2014 to 2023. For the dependent variable (Liquidity of Nigeria Capital Market), time series data on Bid-Ask Spread and Midpoint Price for the period of 2014 to 2023 was collected from the Nigeria capital market. The data obtained for this study was analyzed using regression analysis with the aid of Eviews software.

The Regression Model Used for this Study

LID = $\beta 0 i_t + \beta 1\ (AFS)t + \beta 2\ (UFS)t + \mu_t$

where:

LIQ	liquidity of Nigeria Capital Market
β0	Constant term, which represents when all explanatory variables are held constant
β1- β2	Coefficient of the parameter estimates
AFS	Access to Financial Services.
UFS	Usage of Financial Services.
μ_t	Error term

Measurement and description of the Variables

Table 1. Variable Measurement

Variable Name & acronym	Variable type	Variable Description/Measurement	Sources
Liquidity of Capital Market	Dependent variable	Liquidity = Bid-Ask Spread / Midpoint Price	Foucault, et al.. (2013); Acharya and Pedersen (2005); Chordia et al. (2001).
Access To Financial Services (AFS)	Independent variable	Financial Inclusion Index = $\sum_{n=1}^{n}\left(wi \times \frac{Ii-\min(I)}{\max(I)-\min(I)}\right)$	Sarma (2015); Demirgüç-Kunt, et al. (2018), Allen (2016)
Usage of Financial Services (UFS)	Independent variable	Usage Index= $\sum_{n=1}^{n}\left(wi \times \frac{Ui-min(U)}{\max(U)-\min(U)}\right)$	Demirgüç-Kunt, et al. (2018).

Source: Researcher's Compilation, 2024

RESULTS AND DISCUSSION

This section presents a comprehensive analysis of the data, offering a detailed discussion of the findings. Key results are emphasized and interpreted in line with the research objectives and hypotheses. Statistical outcomes are organized systematically, frequently accompanied by tables and figures to enhance clarity. The discussion situates the findings within the broader context of existing literature, drawing comparisons with prior studies and relevant theoretical frameworks. Additionally, the implications of these results are explored, addressing the extent to which the research hypotheses were supported or

refuted. This analysis provides both practical and theoretical insights, underscoring the significance of the findings and their contributions to academic research and real-world applications.

Descriptive Analysis

This presents the result of descriptive statistics for the variables used in this study, and present the behaviour of the data for the variables.

Table 2: Descriptive Analysis

	LIQ	AFS	UFS
Mean	0.375	0.610	0.512
Median	0.312	0.322	0.332
Maximum	0.426	0.537	0.523
Minimum	0.131	0.140	0.182
Std. Dev.	1.223	1.321	1.146
Skewness	0.034	0.021	0.412
Kurtosis	1.422	1.363	1.521
Jarque-Bera	1.231	1.203	1.125
Probability	0.586	0.579	0.614
Sum	32.014	33.114	42.121
Sum Sq. Dev.	60.5469	40.3244	58.231
Observations	40	40	40

Source: Researcher's Computation, 2024 via EVIEWS

The table 2 is the descriptive statistics for the variables used in this study. The table offer insights into the descriptive characteristics of dependent variable Liquidity of Nigerian Capital Market (LIQ) and the three independent variables: Access to Financial Services (AFS) and Usage of Financial Services (UFS). The descriptive statistical analysis for the liquidity of the Nigerian capital market shows a mean value of 0.375 and a median of 0.312, suggests relatively low average liquidity over the period, which implies limited ease of trading in the market. The maximum and minimum values of 0.426 and 0.131, respectively, indicate moderate variability in liquidity levels, while the standard deviation of 1.223 highlights some degree of fluctuation around the mean. A skewness close to zero (0.034) indicates a relatively symmetrical distribution, and a kurtosis of 1.422 suggests a light-tailed distribution compared to a normal curve. The Jarque-Bera statistic (1.231) with a probability of 0.586 indicates that liquidity is approximately normally distributed. These characteristics imply a generally stable but low liquidity market, which could hinder the efficiency of the capital market and affect investor confidence.

The descriptive statistical analysis for access to financial services show a mean of 0.610 and median of 0.322, shows a moderate average level, indicating that financial services are available to a fair extent within the population. However, the high maximum (0.537) and low minimum (0.140) values point to considerable disparities in access levels. The standard deviation of 1.321 shows variability around the mean, while the low skewness (0.021) and kurtosis (1.363) values indicate a distribution that is fairly symmetrical and has light tails. The Jarque-Bera probability (0.579) confirms the approximate normality of the data. This moderate level of access could impact overall financial inclusion, as unequal access can limit capital market liquidity by restricting potential investors.

The descriptive statistical analysis for usage of financial services shows the mean value of is 0.512, with a median of 0.332, indicating moderate use of available financial services among the population. A relatively narrow range between maximum (0.523) and minimum (0.182) values and a standard deviation of 1.146 suggest less variability in usage compared to other variables. The positive skewness (0.412) implies a slight asymmetry with more observations above the mean, and a kurtosis of 1.521 indicates a distribution closer to normal. The Jarque-Bera probability (0.614) supports the assumption of normality. Moderate usage rates can restrict the depth and breadth of participation in the capital market, potentially limiting its liquidity.

Correlation Analysis

The correlation result is a statistical measure that indicates the strength and direction of the relationship between two variables. Therefore, correlation analysis was computed to determine the strength and direction of the relationship between the variables used.

Table 3: Correlation of the Variables

Date: 6/11/24 Time: 08:22
Sample: 2014 2023
Included observations: 40

Correlation Probability	LIQ	AFS	UFS
LIQ	1.000		
AFS	0.141	1.000	
	0.000		
UFA	0.113	0.214	1.000
	0.000	0.000	

r=correlation coefficient; t-stat; probability of t-statistics,
Source: Researcher's Computation, 2024 via EVIEWS

The table 3 provided correlation matrix of the variables used in this study. The correlation matrix provided shows the strength and direction of relationships between liquidity of the Nigerian Capital Market (LIQ), access to financial services (AFS) and usage of financial services (UFS).

The correlation coefficient between LIQ and AFS is 0.141, which indicates a weak positive relationship. This suggests that as access to financial services improves, there may be a slight increase in market liquidity, though the strength of this relationship is minimal. The correlation between LIQ and UFS is 0.113, which is also a weak positive relationship. This indicates that greater usage of financial services has a small positive association with capital market liquidity, but the effect is not strong.

The correlation between AFS and UFS is 0.214, indicating a weak-to-moderate positive relationship. This implies that higher access to financial services is associated with increased usage, suggesting that improving access may encourage SMEs and individuals to make greater use of available financial services. The weak correlations across these variables indicate that while there are positive associations among financial inclusion dimensions and market liquidity, each dimension's direct impact on liquidity is limited. This suggests that other factors may play a more significant role in determining capital market liquidity, and financial inclusion alone may not suffice to enhance liquidity substantially in the Nigerian capital market. Additionally, the weak-to-moderate correlations among access, usage, and affordability of financial services suggest that these aspects of financial inclusion may complement one another, but their collective impact on liquidity remains modest.

The correlation matrix demonstrates linearity among the variables, with weak positive linear relationships across the dimensions of financial inclusion (access and usage) and market liquidity. Specifically, access to financial services (AFS) shows a slight positive correlation with liquidity (LIQ) and usage (UFS) which indicates a tendency for these variables to move in the same direction but with limited strength. This linearity implies that as one dimension of financial inclusion increases, there is a minimal linear response in other dimensions or in liquidity. However, given the weak correlations, these linear relationships are not strong enough to suggest a substantial effect, reinforcing the idea that financial inclusion components alone may not drive significant changes in market liquidity in the Nigerian context.

Regression Result

The regression results table provides a detailed analysis of the relationship between the dependent variable, Liquidity of the Nigerian Capital Market (LIQ), and several independent variables. In this study, the independent variables represent different aspects of financial inclusion, including access to financial services (AFS) and usage of financial services (UFS). The analysis was conducted using Ordinary Least

Squares (OLS) regression, which allows for examining how these financial inclusion factors impact the liquidity of the Nigerian capital market.

OLS was appropriate for this study because it estimates the linear relationship between access to financial services (AFS) and usage of financial services (UFS), and Liquidity of the Nigerian Capital Market (LIQ). Pre- and post-estimation tests, such as checks for normality which was done using the Jarque-Bera test, multicollinearity and autocorrelation help ensure the reliability and validity of the regression model. The normality confirmed by the Jarque-Bera test supports the suitability of OLS for this analysis, as OLS will yield efficient, consistent, and interpretable results when applied to quarterly time series data with these characteristics.

Table 4.9: Regression Result

Dependent Variable: LIQ
Method: Ordinary Least Squares
Date: 6/11/24 Time: 08:31
Sample: 2014 2023
Included observations: 40
Group: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
C	0.578429	0.088987	6.500137	0.000	
AFS	0.522207	0.114235	4.571345	0.003	2.63
UFS	0.030302	0.030664	0.988205	0.338	2.01

R-squared	0.6821	Mean dependent var	0.152253
Adjusted R-squared	0.6246	S.D. dependent var	0.101220
S.E. of regression	0.214560	Akaike info criterion	−1.22635
Sum squared resid	0.113201	Schwarz criterion	−1.19023
Log likelihood	10.0213	Hannan-Quinn criter.	−1.11257
F-statistic	15.31001	Durbin-Watson stat	1.913
Prob(F-statistic)	0.05001		

Source: Researcher's Computation, 2024 via EVIEWS

The table 4 present the regression result for the effect of financial inclusion proxies by access to financial services (AFS) and usage of financial services (UFS) on Liquidity of the Nigerian Capital Market (LIQ). The VIF values are 2.63 and 2.01 for AFS and USF respectively, all of these values are below the commonly accepted threshold of 5, indicating that multicollinearity is not a significant concern in this model. Multicollinearity occurs when independent variables are highly correlated with each other, which can inflate the standard errors of the coefficients, making it challenging to assess the individual effect of each predictor on the dependent variable. Since the VIF values are low, this suggests that each independent variable provides unique information in explaining the dependent variable (liquidity of the Nigerian Capital Market) without excessive overlap from other predictors.

Meeting the assumption of low multicollinearity is essential for Ordinary Least Squares (OLS) regression, as it ensures the stability and reliability of the coefficient estimates. In the presence of high multicollinearity, the OLS assumptions of linearity and independence of the predictors can be compromised, leading to less reliable and interpretable results. In this model, the low VIF values support the validity of the regression results, meaning each predictor's impact on liquidity can be interpreted with confidence.

The Durbin-Watson (DW) statistic is a test used to detect autocorrelation in the residuals of a regression model, with a value close to 2 indicating minimal or no autocorrelation. In this case, the DW statistic is 1.913, which is very close to 2, suggesting that there is minimal autocorrelation in the residuals of this model. Autocorrelation can be problematic in time-series data because it implies that the residuals (errors)

are correlated with each other over time, which violates one of the core assumptions of Ordinary Least Squares (OLS) regression that the residuals should be independently and identically distributed. By meeting this assumption of no significant autocorrelation, the reliability of the OLS estimates is reinforced. Minimal autocorrelation means that each observation contributes unique information without being overly influenced by the previous observations. This independence among residuals is crucial for unbiased and consistent coefficient estimates, thus supporting the validity of the model's results

The use of Ordinary Least Squares (OLS**)** is justified in this study based on the diagnostic results from the Variance Inflation Factor (VIF) and Durbin-Watson (DW) statistics. These tests confirm that key assumptions of OLS regression have not been violated, ensuring that the model's estimates are reliable and unbiased

The F-statistic is 15.31, with a corresponding p-value of 0.05001, which is on the threshold of statistical significance (typically at 0.05). This suggests that the overall model is marginally significant, implying that, collectively, access to financial services, usage, and affordability have a statistically relevant effect on liquidity. However, given the borderline p-value, additional variables or further model refinement might provide more robust insights into the determinants of capital market liquidity. In terms of model fit, a significant F-statistic suggests that the model as a whole is useful for explaining variations in liquidity.

From the result above, The R-squared value of 0.6821 indicates that 68.21% of the variance in market liquidity is explained by the independent variables (AFS and UFS) in the model, which is relatively high. The adjusted R-squared, at 0.6246, corrects for the number of variables and suggests that around 62.46% of the variability in liquidity is explained after adjusting for any additional variables in the model. This implies a reasonably strong explanatory power, though other external factors may also affect liquidity outside the variables in this model.

H_{O1}: Access to financial services have no significant effect on the liquidity of Nigeria capital market.
The regression results indicate that access to financial services (AFS) has a positive and statistically significant effect on the liquidity of the Nigerian Capital Market (LIQ), with a coefficient of 0.522 and a t-statistic of 4.57 ($p < 0.05$). This suggests that an increase in AFS is associated with an increase in market liquidity, implying that improved financial access may encourage higher trading volumes and reduce transaction costs, enhancing overall liquidity. The coefficient for access to financial services (AFS) is 0.522, with a standard error of 0.114, resulting in a t-statistic of 4.571 and a p-value of 0.003. This indicates a positive and statistically significant effect on the liquidity of the Nigerian Capital Market at 5% level of significant, the positive coefficient suggests that as access to financial services increases, the liquidity of the Nigerian capital market improves. This finding implies that enhancing access to financial services, such as increasing the availability and reach of financial institutions and services, can lead to greater trading volumes and activity in the capital market. Such improvement in liquidity is essential for attracting investors and promoting a more vibrant market.

H_{O2}: Usage of financial services have no significant effect on the liquidity of Nigeria capital market.
The coefficient for usage of financial services (UFS) is 0.030 with a standard error of 0.031, yielding a t-statistic of 0.988 and a p-value of 0.338. Since the p-value is above the typical significance levels (0.05), this result indicates that UFS has a positive but statistically insignificant effect on liquidity of the Nigerian Capital Market at 5% level of significant. This suggests that while increased usage of financial services may have a slight positive association with liquidity, the effect is not strong enough to conclude a reliable relationship within this sample. The insignificant result may imply that simply increasing the usage rate, without enhancing access and affordability, may not substantially impact liquidity.

Generally, the result of this study revealed that access to financial services has positive and statistically significant effect on the liquidity of the Nigerian Capital Market at 5% level of significant. While usage

of financial services and affordability of financial services platforms have positive but statistically insignificant effect on the liquidity of the Nigerian Capital Market at 5% level of significant.

CONCLUSION AND RECOMMENDATIONS

The study concludes that access to financial services plays a crucial role in enhancing the liquidity of the Nigerian Capital Market, as evidenced by its positive and statistically significant effect at the 5% significance level. This finding suggests that improving access to financial services, such as expanding banking networks and increasing availability, can stimulate market activity and liquidity by attracting more participants to the capital market. Conversely, the positive but statistically insignificant effects of usage financial services platforms indicate that while these factors may contribute to market liquidity, their influence is not as impactful as access alone within the current model.

This study therefore recommends based on the findings and conclusions that:

i. policymakers should continue to intensify efforts to expand financial accessibility nationwide. Initiatives could include increasing the number of bank branches and ATMs, especially in underserved areas, and implementing digital banking solutions to make financial services accessible to a broader audience. Improving access could encourage more individuals and businesses to participate in the capital market, thereby enhancing liquidity. The focus on expanding access would support a more inclusive market environment, which can attract both local and foreign investors, ultimately contributing to economic growth.

ii. Nigerian Capital Market management and policymakers should improve on access to usage of financial services. This can be achieved through developing programs to increase financial literacy and awareness about available financial services, particularly investment-related services. Education campaigns and partnerships with financial institutions can help individuals understand the benefits of market participation, thus encouraging greater use of financial services. By fostering an environment where individuals are more knowledgeable and inclined to utilize financial services, the Nigerian Capital Market can cultivate a larger and more active base of market participants.

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QUARTERLY TIME SERIES DATA

SN	**Obs**	**LIQ**	**AFS**	**UFS**
1	2014:01	0.1136	0.1063	0.1723
2	2014:02	0.2915	0.1687	0.1315
3	2014:03	0.2387	0.1678	0.1282
4	2014:04	0.3955	0.1152	0.1078
5	2015:01	0.7214	0.1849	0.1164
6	2015:02	0.2524	0.1072	0.1731
7	2015:03	0.2891	0.1655	0.1721
8	2015:04	0.2065	0.1471	0.1334
9	2016:01	0.1285	0.1137	0.1056
10	2016:02	0.2592	0.1254	0.1336
11	2016:03	0.2287	0.1070	0.1425
12	2016:04	0.1015	0.1909	0.1522
13	2017:01	0.2103	0.0202	0.1621
14	2017:02	0.1259	0.0313	0.1906
15	2017:03	0.3733	0.0230	0.1017
16	2017:04	0.9806	0.0534	0.1332
17	2018:01	0.9175	0.0599	0.1153
18	2018:02	0.1136	0.0074	0.1316
19	2018:03	0.0787	0.0865	0.1547
20	2018:04	0.3366	0.0122	0.1178
21	2019:01	0.0592	0.1045	0.1410
22	2019:02	0.0896	0.1438	0.1115
23	2019:03	0.1322	0.1041	0.1540
24	2019:04	0.2495	0.1095	0.1001
25	2020:01	0.0388	0.1443	0.1511
26	2020:02	0.1931	0.1445	0.1723
27	2020:03	0.1957	0.1021	0.1235
28	2020:04	0.1438	0.1654	0.1318
29	2021:01	0.1445	0.1642	0.1032
30	2021:02	0.1714	0.1596	0.1332
31	2021:03	0.1154	0.1244	0.1485
32	2021:04	0.2492	0.1554	0.1273
33	2022:01	0.1596	0.1567	0.1258
34	2022:02	0.1919	0.1045	0.1251
35	2022:03	0.0954	0.1334	0.1244
36	2022:04	0.2197	0.1168	0.1232
37	2023:01	0.1058	0.1761	0.1245
38	2023:02	0.0314	0.1887	0.1232
39	2023:03	0.2608	0.1231	0.1222
40	2023:04	0.0761	0.1244	0.1211