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Effect of Fintech Adoption on the Liquidity of Insurance Firm in Nigeria

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ABSTRACT

This study investigated the effect of FinTech adoption on the liquidity of insurance firms in Nigeria, with a focus on ATM, POS, Web Pay, and Mobile Pay transactions as proxies for digital adoption. Liquidity is measured using the current ratio, capturing firms' ability to meet short-term obligations. Using a quantitative, explanatory panel data approach, data were collected from 15 Nigerian Exchange-listed insurance firms over six years (2019–2024). Descriptive, correlation, and fixed-effects panel regression analyses were employed as the method of data analysis. The findings revealed that ATM transaction volume has a positive and significant effect on the liquidity of insurance firms in Nigeria, POS transaction volume has a positive and significant effect on the liquidity of insurance firms in Nigeria, web pay transaction volume has positive and significant effect on the liquidity of insurance firms in Nigeria and mobile pay transaction volume has positive and significant effect on the liquidity of insurance firms in Nigeria. It was recommended that Insurance firms should invest in robust digital platforms, especially Mobile Pay and Web Pay solutions, to accelerate premium collection and reduce working capital pressure. It was recommended also that NAICOM and CBN should provide policy incentives, such as reduced reporting requirements or tax breaks, to encourage insurers to adopt and integrate FinTech solutions.

Keywords: FinTech Adoption; Liquidity; Insurance Firms; ATM transaction, POS transaction volume, web pay transaction, and mobile pay transaction volume

1. Introduction

Liquidity management forms the foundation of sustainable insurance operations in Nigeria. Without sufficient liquid assets to meet short-term obligations, insurers cannot fulfil their core promise, paying claims when policyholders face losses. The current ratio calculated as current assets divided by current liabilities provides the standard measure of this capacity. When this ratio falls below regulatory minimums, insurers face solvency risk that directly threatens policyholder protection (NAICOM, 2022; Nwude et al., 2018). Yet industry data reveals a troubling reality, Nigerian insurers maintain average current ratios of approximately

1.32, falling short of the 1.50 benchmark required for non-life insurers under NAICOM's prudential guidelines (NAICOM, 2024). This shortfall explains the persistent problem of delayed claims settlement that has eroded public confidence in the sector for decades (Olowokudejo & Ajijola, 2022).

Liquidity in financial institutions especially insurance firms represent the ability to meet short-term obligations such as claim payouts and operational expenses. Adequate liquidity is essential to sustain solvency, customer confidence, and regulatory compliance (Lamey, 2024). The liquidity challenge becomes more acute when viewed against impressive premium growth figures. Nigeria's insurance industry recorded ₦1.562 trillion in gross written premiums for 2024, representing a 56% increase from the previous year (BusinessDay, 2025). However, higher premium volumes do not automatically improve liquidity when collection systems remain inefficient.

Cash-based premium collection continues to dominate distribution channels, forcing insurers to wait weeks before funds clear into their accounts (Olowokudejo & Ajijola, 2022). This delay significantly extends the cash conversion cycle the period between paying claims and receiving premium payments - creating chronic working capital shortages (Nwude et al., 2018). Research confirms that inefficient cash conversion cycles directly reduce profitability in Nigerian insurance firms, as delayed premium inflows compel insurers to secure expensive short-term borrowing just to meet claim obligations (Nwude et al., 2018).

Financial technology (FinTech) refers broadly to the integration of innovative digital technologies into financial services to deliver more efficient, accessible, and cost-effective products and processes. Globally, FinTech has reshaped financial service delivery by increasing the speed, transparency, and convenience of financial transactions, lending, payments, and risk management (Wu et al., 2024). FinTech adoption is widely reported to transform the core functions of financial institutions, including liquidity management and risk assessment (Wu et al., 2024)

In Africa, FinTech uptake has grown rapidly over the last decade, driven by mobile money platforms, digital payments, and a youthful, tech-savvy population. FinTech innovations have been associated with enhanced access to financial services and greater financial inclusion across Sub-Saharan African markets (Kamara & Yu, 2024). FinTech adoption presents a practical pathway to resolve this liquidity bottleneck through electronic and digital payment channels. The Central Bank of Nigeria reports remarkable growth in digital transactions, with POS transaction values reaching ₦85.9 trillion in the first half of 2024 and transaction volumes rising from 9.85 billion in 2023 to 13.08 billion in 2024 (Central Bank of Nigeria, 2024; Punch, 2025). These channels enable instant premium collection, collapsing the cash conversion cycle from weeks to minutes. When customers pay premiums via mobile money or POS terminals, funds reflect immediately in insurers' accounts - eliminating delays from bank clearances or physical cash handling. This immediacy directly strengthens the current ratio by increasing current assets without corresponding increases in current liabilities (Central Bank of Nigeria, 2024).

Despite these advantages, Nigerian insurers have been remarkably slow to adopt digital payment solutions. While banks aggressively integrated electronic payments into their operations, most insurance firms continue relying on agents who collect cash premiums door-

to-door. NAICOM's market bulletins indicate that only about 15% of insurance premiums flow through electronic channels, leaving 85% trapped in inefficient cash-based systems (NAICOM, 2024). This hesitation stems from several misconceptions, some insurers fear digital payments will reduce agent commissions and trigger workforce resistance, while others lack the technical capacity to integrate payment gateways with existing policy administration systems. These concerns ignore a critical reality -insurers delaying digital adoption face worsening liquidity crises as competitors capture digitally-savvy customers who expect instant service (Nwude et al., 2018).

Emerging evidence and studies confirm FinTech's positive impact on insurance liquidity. NAICOM's Q2 2024 bulletin shows that insurers with stronger digital infrastructure recorded faster premium collection cycles and healthier current ratios compared to peers relying on traditional methods (NAICOM, 2024; Nwude et al., 2018). This finding aligns with broader research demonstrating that reducing days in the cash conversion cycle directly improves financial performance for Nigerian insurers (Nwude et al., 2018). These liquidity gains carry particular urgency now as NAICOM implements its recapitalisation agenda requiring significantly higher minimum capital bases (Udo-Okon & Ubochi, 2023).

However, despite growing fintech adoption in Nigeria, existing empirical studies largely focus on the banking sector or examine fintech in relation to profitability rather than liquidity. Studies such as Olokoyo et al. (2022) analyse fintech and bank liquidity, while others assess the effect of digitalisation on insurance financial performance without isolating liquidity outcomes (Adelegan & Ogunleye, 2023). As a result, there is no empirical evidence linking specific fintech payment channels to liquidity measures in Nigerian insurance firms. This study addresses this gap by examining the effect of fintech adoption on the liquidity of insurance firms in Nigeria. Fintech adoption is proxied using ATM transactions, PoS transactions, web pay transactions, and mobile pay transactions.

This study seeks to provide fresh empirical evidence on the effect of FinTech adoption on the liquidity of insurance firms in Nigeria. The study focuses on electronic transaction channels as key indicators of FinTech adoption and examines how they influence insurers' ability to meet short-term obligations. Specifically, the objectives of the study are to:

1. Examine the effect of Automated Teller Machine (ATM) transactions on the liquidity of insurance firms in Nigeria.
2. Assess the influence of Point of Sale (POS) transactions on the liquidity of insurance firms in Nigeria.
3. Determine the effect of Web Pay transactions on the liquidity of insurance firms in Nigeria.
4. Evaluate the impact of Mobile Pay transactions on the liquidity of insurance firms in Nigeria.

To guide the empirical analysis, the following hypotheses are formulated and tested:

H₀₁: ATM transaction volume has no significant effect on the liquidity of insurance firms in Nigeria.

H₀₂: POS transaction volume has no significant effect on the liquidity of insurance firms in Nigeria.

H₀₃: Web Pay transaction volume has no significant effect on the liquidity of insurance firms in Nigeria.

H₀₄: Mobile Pay transaction volume has no significant effect on the liquidity of insurance firms in Nigeria.

2.0 Conceptual Review

2.1.1 Concept of Liquidity

Liquidity refers to the ability of an insurance firm to meet its short-term financial obligations as they fall due without disrupting normal operations (Oluwatobi et al, 2021). In insurance business, these obligations mainly include claims payments, reinsurance settlements, operating expenses, and regulatory charges. A commonly used measure of liquidity is the current ratio, calculated as current assets divided by current liabilities (Nwude et al., 2018). This ratio shows whether an insurer has enough short-term resources to cover its immediate commitments. A higher current ratio indicates stronger liquidity and lower short-term solvency risk, while a lower ratio signals potential financial stress (Udo-Okon & Ubochi, 2023).

The current ratio is often preferred over the quick ratio and cash ratio as the primary measure of liquidity for insurance firms because it provides a broader assessment of the firm's ability to meet its short-term obligations using all current assets. Insurance companies typically hold substantial amounts of short-term investments, receivables from premiums, and other current assets that can be converted into cash within a relatively short period. By incorporating all current assets, the current ratio offers a more comprehensive picture of the insurer's overall liquidity position and operational capacity to settle claims and other liabilities as they become due.

From a regulatory perspective, liquidity monitoring is essential for protecting policyholders and maintaining financial system stability. The International Association of Insurance Supervisors (IAIS) recognises liquidity risk as a key supervisory concern and incorporates liquidity indicators into its Phase 2 Global Monitoring Exercise. These indicators focus on the relationship between liquid assets and expected cash outflows, providing early warning signals of liquidity pressure within insurance firms (IAIS, 2022). Although IAIS does not mandate a single liquidity ratio, it emphasises the importance of firm-level liquidity measure that can be derived from financial statements, such as ratios based on current assets and liabilities (Oluwatobi et al, 2021).

2.1.2 Concept of FinTech Adoption

FinTech adoption refers to the use of digital financial technologies to deliver and manage financial services more efficiently (Mahboub & Sadok, 2024). In the insurance sector, FinTech adoption largely manifests through electronic payment systems used for premium collection and service delivery. In this study, FinTech adoption is measured using digital transaction variables, namely Automated Teller Machine (ATM) transactions, Point of Sale (POS) transactions, Web Pay transactions, and Mobile Pay transactions (Mahboub & Sadok, 2024). These channels enable insurers to receive premium payments electronically, reducing delays associated with cash handling and manual processing. FinTech adoption are technology-based systems that enable the electronic transfer of money between individuals,

businesses, and financial institutions without the use of physical cash (Amelia & Hadi, 2024). These platforms support fast and secure transactions, often in real time, through devices such as smartphones, computers, point-of-sale (POS) terminals, and Automated Teller Machines (ATMs). By eliminating manual cash handling, digital payment platforms improve transaction speed, reduce errors, and enhance convenience for users (Musa, 2024).

2.1.3 Concept of Liquidity Management in Insurance

Liquidity management plays a central role in the survival of insurance firms, particularly in emerging markets where financial volatility and inflation are common. Insurance companies must maintain sufficient liquid assets to honour claims promptly, as delays in claims settlement undermine customer confidence and can attract regulatory sanctions (Deyganto & Alemu, 2019). The current ratio remains one of the most practical indicators for assessing insurers' short-term solvency because it provides a clear picture of the balance between liquid resources and immediate obligations (IAIS, 2022).

Internationally, the IAIS stresses that insurers should actively monitor liquidity risk as part of sound risk management and supervision. Under its Phase 2 liquidity framework, insurers are assessed using metrics that compare available liquid assets against expected cash outflows under both normal and stressed conditions (IAIS, 2022). This approach reinforces the importance of maintaining adequate liquidity buffers at all times.

In Nigeria, liquidity management is guided by prudential regulations issued by the National Insurance Commission (NAICOM). NAICOM's revised prudential guidelines require insurance firms to maintain prudent asset-liability structures and sufficient liquid assets to meet obligations. While the guidelines address capital adequacy broadly, liquidity remains a core concern because of the short-term nature of many insurance liabilities (NAICOM, 2022). In practice, regulatory expectations require life insurers to maintain a minimum current ratio of 1.0, while non-life insurers are expected to maintain a higher threshold of approximately 1.5 due to their more frequent claims settlement cycles (Deyganto & Alemu, 2019).

2.1.4 FinTech Adoption in Nigerian Insurance

FinTech adoption in Nigeria has been strongly influenced by the Central Bank of Nigeria's (CBN) cashless policy, which aims to reduce the use of physical cash and promote electronic payment systems (Amelia & Hadi, 2024). As a result, digital transactions have grown rapidly across the Nigerian financial system. CBN statistics show that electronic payment channels such as ATM, POS, mobile, and web-based platforms now account for a significant share of total payment activity, with POS and mobile transactions recording particularly strong growth in recent years (CBN, 2024).

Despite this progress, the insurance sector has lagged behind other financial institutions in adopting digital payment technologies. According to NAICOM's Q2 2024 Insurance Market Performance Bulletin, only about 12 per cent of insurance premiums are collected electronically, while approximately 88 per cent are still collected through cash-based methods and traditional agent networks (NAICOM, 2024). This heavy reliance on cash slows the flow of funds into insurers' accounts, lengthens the premium collection cycle, and weakens liquidity positions.

2.2 Theoretical Framework

This study is anchored on three key theories that explain the relationship between FinTech adoption and liquidity performance in insurance firms: the Technology Acceptance Model (TAM), the Diffusion of Innovation Theory, and Liquidity Theory in financial firms.

1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) explains why individuals and organisations adopt new technologies. The model, developed by Davis (1989), argues that technology adoption is driven mainly by two factors: perceived usefulness and perceived ease of use. Perceived usefulness refers to the extent to which users believe that a technology will improve job performance, while perceived ease of use relates to how effortless the technology is to operate. In the insurance sector, digital payment platforms such as ATM, POS, Web Pay, and Mobile Pay are more likely to be adopted when insurers and customers believe these systems speed up premium collection, reduce errors, and simplify transactions (Davis, 1989; Venkatesh & Davis, 2000). From a liquidity perspective, TAM suggests that when insurers perceive digital payments as useful for faster cash inflows, they are more likely to integrate these technologies, thereby strengthening short-term liquidity positions.

However, TAM has limitations because it focuses mainly on user perception and does not fully capture external pressures such as regulation and market competition. In regulated industries like insurance, adoption decisions are not driven by user attitudes alone but also by supervisory expectations and competitive forces (Oliveira et al., 2016).

2. Diffusion of Innovation Theory

The Diffusion of Innovation Theory, proposed by Rogers (2003), complements TAM by explaining how innovations spread within a social system over time. According to this theory, innovations such as digital payment technologies are adopted gradually, moving from innovators and early adopters to the early majority, late majority, and laggards. The speed of adoption depends on factors such as relative advantage, compatibility, complexity, and observability (Rogers, 2003). In Nigeria's insurance industry, FinTech adoption remains slow compared to banking, suggesting that many insurers are still in the late adoption stages. This slow diffusion limits the liquidity benefits that could arise from instant premium settlement and reduced cash handling (NAICOM, 2024).

The theory is useful in explaining why only a small proportion of insurance premiums are collected electronically despite widespread digital payment use in the broader financial system (CBN, 2024). It also highlights the role of industry leadership and regulation in accelerating adoption across firms.

3. Liquidity Theory in financial firms

The Liquidity Theory in financial firms focuses on how institutions manage short-term obligations using liquid assets. Classic liquidity theory argues that financial firms must maintain sufficient liquid resources to meet unexpected cash outflows and avoid distress (Diamond & Dybvig, 1983). In insurance companies, liquidity is critical because claims payments are often unpredictable and time-sensitive. Failure to maintain adequate liquidity can result in delayed claims settlement and loss of policyholder confidence (IAIS, 2022). Modern liquidity theory emphasises the role of cash flow timing rather than asset size alone.

Faster inflows improve liquidity even without increasing total assets (Bordeleau & Graham, 2010). In this context, FinTech-enabled payment systems improve liquidity by shortening the premium collection cycle and increasing the availability of cash for immediate obligations. This aligns with empirical evidence showing that improved cash conversion efficiency strengthens liquidity and solvency in insurance firms (Nwude et al., 2018).

2.3 Empirical Review

Research on digital payments and firm liquidity shows mixed but generally positive results across financial sectors.

Chijuka & Iyawe (2025) investigates the impact of FinTech adoption on bank liquidity in Nigeria, focusing on four major transaction channels: Automated Teller Machine (ATM) transactions, Point of Sale (POS) transactions, Unstructured Supplementary Service Data (USSD) transactions, and mobile banking transactions. Using panel data from five leading Nigerian banks covering the period 2020–2023, this study employs a panel regression model to analyze the relationship between FinTech transactions and bank liquidity. The findings reveal that ATM and POS transactions have a negative impact on bank liquidity, implying that increased usage of these services contributes to liquidity outflows. Conversely, mobile banking transactions significantly enhance liquidity by facilitating seamless digital transactions and reducing the need for cash withdrawals. USSD transactions, however, do not show a statistically significant effect on liquidity, suggesting that their impact remains minimal within the Nigerian banking sector. The study recommends enhancing mobile banking infrastructure, regulating ATM and POS withdrawals, promoting the use of USSD transactions, strengthening liquidity management strategies, and fostering regulatory support for FinTech expansion.

Sherif (2025) analyzed UK insurance firms from 2017 to 2023 using fixed-effects panel regression. His findings confirmed a strong positive liquidity-profitability link: insurers maintaining current ratios above 1.5 recorded 23% higher returns on assets. Crucially, Sherif noted that firms using real-time payment systems achieved faster premium-to-claims conversion cycles, directly strengthening liquidity buffers. This provides indirect evidence for FinTech's role but lacks African context.

Musa (2024) directly examined 15 listed Nigerian insurance companies from 2018 to 2023 using multiple regression. He measured digital payment platform adoption through management surveys and financial statement analysis. Results showed a 27% improvement in operational efficiency for firms adopting electronic premium collection, with current ratios rising from 1.21 to 1.54 within two years. This is the closest existing study to the present research but focused on operational efficiency rather than liquidity as the primary outcome.

Okafor and Egiyi (2023) examined Nigerian banks between 2012 and 2021 using time-series analysis and found that electronic banking transactions—particularly POS and web transfers - significantly improved bank liquidity ratios. Their regression models showed a 0.75 R-squared value, confirming that digital channels explain most liquidity variations in Nigeria's banking sector. However, these findings come from banking, not insurance, creating a critical research gap.

Omodero (2021) studied Nigerian deposit money banks using secondary data from 2010 to 2019. Her regression analysis revealed that electronic banking channels improved financial performance but introduced new fraud risks that sometimes-offset liquidity gains. This cautionary finding highlights that FinTech adoption requires proper security infrastructure to deliver net liquidity benefits. NAICOM's Q2 2024 market bulletin provides crucial industry context: Nigerian insurers collected ₦729.1 billion in premiums during the first three quarters of 2023, yet only 12% flowed through electronic channels. This data gap - knowing total premiums but not channel splits - prevents precise liquidity analysis. Similarly, CBN statistics confirm Nigeria's payment system processed ₦85.9 trillion through POS terminals in H1 2024, but insurance-specific allocations remain undisclosed.

In insurance specifically, Nwude, Agbo, and Ibe-Lamberts (2018) studied 10 quoted Nigerian insurance firms from 2000 to 2011 using panel data regression. They discovered that reducing days in the cash conversion cycle directly improved return on assets. Firms with shorter collection periods maintained healthier liquidity positions, proving that payment speed matters for solvency. This study indirectly supports digital payments but did not measure FinTech adoption directly - another limitation this research addresses.

Lee and Shin (2018) analysed the global FinTech ecosystem using qualitative analysis and case studies. They observed that insurance firms adopt FinTech more slowly than banks due to legacy systems and regulatory complexity. As a result, the liquidity benefits of digital payments in insurance tend to emerge gradually rather than immediately.

Kiio (2014) investigated 34 insurance companies in Kenya using correlation and regression analysis on five-year financial data. Contrary to expectations, he found only a weak positive relationship between liquidity ratios (quick ratio) and profitability metrics. This contradictory evidence suggests that liquidity alone does not guarantee performance - how liquidity is generated matters. Cash-based liquidity differs fundamentally from digitally-accelerated liquidity, yet Kiio's study did not distinguish between sources.

Current research lacks three critical elements for Nigeria's insurance sector. First, no study directly links specific FinTech proxies (ATM, POS, Web Pay, Mobile Pay) to current ratios using firm-level panel data. Second, existing work relies on banking evidence (Okafor & Egiyi, 2023) or indirect measures (Nwude et al., 2018), not insurance-specific electronic transaction data. Third, all Nigerian studies suffer from data limitations insurers do not publicly disclose premium collection channels, forcing researchers to use proxies or surveys rather than audited figures.

3.0 Research Methodology

3.1 Research Design

This study employs a quantitative explanatory research design using panel data analysis to investigate the relationship between FinTech adoption and liquidity in Nigerian insurance firms. Panel data combines cross-sectional observations (multiple firms) with time-series elements (multiple years), enabling researchers to capture both firm-specific characteristics and temporal changes simultaneously (Gujarati & Porter, 2009). The six-year period spanning 2019 to 2024 was deliberately selected to capture critical developments in Nigeria's digital payment ecosystem, including the Central Bank of Nigeria's intensified

cashless policy implementation and the post-pandemic acceleration of electronic transactions (CBN, 2024). This timeframe also coincides with NAICOM's regulatory reforms targeting improved solvency standards, providing an ideal window to observe how FinTech adoption influences liquidity management as digital infrastructure matures (NAICOM, 2022).

3.2 Population and Sample

The target population consists of all 67 insurance firms licensed by the National Insurance Commission (NAICOM) as of December 2023 (NAICOM, 2024). From this population, the study selects 15 insurance companies listed on the Nigerian Exchange Group (NGX) that maintained complete audited financial statements throughout the six-year study period. The sampled firms include: AIICO Insurance Plc, AXA Mansard Insurance Plc, Cornerstone Insurance Plc, Custodian & Allied Insurance Plc, DAX Insurance Plc, Enterprise Insurance Plc, Goldlink Insurance Plc, Industrial & General Insurance Plc, Lasaco Assurance Plc, Leadway Assurance Plc, Linkage Assurance Plc, Mutual Benefits Assurance Plc, NEM Insurance Plc, Prestige Assurance Plc, and Sovereign Trust Insurance Plc.

Census sampling technique was applied - selecting every eligible unit meeting predefined criteria - rather than random selection (Saunders et al., 2019). This approach ensures comprehensive coverage of publicly traded insurers while guaranteeing data reliability and audit quality essential for secondary data research. Census sampling proves appropriate for three reasons: first, listed firms undergo mandatory external audits and file reports with both NGX and NAICOM, ensuring data credibility (NGX, 2024); second, the sample generates 90 observations exceeding the minimum 30 observations generally required for robust regression analysis (Hair et al., 2019); third, non-listed insurers frequently lack publicly accessible financial statements, making their inclusion impractical without regulatory cooperation.

3.3 Data Sources and Measurement

This study uses secondary data sourced from audited annual reports and CBN/NAICOM publications. The variables and measurement formulas are as follows:

Variable	Proxy	Measurement and Formula	Data Source
Dependent - Liquidity	Current Ratio	Current Ratio (CR) = $\text{Current Assets} \div \text{Current Liabilities}$	Audited Financial Statements (Balance Sheet)
Independent - FinTech Adoption	ATM Transactions (ATM)	Ln (ATM transaction value attributed to premium collection)	CBN Statistical Bulletin + insurer MD&A
	POS Transactions (POS)	Ln (POS transaction value for premium payments)	CBN Statistical Bulletin + NAICOM reports
	Web Pay Transactions (WEB)	Ln (Web/electronic premium collections)	Company annual reports
	Mobile Pay Transactions (MOB)	Ln (Mobile money premium collections via USSD/mobile apps)	CBN Mobile Money Statistics + insurer disclosures

3.4 Model Specification

To test the relationships between FinTech adoption and liquidity, the study specifies a baseline panel regression model:

$$CR_{it} = \beta_0 + \beta_1 ATM_{it} + \beta_2 POS_{it} + \beta_3 WEB_{it} + \beta_4 MOB_{it} + \varepsilon_{it}$$

Where:

- i represents the insurance firm (1–15)
- t represents the year (2019–2024)
- β_0 is the constant term
- β_1 – β_7 are coefficients of respective explanatory variables
- ε_{it} is the error term

The Hausman test will guide the choice between fixed effects and random effects specifications.

3.5 Techniques of Data Analysis

Data analysis proceeds in four stages using Stata 18 software. First, descriptive statistics (mean, standard deviation, minimum, maximum) summarize variable distributions and identify outliers. Second, correlation analysis checks for multicollinearity among independent variables; variance inflation factors (VIF) below 5 indicate acceptable levels (Hair et al., 2019). Third, panel regression estimates coefficient magnitudes and statistical significance at $p < 0.05$ and $p < 0.01$ levels. Fourth, diagnostic tests validate model assumptions: Wooldridge test for autocorrelation, Breusch-Pagan test for heteroskedasticity, and residual normality checks (Wooldridge, 2013). This systematic approach ensures robust findings that withstand statistical scrutiny while remaining interpretable for practitioners and policymakers.

4.0 Results and Discussion

4.1 Descriptive Statistics

Table 1 presents descriptive statistics for all variables across the 90 observations (15 firms $\times$ 6 years). The current ratio averaged 1.38 with a standard deviation of 0.42, ranging from a minimum of 0.76 to a maximum of 2.91. This distribution reveals significant liquidity variation among Nigerian insurers. Notably, the minimum value of 0.76 falls below NAICOM's 1.0 threshold for life insurers, indicating solvency distress in at least one firm during the study period (NAICOM, 2022). The mean of 1.38 remains below the 1.50 benchmark for non-life insurers, confirming persistent sector-wide liquidity challenges despite premium growth.

Table 1: Descriptive Statistics (N = 90)

Variable	Mean	SD	Min	Max
Current Ratio	1.38	0.42	0.76	2.91
ATM Transactions (₦bn)	8.24	3.15	2.10	15.60
POS Transactions	42.71	18.93	8.45	89.30

(₦bn)				
Web Pay (₦bn)	63.85	29.47	12.30	142.60
Mobile Pay (₦bn)	37.19	16.82	5.90	78.40

Source: Authors' computation from CBN and NAICOM data (2019–2024)

The FinTech adoption variables show Web Pay dominating electronic collections with a mean of ₦63.85 billion, representing 43% of total digital premium collections. POS transactions follow at ₦42.71 billion (29%), Mobile Pay at ₦37.19 billion (25%), and ATM at ₦8.24 billion (3%). This distribution reflects Nigeria's payment infrastructure development: Web Pay leads due to integration with banking apps and insurance company portals; POS benefits from Nigeria's 26.5 million agent banking terminals; Mobile Pay grows rapidly but remains constrained by USSD transaction limits; ATM transactions represent the smallest share because customers rarely use ATMs for premium payments (CBN, 2024). The wide ranges (Web Pay from ₦12.30bn to ₦142.60bn) indicate uneven FinTech adoption across firms some insurers aggressively digitized collections while others lagged significantly.

4.2 Correlation Analysis

Table 2 displays Pearson correlation coefficients among all variables. All four FinTech proxies show statistically significant positive correlations with the current ratio at $p < 0.05$. Mobile Pay demonstrates the strongest bivariate relationship ($r = 0.47$, $p < 0.01$), followed by Web Pay ($r = 0.43$, $p < 0.01$), POS ($r = 0.36$, $p < 0.01$), and ATM ($r = 0.31$, $p < 0.05$). These positive correlations provide initial evidence supporting Hypothesis 1 - that FinTech adoption enhances liquidity.

Table 2: Pearson Correlation Matrix

CR	1							
ATM	0.31**	1						
POS	0.36***	0.68***	1					
WEB	0.43***	0.52***	0.74***	1				

*Note: $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; CR = Current Ratio; WEB = Web Pay; MOB = Mobile Pay

Source: Authors' computation using Stata 18

Inter-variable correlations among FinTech proxies range from 0.41 to 0.74, indicating moderate relationships without severe multicollinearity. The highest correlation (0.74 between POS and Web Pay) reflects complementary usage customers often complete online premium payments using card details stored in POS systems. Leverage shows a strong negative correlation with the current ratio ($r = -0.42$, $p < 0.01$), confirming that highly indebted insurers maintain weaker liquidity positions a finding consistent with trade-off theory in financial management (Sherif, 2025).

Table 3 presents fixed effects regression results after the Hausman test ($\chi^2 = 18.34$, $p = 0.003$) confirmed fixed effects as the appropriate estimator. The model explains 68.3% of within-firm variation in current ratios (R^2 within = 0.683), with an overall F-statistic of 28.74 ($p < 0.001$) confirming model significance.

Table 3: Fixed Effects Regression Results (Dependent Variable: Current Ratio)

Variable	Coefficient	Std. Error	t-statistic	p-value
ATM	0.082	0.031	2.65	0.009**
POS	0.147	0.042	3.50	0.001***
Web Pay	0.215	0.053	4.06	0.000***
Mobile Pay	0.318	0.067	4.75	0.000***
Constant	0.412	0.185	2.23	0.028*
Observations	90			
R ² (within)	0.683			
F-statistic	28.74			p<0.001

Source: Authors' computation using Stata 18

All four FinTech proxies exert statistically significant positive effects on the current ratio, fully supporting Hypothesis 1. Mobile Pay shows the strongest impact ($\beta=0.318$, $p<0.001$): a 1% increase in Mobile Pay transactions correlates with a 0.32-unit improvement in the current ratio. This dominance stems from Mobile Pay's unique characteristics in Nigeria - USSD-based payments (*737# codes) work without internet connectivity and settle instantly into insurer accounts, collapsing the cash conversion cycle more effectively than other channels (CBN, 2024). Web Pay ranks second ($\beta=0.215$, $p<0.001$), reflecting its integration with policy administration systems that automatically link payments to policy numbers. POS follows ($\beta=0.147$, $p<0.001$), benefiting from Nigeria's extensive agent banking network but suffering from occasional settlement delays when terminals lose connectivity. ATM shows the weakest effect ($\beta=0.082$, $p<0.01$), consistent with its minimal role in premium collection. ATMs are primarily associated to withdrawals rather than premium deposits.

4.4 Diagnostic Tests and Robustness

Diagnostic tests confirm model reliability. Variance inflation factors (VIF) averaged 2.1 (maximum 2.4), well below the 5.0 threshold, confirming absence of harmful multicollinearity (Hair et al., 2019). The Wooldridge test detected autocorrelation ($F=4.21$, $p=0.018$), prompting application of robust standard errors to ensure valid inference. Residual analysis confirmed approximate normality, satisfying regression assumptions.

A robustness check using random effects produced similar coefficient signs and significance levels but with smaller magnitudes, reinforcing confidence in the fixed effects estimates. Additionally, excluding the 2020 pandemic year (when liquidity patterns were distorted by lockdowns) did not alter the direction or significance of FinTech coefficients, confirming result stability across normal operating conditions.

4.5 Discussion of Findings

The results show that FinTech adoption proxies especially Mobile Pay and Web Pay transactions have strong positive effects on liquidity (current ratio) in Nigerian insurance firms. From the regression analysis, the first hypothesis showed that ATM transaction volume has a significant effect on the liquidity of insurance firms in Nigeria. Some studies like that of Lokoyo et al. (2022), Gomber et al. (2017) and (Kiio, 2014) find that transaction channels

like ATMs influence the liquidity dynamics of financial intermediaries because they change cash flows and payment behaviours. Other research suggests that ATM usage might not be significant in more digitally advanced segments or might even be insignificant in explaining liquidity changes. For instance, studies of FinTech impact on insurance assets found non-significant relationships between ATM usage and firm assets (which are closely linked to liquidity capacity). Chijuka & Iyawe (2025) did not agree with this study because their findings reveal that ATM and POS transactions have a negative impact on bank liquidity.

The second hypothesis revealed that POS transaction volume has a significant effect on the liquidity of insurance firms in Nigeria. POS transactions expand digital cash flow circulation efficiently and have been associated with increased deposit base and transactional volume in banks, which supports general financial system liquidity - this effect can indirectly benefit insurance firms' ability to mobilize and manage funds. This is supported by the study of Marshal Iwedi (2024). However, the study of Chijuka & Iyawe (2025) reveals that POS transactions have a negative impact on bank liquidity. POS transactions can have an insignificant or even negative effect on liquidity because quick settlement obligations require insurers or banks to maintain higher liquid reserves, thus not improving liquidity ratios materially in the short term.

The third hypothesis showed that web pay transaction volume has a significant effect on the liquidity of insurance firms in Nigeria. Web-based transactions (internet payments) have been linked to expanded financial services usage and greater transactional fluidity, which in banking research correlates with improved liquidity metrics when transactions are efficiently cleared. This is supported by Okoro, et al. (2023). Some studies like Nwude et al., 2018; Ozili, 2018 find that Web payments have an insignificant effect on liquidity particularly where infrastructure or adoption rates are uneven, leading to delays in fund settlement that do not immediately improve liquidity.

Mobile Pay transaction volume as the fourth hypothesis has a significant effect on the liquidity of insurance firms in Nigeria. Mobile payments have a consistent positive and significant relationship with financial performance and institutional liquidity in the financial sector. Studies show mobile transactions can enhance liquidity by speeding up inflows and broadening the client base, especially in mobile-centric economies it was supported by and Chijuka & Iyawe (2025), Okoro, et al. (2023) and Adeola & Evans (2021). However, not all research agrees. Kiio (2014) found weak or negative effects of digital adoption on profitability in insurance due to high technology costs, suggesting that digital tools do not always yield short-term financial gains.

From the findings, differences in ATM, POS, Web Pay, and Mobile Pay transactions can affect the liquidity of insurance firms differently across sectors and countries because payment infrastructure, customer behavior, and financial system development vary widely. In more developed financial markets, high adoption of web and mobile payments accelerates premium collection and claim settlements, improving cash flow predictability and enhancing insurers' short-term liquidity. In contrast, in less developed or cash-dependent economies, greater reliance on ATMs and POS transactions may slow fund transfers, increase transaction costs, and create delays in premium inflows, thereby weakening liquidity positions. Sectoral differences also matter because life insurance firms often receive long-term, scheduled

premiums that align better with digital payment systems, while non-life insurers depend on more irregular and sometimes cash-based payments, making their liquidity more sensitive to payment channel inefficiencies. Overall, the variation in digital payment adoption, regulatory environments, banking infrastructure, and consumer trust across countries explains why the impact of ATM, POS, Web Pay, and Mobile Pay transactions on insurance liquidity is not uniform but context-dependent, with stronger liquidity effects generally observed in more digitally advanced economies.

5.0 Conclusion and Recommendations

5.1 Conclusion

This study examined the effect of FinTech adoption on the liquidity of Nigerian insurance firms, focusing on ATM, POS, Web Pay, and Mobile Pay transactions as proxies for digital adoption, and the current ratio as the measure of liquidity. The results indicate a positive and significant relationship between all FinTech proxies and liquidity, with Mobile Pay and Web Pay exhibiting the strongest effects. These findings are consistent with the Technology Acceptance Model (TAM) and Diffusion of Innovation theory, which explain that technologies perceived as useful and widely adopted lead to improved operational efficiency and financial outcomes (Davis, 1989; Rogers, 2003). Practically, the study highlights that insurers leveraging electronic payment channels can significantly improve cash inflows, shorten cash conversion cycles, and strengthen working capital. The strong influence of Web Pay and Mobile Pay reflects evolving consumer behavior in Nigeria, where online and mobile platforms are increasingly preferred over traditional channels. Conversely, ATM and POS transactions had smaller effects, consistent with lower usage rates and slower adoption in insurance premium collections. These findings align with prior studies in banking and insurance (Adeola & Evans, 2021; Nwude et al., 2018), while partially contradicting research that suggests high initial FinTech costs can reduce short-term financial gains (Kiio, 2014).

The study contributes to both theory and practice by demonstrating how FinTech adoption can serve as a strategic tool for liquidity management, enhancing solvency and financial resilience in emerging markets. It also provides evidence supporting regulatory emphasis on digital adoption as a mechanism to strengthen industry stability.

5.2 Recommendations

The following are recommended:

1. For ATM-based transactions, insurers should deepen integration with banking networks by ensuring real-time premium collection settlement systems with partner banks, enabling instant confirmation of payments and reducing delays in fund reconciliation.
2. For POS transactions, firms should expand partnerships with retail agents and bancassurance outlets, ensuring that POS terminals are fully integrated into insurance billing systems. Strengthening agent training, improving transaction verification protocols, and deploying cloud-based reconciliation systems can reduce leakage, enhance premium collection efficiency, and support steady liquidity inflows.
3. For web pay systems, insurers need to prioritize secure and scalable online payment gateways embedded in their websites and customer portals. Investment in

cybersecurity infrastructure, real-time payment processing, and user-friendly digital interfaces will encourage higher customer adoption, reduce transaction friction, and ensure faster premium settlement, thereby improving liquidity stability.

4. For mobile pay channels, which are increasingly dominant in Nigeria's fintech ecosystem, insurance firms should integrate seamlessly with mobile money operators and fintech platforms such as USSD, mobile wallets, and banking apps. Prioritizing mobile-first architecture, SMS/USSD fallback systems for low-internet regions, and instant policy issuance upon payment will significantly enhance premium inflows and liquidity performance.

5.3 Further research

Future studies should explore the following:

1. Future research should consider conducting comparative studies across countries or regions to determine whether the observed positive relationship holds in economies with different levels of financial technology development, regulatory frameworks, and digital payment penetration. Such comparative analysis would help to establish whether the Nigerian experience is unique or part of a broader global pattern.
2. future studies should employ longer panel data periods to capture dynamic changes over time and provide stronger evidence on the long-term effects of electronic payment channels on insurance liquidity. A more extended timeframe would also help account for structural shifts such as financial inclusion policies, fintech expansion, and macroeconomic fluctuations.
3. researchers should include unlisted insurance firms in the sample. This would improve the generalizability of findings, as listed firms may benefit from better access to technology, stricter regulatory oversight, and higher financial transparency compared to their unlisted counterparts. Including both listed and unlisted insurers would provide a more comprehensive understanding of how payment technologies influence liquidity across the entire insurance sector in Nigeria.

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