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DIGITAL FINANCIAL INCLUSION, FINANCIAL LITERACY, AND SOCIOECONOMIC DETERMINANTS OF SUSCEPTIBILITY TO PONZI SCHEME INVESTMENT FRAUD

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Abstract

This study examined the relationships between digital financial inclusion, financial literacy, socioeconomic factors and susceptibility to Ponzi scheme investment fraud in Nigeria. It adopted a quantitative cross-sectional survey design and employed Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS to analyse the study variables. The findings revealed that digital financial inclusion and socioeconomic vulnerability had positive and significant relationships with susceptibility to Ponzi scheme fraud, while financial literacy had a negative and significant relationship. The study concludes that increased access to digital financial services may expose users to fraudulent investment opportunities, whereas financial literacy may strengthen their ability to recognise and avoid such schemes. Socioeconomic vulnerability may further increase susceptibility by making individuals more attracted to promises of unusually high returns. The study recommends stronger digital consumer protection, improved financial literacy programmes and interventions addressing socioeconomic vulnerability to reduce susceptibility to Ponzi scheme investment fraud in Nigeria.

Keywords: Digital Financial Inclusion, Financial Literacy, Socioeconomic Vulnerability, Ponzi Scheme Fraud

1. Introduction

The expansion of digital financial services has significantly transformed how individuals access, use and manage financial products. Digital financial inclusion, which refers to the availability and use of formal financial services through digital channels such as mobile banking, internet banking, fintech applications and electronic payment platforms, has reduced traditional barriers to financial access, including geographical distance, transaction costs and limited banking infrastructure. In Nigeria, the growing adoption of mobile banking applications, financial technology platforms and electronic payment systems has created opportunities for individuals to participate more actively in the formal financial system. These developments have facilitated payments, savings, money transfers and investment activities, thereby broadening financial participation. Demirgüç-Kunt et al. (2018) highlight the growing contribution of digital technology to financial inclusion, while Ozili (2021) explains the importance of financial innovation in expanding access to financial services. Similarly, Gomber et al. (2018) observe that financial technology is transforming the delivery and use of financial products. However, increased access to digital financial services does not necessarily guarantee safe financial participation. The growing use of digital platforms may also expose individuals to misleading investment advertisements, impersonation, unregistered investment operators and fraudulent financial offers, particularly where financial awareness and consumer protection mechanisms are inadequate.

One major concern associated with investment activities in the digital financial environment is susceptibility to Ponzi scheme fraud. A Ponzi scheme is a fraudulent investment arrangement in which returns paid to existing investors are financed from contributions made by new participants rather than from legitimate investment earnings. The survival of such schemes depends on attracting a continuous flow of new investors, often through promises of unusually high returns with little or no apparent risk. Operators may use persuasive advertisements, testimonials, social

networks and digital communication channels to create an impression of credibility and attract potential participants. Recommendations from friends, relatives, colleagues and other trusted individuals may further encourage participation, even when the investment arrangement lacks legitimate business activities. Lewis (2012) explains that trust, investor behaviour and the appeal of promised returns contribute to the success of Ponzi schemes. In Nigeria, the Securities and Exchange Commission (SEC, 2023) has warned investors about fraudulent investment arrangements, particularly those characterised by unrealistic returns and the payment of earlier investors using funds obtained from new participants. These developments highlight the importance of understanding the factors that influence individuals' decisions to participate in suspicious investment opportunities, especially as digital platforms make the promotion and circulation of such schemes easier.

Financial literacy is an important consideration in understanding individuals' susceptibility to Ponzi scheme investment fraud. It refers to the knowledge and ability required to make informed financial decisions, including understanding financial products, evaluating investment risks and assessing expected returns. Individuals with adequate financial knowledge are generally better positioned to understand concepts such as interest, inflation, risk diversification and the relationship between risk and return. Lusardi and Mitchell (2014) emphasise the importance of financial literacy in improving economic decision-making and household financial well-being. Similarly, van Rooij et al. (2011) establish that financial literacy is associated with participation in financial markets, while Klapper et al. (2013) demonstrate its relevance to financial behaviour and household financial decisions. Hastings et al. (2013) also highlight the contribution of financial knowledge and education to economic outcomes. In the context of investment fraud, these capabilities may help individuals question unrealistic profit promises, examine investment information and verify the credibility of financial providers before committing their resources. Nevertheless, financial literacy alone may not completely eliminate susceptibility to fraudulent investment schemes. Individuals with financial knowledge may still be influenced by trust, social pressure, attractive financial promises and personal economic circumstances. It is therefore important to examine financial literacy alongside other factors that may shape investment decisions.

Socioeconomic circumstances may also influence individuals' responses to investment opportunities and their exposure to fraudulent financial arrangements. Factors such as income, employment status, educational attainment and financial obligations can shape investment decisions, particularly among individuals experiencing financial uncertainty or limited economic resources. Financial pressure and income insecurity may increase the attraction of investment opportunities promising quick and substantial returns, although economic hardship does not automatically make an individual susceptible to fraud. Social relationships may also influence investment decisions, as individuals often rely on recommendations from friends, relatives, colleagues and other trusted contacts when evaluating financial opportunities. Such relationships can create confidence in investment arrangements without necessarily providing evidence of their legitimacy. Holtfreter et al. (2008) identify individual behavioural characteristics and routine activities as relevant factors in understanding fraud victimisation, while Lewis (2012) highlights the importance of trust and investor behaviour in the success of Ponzi schemes. These perspectives suggest that susceptibility to investment fraud cannot be explained solely by access to digital financial services or the level of financial knowledge. Rather, individuals' economic circumstances, behavioural characteristics and social interactions may also contribute to how they assess and respond to fraudulent investment opportunities.

The relationship between digital financial inclusion, financial literacy and socioeconomic circumstances therefore provides an important basis for understanding susceptibility to Ponzi scheme investment fraud. Digital financial inclusion expands access to financial products

and investment opportunities, but it may also increase exposure to fraudulent investment promotions through online platforms. Financial literacy influences individuals' ability to evaluate investment information, understand financial risks and distinguish legitimate opportunities from suspicious offers, while socioeconomic circumstances may shape their motivations, expectations and financial decisions. These factors may interact to produce different levels of susceptibility among users of digital financial services. For instance, individuals who frequently encounter online investment promotions, have limited knowledge of investment risks and experience significant financial pressure may find promises of unusually high returns attractive. However, digital financial inclusion should not itself be regarded as evidence of susceptibility to fraud, since the potential risks also depend on how individuals assess investment information, verify financial providers and respond to financial incentives. This makes it necessary to examine digital financial inclusion together with financial literacy and socioeconomic factors rather than treating them as unrelated influences.

Despite the expansion of digital financial services and the growing concern about fraudulent investment arrangements, there remains a need for a clearer understanding of the factors associated with individuals' susceptibility to Ponzi scheme fraud in Nigeria. Existing studies have provided useful insights into digital financial inclusion, financial literacy, investment behaviour and fraud victimisation, but these issues have often been examined separately. Consequently, there is limited empirical understanding of how digital financial inclusion, financial literacy and socioeconomic factors jointly relate to susceptibility to Ponzi scheme investment fraud. This gap is important because interventions that focus exclusively on expanding digital financial access or promoting general financial awareness may not adequately address the economic and behavioural circumstances that influence investment decisions. Examining these factors together can provide a broader understanding of why some users of digital financial services may be more susceptible to fraudulent investment opportunities than others. Against this background, the study examines the relationship between digital financial inclusion, financial literacy, socioeconomic factors and susceptibility to Ponzi scheme investment fraud in Nigeria. It specifically investigates whether digital financial inclusion is associated with greater susceptibility, whether financial literacy offers a protective influence and whether socioeconomic circumstances contribute to individuals' vulnerability to fraudulent investment arrangements.

2. Literature Review

Digital financial inclusion has received considerable research attention because of its contribution to access to financial services. Using the Global Findex Database, Demirgüç-Kunt et al. (2018) documented the expansion of account ownership and digital payments across economies. Ozili (2021) identified digital finance as an important driver of financial inclusion, while Gomber et al. (2018) examined its transformation of financial service delivery. Bongomin and Ntayi (2020) highlighted the importance of digital consumer protection in mobile money adoption and usage among enterprises in northern Uganda. Similarly, Holtfreter et al. (2008), using survey data from 922 adults in Florida, found that remote purchasing activities were associated with increased fraud exposure. These studies suggest that digital financial services expand access but may also create opportunities for financial fraud.

Financial literacy influences individuals' ability to understand financial products, evaluate investment risks and make informed decisions. Lusardi and Mitchell (2014) established its importance in saving, borrowing and investment decisions, while van Rooij et al. (2011) found a positive association between financial literacy and stock market participation. Fernandes et al. (2014), through a meta-analysis, examined the relationship between financial education and subsequent financial behaviour. More directly, Mao and Liu (2023) investigated financial fraud victimisation among older adults in China and highlighted the relevance of financial literacy and

financial attitudes. Their findings suggest that financial knowledge, although important, does not independently explain vulnerability to fraud.

Socioeconomic characteristics also influence exposure and vulnerability to financial fraud. Fan and Yu (2022), examining consumer financial fraud in China, found that age, income, debt, education and residential location had different associations with fraud exposure and actual victimisation. Mao and Liu (2023) further identified household financial assets, education and residential status as relevant factors in financial fraud victimisation, partly through financial literacy and financial attitudes. Similarly, Zhang and Ye (2022), analysing online fraud victimisation among 1,027 individuals in China, identified impulsiveness, trust tendency, negative life experiences and social support as relevant factors. These studies demonstrate that financial fraud vulnerability involves economic, behavioural and social circumstances.

Ponzi schemes are investment frauds in which returns to earlier investors are paid from funds contributed by new participants rather than genuine investment profits. Lewis (2012), examining three Ponzi schemes, identified trust, gullibility and weaknesses in financial oversight as factors contributing to their success. Gurun et al. (2018), investigating the Madoff Ponzi scheme, found that communities exposed to the fraud subsequently withdrew funds from investment advisers and increased bank deposits. This demonstrates that Ponzi schemes can influence investment behaviour beyond their direct victims.

Existing studies establish the relevance of digital financial access, financial literacy and socioeconomic characteristics to financial behaviour and fraud vulnerability. However, these factors have largely been examined separately, with much of the fraud literature focusing on general consumer or online fraud rather than susceptibility to Ponzi scheme investment fraud. This creates a research gap concerning how digital financial inclusion, financial literacy and socioeconomic factors jointly relate to Ponzi scheme susceptibility. The present study addresses this gap by examining these relationships among users of digital financial services in Nigeria.

The study is anchored on three complementary perspectives: Behavioural Finance Theory, the Human Capital Perspective of Financial Literacy and Routine Activity Theory. Together, they explain how psychological influences, financial knowledge and exposure to digital financial environments may shape susceptibility to Ponzi scheme investment fraud.

Behavioural Finance Theory explains how psychological biases, emotions and social pressures influence financial decisions, particularly under uncertainty. Barberis and Thaler (2003) argued that individuals do not always make rational financial decisions because of cognitive biases such as overconfidence, herd behaviour and loss aversion. In this study, these biases may encourage users of digital financial platforms to pursue unusually high returns, follow investment recommendations from trusted contacts or participate in schemes without adequate verification.

The Human Capital Perspective explains financial literacy as an investment in knowledge that improves individuals' ability to understand financial products, evaluate risks and make informed decisions. Lusardi and Mitchell (2014) emphasised the contribution of financial knowledge to better economic decision-making and financial wellbeing. This perspective suggests that financially knowledgeable individuals may be better equipped to assess investment opportunities, understand risk-return relationships and recognise unrealistic financial promises. It therefore provides a basis for examining financial literacy as a factor associated with susceptibility to Ponzi scheme fraud.

Routine Activity Theory, developed by Cohen and Felson (1979), explains crime through the convergence of a motivated offender, a suitable target and the absence of capable guardianship. In this study, digital

financial inclusion may expose individuals to fraudulent investment operators through online financial platforms. Inadequate verification practices and weak consumer protection may reduce effective guardianship, while socioeconomic circumstances may increase individuals' vulnerability. The theory therefore explains how digital exposure, target suitability and inadequate protection may contribute to susceptibility to Ponzi scheme fraud.

Collectively, these perspectives provide a theoretical basis for the study. Behavioural Finance Theory explains psychological and social influences on investment decisions, the Human Capital Perspective highlights the role of financial knowledge, while Routine Activity Theory explains the opportunities for fraud created by digital exposure and inadequate protection. Their combined application supports the examination of susceptibility to Ponzi scheme investment fraud among users of digital financial services in Nigeria.

3. Methodology

The study adopted a quantitative research design using a cross-sectional survey approach to examine the relationships between digital financial inclusion, financial literacy, socioeconomic factors and susceptibility to Ponzi scheme investment fraud. The design enabled the collection of numerical data from respondents at a single point in time and the application of statistical techniques to examine the proposed relationships. An explanatory approach was also adopted to establish how the selected independent variables were statistically associated with susceptibility to Ponzi scheme investment fraud. This approach was considered appropriate because the study sought to measure the variables systematically and test the hypothesised relationships without requiring repeated observations (Creswell & Creswell, 2018; Saunders et al., 2019). However, given the cross-sectional nature of the data, the findings were interpreted as statistical relationships rather than definitive evidence of causation.

The population of the study comprised adults in Nigeria who actively used digital financial services, particularly mobile banking applications, fintech platforms and online investment channels. These included individuals who used digital platforms for payments, money transfers, savings and investment activities. The population was considered appropriate because users of digital financial services were exposed to both the opportunities and potential risks associated with digital financial transactions. It covered individuals with different socioeconomic characteristics, including age, gender, educational attainment, income and employment status. Participation was restricted to adults with experience using digital financial services to ensure that respondents could provide relevant information on digital financial inclusion and susceptibility to Ponzi scheme investment fraud (Demirgüç-Kunt et al., 2018; Ozili, 2021). The sample size was determined using Cochran's (1977) formula for large or unknown populations, since the exact population of active digital financial service users in Nigeria was not readily available. The formula is expressed as:

$$n_0 = \frac{Z^2 p(1-p)}{e^2}$$

Where:

n_0 = required sample size

Z = standard normal deviation at 95% confidence level (1.96)

p = estimated population proportion (0.5)

1- p = 0.5

e = acceptable margin of error (0.05)

Substituting the values:

$$n_0 = \frac{(1.96)^2\ (0.5)(1-0{,}5)}{(0.05)^2}$$

$$n_0 = \frac{(1.96)^2\ (0.5)(0{,}5)}{(0.05)^2}$$

$$n_0 = \frac{3.8416\ X\ 0{,}25}{0.0025}$$

$$n_0 = \frac{0.9604}{0.0025}$$

$$n_0 = 384.16$$

The calculated sample size was approximately 384.16, which was rounded up to 385 respondents. This represented the minimum target sample based on a 95% confidence level, 5% margin of error and 50% assumed population proportion (Cochran, 1977). The study employed a multistage sampling approach, incorporating purposive selection of individuals who actively used digital financial services. This ensured that participants possessed relevant experience to provide informed responses on digital financial inclusion, financial literacy, socioeconomic circumstances and susceptibility to Ponzi scheme investment fraud.

The study relied on primary data collected directly from active users of digital financial services in Nigeria through a structured questionnaire developed in line with the research objectives and variables. The questionnaire comprised sections covering respondents' demographic characteristics, digital financial inclusion, financial literacy, socioeconomic factors and susceptibility to Ponzi scheme investment fraud. The measurement items were presented on a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5), to capture respondents' views on the study constructs. Before the main data collection, the questionnaire was pre-tested to assess the clarity, relevance and suitability of the measurement items. Feedback from the pre-test was used to identify ambiguous statements and improve the instrument before its final administration. The use of structured questionnaires was consistent with established procedures for quantitative survey research (Creswell & Creswell, 2018; Saunders et al., 2019).

The data were analysed using descriptive and inferential statistical techniques. Descriptive statistics, including frequencies, percentages, means and standard deviations, were used to summarise respondents' demographic characteristics and responses to the study variables. Inferential analysis was conducted using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS software. This technique was considered appropriate because the study involved latent constructs and sought to explain and predict susceptibility to Ponzi scheme investment fraud (Hair et al., 2021; Hair & Alamer, 2022). The structural model was specified as follows:

$$SUS = \beta_0 + \beta_1 DFI + \beta_2 FL + \beta_3 SEF + \varepsilon \quad (1)$$

Where:

SUS = Susceptibility to Ponzi scheme investment fraud
DFI = Digital financial inclusion
FL = Financial literacy
SEF = Socioeconomic factors
β_0 = Intercept
β_1, β_2, β_3 = Path coefficients
ε = Error term

The model provided the basis for examining the hypothesised relationships between the three explanatory variables and susceptibility to Ponzi scheme investment fraud.

The PLS-SEM analysis was conducted in two main stages: measurement model assessment and structural model assessment. The measurement model was evaluated to establish the reliability and validity of the study constructs. Indicator reliability was assessed using outer loadings, while internal consistency reliability was examined using Cronbach's alpha, composite reliability and rho_A. Convergent validity was assessed using the Average Variance Extracted (AVE), with a recommended minimum threshold of 0.50. Discriminant validity was examined using the Heterotrait-Monotrait Ratio (HTMT) to establish whether the constructs were empirically distinct. These procedures followed established PLS-SEM guidelines (Hair et al., 2021; Henseler et al., 2015).

The structural model was assessed to determine the direction, magnitude and statistical significance of the relationships among the study variables. Path coefficients were examined to evaluate the hypothesised relationships, while the coefficient of determination R^2 was used to assess the explanatory power of the model. Effect size f^2 was examined to

determine the contribution of each predictor to the endogenous construct. Predictive relevance was assessed using Q^2, while out-of-sample predictive performance was examined using PLSpredict (Shmueli et al., 2019). Furthermore, bootstrapping was employed to determine the statistical significance of the estimated path coefficients. The procedure generated standard errors, t-statistics, p-values and confidence intervals for hypothesis testing. A 5% significance level was adopted, such that relationships with p-values below 0.05 were considered statistically significant. These procedures were consistent with established recommendations for PLS-SEM analysis (Hair et al., 2021; Hair & Alamer, 2022).

4. Results Discussion

This section presents the results of the analysis of digital financial inclusion (DFI), financial literacy (FL), socioeconomic factors (SEF) and susceptibility to Ponzi scheme fraud (PSF). The analysis covers descriptive statistics, measurement model assessment and structural model assessment. The descriptive statistics provide an overview of respondents' responses to the study constructs. The results are presented in Table 1:

Table 1: Summary of Descriptive Statistics of Study Constructs

Constructs	Mean	Std. Deviation
Digital Financial Inclusion	3.84	0.76
Financial Literacy	3.21	0.89
Socioeconomic Factors	3.47	0.83
Susceptibility to Ponzi Scheme Fraud	3.18	0.91

Source: Results of Analysis (2026).

Digital financial inclusion recorded the highest mean score of 3.84, indicating relatively high engagement with digital financial services among respondents. Socioeconomic factors recorded a mean of 3.47, followed by financial literacy at 3.21, while susceptibility to Ponzi scheme fraud recorded 3.18. These results provide an overview of the study constructs but do not independently establish relationships among them.

The measurement model was assessed to establish the reliability and validity of the constructs. Internal consistency reliability was examined using Cronbach's alpha, rho_A and composite reliability (CR), while convergent validity was assessed using the Average Variance Extracted (AVE). The results are presented in Table 2.

Table 2: Reliability and Convergent Validity Results

Construct	Cronbach's Alpha	rho_A	CR	AVE
DFI	0.874	0.881	0.910	0.669
FL	0.852	0.859	0.895	0.630
SEF	0.831	0.838	0.887	0.662
PSF	0.891	0.898	0.918	0.690

Source: Results of Analysis (2026).

All constructs achieved satisfactory reliability, with Cronbach's alpha values ranging from 0.831 to 0.891 and composite reliability values ranging from 0.887 to 0.918. The rho_A values also exceeded the recommended threshold of 0.70. Furthermore, AVE values ranged from 0.630 to 0.690, exceeding the minimum threshold of 0.50. These results indicate satisfactory internal consistency and convergent validity (Hair et al., 2021). Discriminant validity was

assessed using the Heterotrait-Monotrait Ratio (HTMT). Values below 0.85 indicate satisfactory discriminant validity under the conservative criterion (Henseler et al., 2015). The results are presented in Table 3.

Table 3: Heterotrait-Monotrait Ratio (HTMT)

Constructs	DFI	FL	SEF	PSF
DFI	—			
FL	0.624	—		
SEF	0.583	0.617	—	
PSF	0.716	0.681	0.654	—

Source: Results of Analysis (2026).

All HTMT values were below 0.85, with the highest value being 0.716 between digital financial inclusion and susceptibility to Ponzi scheme fraud. This indicates that the constructs were sufficiently distinct, providing evidence of discriminant validity. Following the measurement model assessment, the structural model was evaluated to examine the explanatory and predictive performance of the model. Collinearity was first assessed using the Variance Inflation Factor (VIF), with values below 3.0 indicating no serious collinearity concerns (Hair et al., 2021). The results are presented in Table 4.

Table 4: Collinearity Assessment

Explanatory Constructs	VIF
Digital Financial Inclusion	1.684
Financial Literacy	1.572
Socioeconomic Factors	1.493

Source: Results of Analysis (2026).

The VIF values ranged from 1.493 to 1.684, indicating that multicollinearity was not a concern. The explanatory constructs were therefore considered suitable for inclusion in the structural model.

The explanatory power of the model was examined using the coefficient of determination (R^2). The results are presented in Table 5.

Table 5: Coefficient of Determination

Endogenous Construct	R^2	Adjusted R^2
Susceptibility to Ponzi Scheme Fraud	0.420	0.416

Source: Results of Analysis (2026).

The R^2 value of 0.420 indicates that digital financial inclusion, financial literacy and socioeconomic factors jointly explained 42.0% of the variation in susceptibility to Ponzi scheme fraud. The adjusted R^2 of 0.416 indicates that the model retained approximately 41.6% explanatory power after accounting for the explanatory constructs. The remaining variation may be attributable to factors not included in the model, such as psychological biases, social influence, trust in investment promoters and regulatory awareness. The individual contribution of each explanatory construct was assessed using the effect size (f^2). Following Cohen (1988), values of 0.02, 0.15 and 0.35 represent small, medium and large effects, respectively.

Table 6: Effect Size Results

Explanatory Constructs	f^2	Effect
Digital Financial Inclusion	0.185	Medium
Financial Literacy	0.142	Small
Socioeconomic Factors	0.096	Small

Source: Results of Analysis (2026).

Digital financial inclusion recorded the highest effect size of 0.185, indicating a medium contribution to explaining susceptibility to Ponzi scheme fraud. Financial literacy and socioeconomic factors recorded 0.142 and 0.096, respectively, indicating small effects. This suggests that digital financial inclusion made the largest individual contribution to the explanatory power of the model. The predictive relevance of the model was assessed using the Stone-Geisser Q^2 criterion. A value greater than zero indicates predictive relevance (Stone, 1974; Geisser, 1974).

Table 7: Predictive Relevance

Endogenous Construct	Q^2
Susceptibility to Ponzi Scheme Fraud	0.268

Source: Results of Analysis (2026).

The Q^2 value of 0.268 indicates that the model demonstrated predictive relevance for susceptibility to Ponzi scheme fraud. This suggests that the explanatory constructs provided useful predictive information regarding the dependent construct. Overall, the results of the measurement and structural model assessments indicate satisfactory reliability, validity, absence of problematic collinearity, explanatory power and predictive relevance. The model explained 42.0% of the variation in susceptibility to Ponzi scheme fraud, with digital financial inclusion making the largest individual contribution based on the reported effect sizes.

Table 8: Structural Model Path Coefficients and Hypothesis Testing

Hypothesised Relationships	β	Std. Error	t-statistic	p-value	Decision
DFI → PSF (H_1)	0.362	0.061	5.934	<0.001	Supported
FL → PSF (H_2)	-0.284	0.058	4.897	<0.001	Supported
SEF → PSF (H_3)	0.196	0.063	3.111	0.002	Supported

Source: *Results of Analysis (2026).*

The results revealed that digital financial inclusion had a positive and statistically significant relationship with susceptibility to Ponzi scheme fraud ($\beta = 0.362$, $t = 5.934$, $p < 0.001$). This indicates that greater engagement with digital financial services was associated with increased susceptibility to fraudulent investment schemes. Although digital platforms improve access to financial services and investment opportunities, they may also expose users to fraudulent activities, particularly where adequate financial knowledge and risk awareness are lacking. This finding is consistent with Demirgüç-Kunt et al. (2018) and Ozili (2021), who highlighted the importance of consumer protection alongside the expansion of financial inclusion. Therefore, H_1 was supported.

Financial literacy exhibited a negative and statistically significant relationship with susceptibility to Ponzi scheme fraud ($\beta = -0.284$, $t = 4.897$, $p < 0.001$). This suggests that individuals with higher financial literacy

were less susceptible to fraudulent investment schemes. Financial knowledge can improve individuals' ability to evaluate investment risks, understand financial products and identify unrealistic returns. This finding supports Lusardi and Mitchell (2014), who emphasised the importance of financial literacy in informed financial decision-making. It is also consistent with Klapper et al. (2013), who highlighted the role of financial literacy in strengthening individuals' financial capabilities. Thus, H_2 was supported.

Similarly, socioeconomic vulnerability had a positive and statistically significant relationship with susceptibility to Ponzi scheme fraud ($\beta = 0.196$, $t = 3.111$, $p = 0.002$). This indicates that higher scores on the socioeconomic factor construct were associated with increased susceptibility. This interpretation assumes that higher scores represent financial pressure, income insecurity and economic disadvantage. Individuals experiencing such conditions may be more attracted to investment schemes promising unusually high returns as a means of improving their financial circumstances. The finding highlights the relevance of socioeconomic conditions in understanding vulnerability to financial exploitation. Therefore, H_3 was supported.

Overall, the findings demonstrate that digital financial inclusion and socioeconomic vulnerability were positively associated with susceptibility to Ponzi scheme fraud, while financial literacy had a protective relationship. This suggests that susceptibility is associated with financial access, knowledge and economic circumstances. Consequently, efforts to prevent Ponzi scheme fraud should extend beyond expanding digital financial access to include financial literacy programmes, stronger consumer protection and interventions that address socioeconomic vulnerability.

5.2 Conclusion and Recommendations

The study established that digital financial inclusion, financial literacy and socioeconomic vulnerability were important factors associated with susceptibility to Ponzi scheme investment fraud in Nigeria. Although digital financial inclusion improves access to financial services and investment opportunities, increased participation in digital financial activities may also expose individuals to fraudulent schemes, particularly where adequate consumer awareness and protection are lacking. The negative relationship between financial literacy and susceptibility highlights the importance of financial knowledge in helping individuals evaluate investment opportunities, understand financial risks and recognise unrealistic returns. Similarly, the positive relationship between socioeconomic vulnerability and susceptibility suggests that financial pressure and income insecurity may make individuals more receptive to investment schemes promising unusually high returns.

The study therefore concludes that addressing Ponzi scheme fraud requires more than expanding access to digital financial services. It also requires stronger consumer protection, improved financial literacy and measures that reduce economic vulnerability. In view of these findings, the Securities and Exchange Commission (SEC), Central Bank of Nigeria (CBN) and other relevant regulatory institutions should strengthen the monitoring of online investment activities. They should improve public access to information on licensed investment operators and provide effective channels for reporting suspected Ponzi schemes. Government agencies, financial institutions and educational institutions should also intensify financial literacy programmes to equip individuals with practical knowledge of investment risks, financial returns, diversification and the identification of fraudulent investment offers.

Furthermore, fintech companies, banks and digital payment service providers should integrate fraud-awareness messages and investment-risk warnings into their platforms. Users should receive clear information about the risks of dealing with unverified investment operators. Government and relevant development institutions should strengthen programmes that promote employment, entrepreneurship and sustainable income generation. Such interventions could reduce the financial pressures that make individuals more attracted

to unrealistic investment returns. Finally, regulatory agencies, law-enforcement institutions and the media should collaborate on sustained public enlightenment campaigns. These campaigns should explain common Ponzi scheme tactics, encourage verification of investment operators and provide clear procedures for reporting suspected fraud.

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