

FinTech and Financial Inclusion in Nigeria. The Mediating Role of Digital Financial Literacy

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Abstract

The study examined the determinants of FinTech usage, the relationship between FinTech adoption and financial inclusion; as well as the mediating effect of digital financial literacy on this relationship. The study, anchored on vulnerable group theory of financial inclusion, adopted the survey research design with a quantitative approach. Google Forms was used to create the structured survey tool, which was then sent to people via FinTech platforms. The snowball sampling technique was adopted due to lack of predetermined list of people utilising FinTech in Nigeria. SEM with AMOS was used to analyse the data. Findings of the study revealed that perceived security, usefulness, and confidence in FinTech platform have a significant positive effect on the level of usage of financial technology. Further, financial technology usage was found to have a significant positive effect on financial inclusion, while the mediating role of digital financial literacy is found to be positive and significant suggesting that increased knowledge about FinTech platforms improves the positive effect of financial technology adoption on financial inclusion. The study concludes that FinTech usage significantly influences financial inclusion in Nigeria.

Keywords: *FinTech, Financial Inclusion, Digital Financial Literacy*

1. Introduction

In many developing nations, financial exclusion is a serious problem. According to World Bank Report (2023), over two billion individuals do not have access to affordable, dependable, and safe financial services and are therefore unbanked. Ozili and Mhlanga (2024) highlighted the common causes of financial exclusion to include high transaction costs, financial illiteracy, structural inequality, irregular income, distances to banks, and regulatory frameworks that restrict the integration of the whole population into the formal financial sector. Financial inclusion, which has emerged as a major policy issue in many nations, is defined as the usage and accessibility of formal financial services by members of a society.

The emergence of financial technology, or FinTech, has made financial services far more accessible to all, particularly the underprivileged. A global movement has been launched to promote financial inclusion through the use of FinTech-enabled digital financial services (Rusliati et al., 2024). The enormous potential to increase financial inclusion through financial technology has been made clear by the growing popularity of transaction and payment services provided by technology. Although Nigeria presents itself as the largest country in Africa, with 24 commercial banks, 6 merchant banks, 887 microfinance banks, and 47 mobile money operators, the available EFINA Report (2023) indicates that about 36% of adult Nigerians are financially excluded from formal financial products and services. This suggests that the level of competition in the sector is high.

According to National Financial Inclusion Strategy (NFIS, 2020), financial inclusion is attained when adult Nigerians have access to reasonably priced financial services and products that suit their needs. These financial transactions include e-commerce, investments, insurance, savings, and payments. FinTech has also expanded into modelling lives, including the health sector to request medical services, the educational sector, and the purchase of taxi trips and airline tickets, to name a few. Margijoyo et al. (2024) claim that mobile network technology is driving financial inclusion and drawing more people into the financial system in emerging nations, where FinTech is improving the lives of consumers globally. It has altered the ways in which we send and receive money, borrow and lend money, locate and communicate with customers, obtain insurance, interact with clients, and communicate with banks.

The Central Bank of Nigeria implemented a cashless policy in 2012 with the goal of reducing the quantity of cash in circulation and promoting the use of electronic payments, which has historically been the driving force behind the recent development of FinTech in Nigeria. Furthermore, the COVID-19 pandemic compelled numerous enterprises to devise methods of connecting with their clientele in lieu of in-person interactions. With digital technology currently being the only option, transactions by proxy labour are possible.

However, additional difficulties have emerged as a result of the quick uptake of FinTech services. Risks that users must deal with include identity theft, privacy concerns, unregulated service providers, and security vulnerabilities. Digital financial literacy—which includes understanding FinTech products and how to handle them—becomes crucial in addressing these issues. In contrast to traditional financial literacy, digital financial literacy pertains to an individual's ability to utilise

financial products that are delivered digitally (Jangir et al., 2022; Nasir et al., 2023; Prete, 2022). Thus, whereas "digital financial literacy" refers to the use of technology to develop, assess, and acquire the cognitive and technical abilities necessary to use digital technology, financial literacy concentrates on knowledge itself and an individual's capacity to learn financial knowledge.

This study adds two important pieces to the management and finance literature, even though a number of studies (Alrawad et al. 2023; Amnas et al., 2024; Bajunaied et al. 2023; Kumar et al., 2024; Ozili & Mhlanga, 2024; Rusliati et al., 2024; Savitha et al. 2022; Shaikh et al. 2023) have focused on factors related to adoption of FinTech and how they affect financial inclusion. First of all, it offers proof that FinTech adoption by itself does not enhance financial inclusion in the context of developing economies like Nigeria. It contends that there is a complicated relationship between the uptake of FinTech and financial inclusion, one that may be impacted by variables other than the degree of technological acceptability.

Second, digital financial literacy, which has seldom been taken into account in prior empirical studies in the Nigerian setting, mediates the association between FinTech use and financial inclusion. The importance of digital financial literacy in today's increasingly digitalised society is emphasised by this study. It also provides useful suggestions for industry participants and regulators.

The remaining parts of the paper are organized as follows: section two provides the review of related literature, theoretical framework, and hypothesis development. Section three gives details of the empirical method adopted for the study and include the design and data, and model specification. Section four presents the data analysis and discussion of findings while the last section concludes the study.

2. Literature Review and Hypotheses Development

Financial Inclusion

Financial inclusion is an effort to provide access and financial services that are affordable, accessible, and in accordance with the needs of the community, especially those with low income. Lee et al. (2019) revealed that financial inclusion allows businesses to gain access to finance, increase productivity, and increase sales growth, which in turn can affect company performance. The World Bank defines financial inclusion as the availability and accessibility of financial services and products to all individuals and businesses, regardless of their income level, social status, or geographical location. Financial inclusion indicators include account ownership, borrowing from formal financial institutions, borrowing from friends and family, owning credit and debit cards, saving money in a formal financial institution, and owning an account.

Financial Technology (FinTech)

Financial technology is shortened to FinTech. It is an invention aimed at making innovation in the financial sector easier, more effective, and more efficient to carry out (Iwedi et al., 2023). Financial technology can be defined as innovation in the financial sector infused with contemporary technology, or as a fusion of technology and financial aspects. FinTech emerged in tandem with the fast-paced demands of modern living and the shifts in people's lifestyles, which are now dominated by information technology users (Otuya et al., 2022). FinTech can reduce issues with

purchasing, selling, and payments, such as not having enough time to browse for products at stores, having to go to banks or ATMs to transfer money, and being reluctant to visit a location due to bad service. Put another way, FinTech makes payments and buying and selling processes more effective while remaining inexpensive.

Determinants of FinTech Usage

Prior literature has enumerated a number of factors facilitating the adoption and usage of technology in financial services. These factors are economic, technological, psychological, cultural social driven. Adapting from studies by Kumar et al. (2024), Amnas et al. (2024), and Putri et al. (2023), we focus on three key determinants of FinTech usage bordering on how secured, trustworthy, and useful the technological innovations are in providing the needed financial services.

Security: How secured a platform, an app or mobile banking instrument is, constitutes one of the most paramount conditions for its usage. According to Amnas et al. (2024), perceived security refers to individuals' subjective assessment of the safety and protection associated with their financial data and transactions. As argued by George and Sunny (2023), the confidence that users have in FinTech platforms is directly influenced by their perception of security. High levels of perceived security of users contribute to greater reliability of FinTech platforms, which is necessary for FinTech use (Putri et al. 2023). Using FinTech services will be less risky for users if they are confident that their financial information is secure (Jangir et al. 2022). If users feel that their data are secure, they are more inclined to remain loyal to FinTech platforms (Zhang et al. 2023). Security is imperative in view of concerns about identity theft, data breaches, cyber-attacks, and unauthorized access which are the common challenges to the utilization of FinTech. On the relationship between security and level of adoption of FinTech, prior studies such as George and Sunny (2023), Amnas et al. (2024), and Putri et al. (2023) reported a positive and significant link.

Usefulness: In the context of FinTech, usefulness refers to the overall benefit or superiority of a service in meeting user's expectations. According to Amnas et al. (2024), the acceptance and continued use of FinTech platforms can be significantly impacted by users' perception of the utility derived from deploying such applications. The satisfaction derived from the usage of FinTech services determines the service quality which in turn influences users' experience of reliability, and efficiency. When the users believe FinTech services exceed their expectations in terms of quality, they are more likely to use them. Users evaluate the value they receive from FinTech, based on the level of utility of the services (Patnaik et al. 2023). Higher service usefulness contributes to a positive perception of value, which encourages them to keep using services. Studies such as (Amnas et al. 2024; Zhang et al. 2023) have reported a positive influence of usefulness on financial technology level of adoption.

Confidence: Confidence is a major factor to be considered in FinTech usage. Alrawad et al. (2023) define confidence, in the context of FinTech services, to denote the trust or assurance that users place in the safety, dependability, and ethical conduct of financial technology platforms. Roh et al. (2022) in a study found that confidence has a strong influence on individuals' willingness to utilize FinTech platforms. Another study by Amnas et al. (2024) also demonstrated that trust in platforms has a significant positive impact on financial technology adoption. Zhang et al. (2023) posit that confidence regarding the protection, privacy, and integrity of digital products is

heightened while users place trust in FinTech platforms. Against the backdrop of the above, we hypothesize as follows:

Hypothesis 1: *Security of FinTech platform has a significant positive impact on FinTech usage*

Hypothesis 2: *Usefulness of FinTech platform has a significant positive impact on FinTech usage*

Hypothesis 2: *Confidence in FinTech platform has a significant positive impact on FinTech usage*

FinTech, Digital Financial Literacy, and Financial Inclusion

Previous research studies indicate FinTech use, digital financial literacy, and financial inclusion have a complex relationship that is influenced by various factors. For instance, Kumar et al. (2024) in an Indian survey using SEM with AMOS found a positive influence of fintech on financial inclusion, and positive effect of digital financial literacy on acceptance of financial technology-based services. Amnas et al. (2024) exploring the potential of financial technology to promote financial inclusion also demonstrated that FinTech positively impacts financial inclusion, making it easier for individuals to get into formal financial services. Their study also showed that digital financial literacy emerged as an important mediator between FinTech use and financial inclusion. Ozili and Mhlanga (2024) found a unidirectional causality between interest in Fintech information and interest in financial inclusion information, while Iwedi et al. (2023) in another study found that an increase in the usage of financial technology (ATM, POS, WEB and mobile technology) causes more Nigerians to be financially included.

In addition, studies by Fitriani and Santi (2023), and Rusliati et al. (2024) indicate that financial technology has a positive and significant impact on financial inclusion, and that financial technology can offset the impact of financial literacy on financial inclusion. Margijoyo et al. (2024) results showed that there is a significant association between financial literacy and the use of financial technology on business performance and that financial inclusion can significantly mediate the effect of financial literacy and the use of financial technology on business performance. Against the backdrop of the above, we frame our fourth and fifth hypotheses thus:

Hypothesis 4: *FinTech usage has a significant positive impact on financial inclusion*

Hypothesis 5: *Digital financial literacy strengthens the positive impact of FinTech on financial inclusion.*

3. Methodology

Design and Data

The study used a quantitative technique and a survey research design. Users of FinTech services in Nigeria make up the research population. Google Forms was used to create the structured survey tool, which was then sent to people via FinTech platforms. Convenience sampling was utilised because there was little data on the demographic that utilised FinTech services. We used Google Forms to collect data using the snowball sampling technique because there was no predetermined list of people utilising FinTech. We then shared the link on Facebook, WhatsApp, and email. To get a large sample, the survey instrument was distributed widely among the initial respondents. Each assessment item was evaluated using a four-point Likert scale, with the values ranging from "strongly disagree" to "strongly agree." Two sections made up the questionnaire: the first collected

demographic information, and the second asked respondents about their thoughts on each of the variables in the research model. SEM with AMOS was used to analyse the data.

Theoretical Framework and Model Specification

This study is anchored on the vulnerable group theory of financial inclusion which was first postulated in Ozili (2024) and is one of the most relevant theories of financial inclusion. Vulnerability is defined as the quality of being vulnerable or showing openness or susceptibility to attack or harm. This study focusses predominantly on financial technology services and its determinants, and the extent to which they affect financial inclusion. Basically, applying the vulnerable group theory, it can be contended that since vulnerable people are frequently the ones who suffer the most from financial crises and economic downturns, it makes sense to include them in the formal financial system.

It is considered the most suitable for this study because the theory seeks to reduce the financial exclusion problem in society. It does so by targeting vulnerable people who are excluded from the formal financial sector or targeting vulnerable people who are at risk of financial exclusion. The theory argues that financial inclusion efforts should be directed at vulnerable groups in society so that vulnerable people will not be left behind in society.

Against the backdrop of the review above, the conceptual model for the study is described as follows:

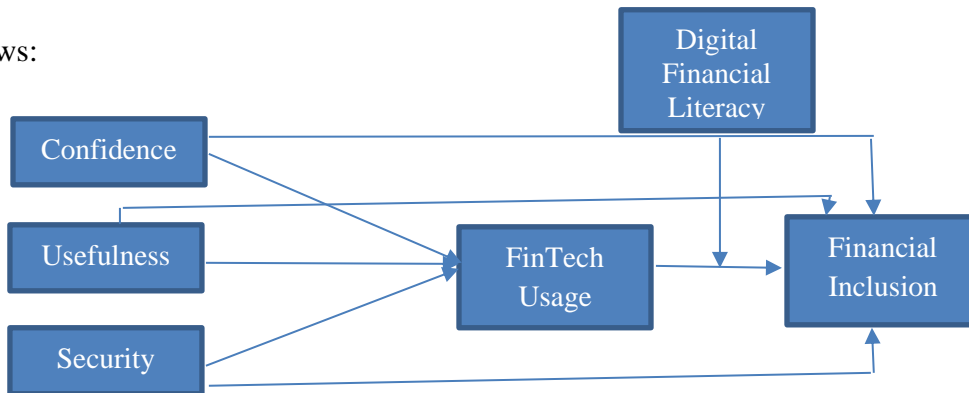


Figure 1: Conceptual Model for the Study

In view of the above framework, we express a functional relationship in two models as follows:

Model 1 expresses FinTech as a function of users' perceived security, usefulness, and confidence in FinTech platform which is given as:

$$\text{FinTech} = f(\text{Security, Usefulness, Confidence}) \text{----- (i)}$$

Articulating equation (i) in econometric method, equation (ii) is converted as:

$$\text{TEC} = \beta_0 + \beta_1\text{SEC} + \beta_2\text{USE} + \beta_3\text{CON} + \mu_{it} \text{----- (ii)}$$

In model 2, financial inclusion is expressed as a function of FinTech which is given as:

$$\text{INC} = f(\text{TEC}) \text{----- (iii)}$$

Further expressing equation (iii) in econometric form provides equation (iv) as:

$$\text{INC} = \beta_0 + \beta_1\text{TEC} + \mu \text{----- (iv)}$$

Considering the mediating effect of digital financial literacy on the relationship between FinTech use and financial inclusion, we improved equation (v) to replicate the interface of the variable of FinTech and Digital Financial Literacy as:

$$\text{INC} = \beta_0 + \beta_1\text{TEC} + \beta_2\text{TEC}*\text{DFL} + \mu \text{----- (v)}$$

Where: INC = Financial Inclusion; TEC = FinTech; DFL = Digital Financial Literacy; SEC = Security; USE = Usefulness; CON = Confidence; μ = Error term.

4. Estimation Results and Discussion of Findings

Data used for the study was collected for a six week period between March 2024 and May 2024. We received a total of 189 completed forms. 58 percent of the respondents were female, with 48 percent under 20 years of age. In terms of educational qualification, 53 percent of the respondents have at least secondary school leaving certificate. 67 percent of respondent were located in urban areas.

Data Analysis

In this section, the data generated from the responses elicited from the respondents are analysed, and the result is discussed subsequently.

Table 1: Responses on Security of FinTech Platform

No.	Item	Mean	SD	Decision
1	I believe that my personal and financial information is secure when using FinTech platforms.	3.0951	0.94906	Agree
2	I am confident that FinTech platforms promptly address and resolve any security vulnerabilities.	3.0180	1.00370	Agree
3	I have confidence in the effectiveness of the authentication methods employed by FinTech services to prevent unauthorized access.	3.4987	0.54501	Agree
4	I believe that FinTech companies implement sufficient measures to safeguard against fraud and cyber threats.	3.3933	0.73362	Agree
	Grand mean (\bar{x})	3.25		Agree

* The acceptance mean point for the items was 2.50, any mean (\bar{x}) that is 2.50 and above is agreed indicating a positive effect. Below 2.50 is disagreed which is regarded as a negative effect.

Source: Field Work (2024).

Table 1 above showed the distribution of the respondents based on their response to statements bordering on how security of FinTech platform influence FinTech usage. All of the respondents agreed and were positive with grand mean of 3.25 which further validates that security of FinTech platform influences financial technology usage.

Table 2: Responses on Users' Perceived Usefulness of FinTech Platform

No.	Item	Mean	SD	Decision
5	I frequently employ FinTech for making payments and transferring funds.	2.3342	0.79715	Disagree
6	I leverage FinTech investment platforms to oversee my investment portfolio.	3.3548	0.72695	Agree
7	I turn to FinTech services when I require financial assistance	3.4884	0.80462	Agree
8	I actively engage with FinTech insurance services to purchase and oversee insurance policies.	3.5064	0.67586	Agree
Grand mean (\bar{x})		3.42		Agree

* The acceptance mean point for the items was 2.50, any mean (\bar{x}) that is 2.50 and above is agreed indicating a positive effect. Below 2.50 is disagreed which is regarded as a negative effect.

Source: Field Work (2024).

Table 2 above showed the distribution of the respondents based on their response to effect of users perceived usefulness of FinTech platform on usage with all the responses being positive as they were above the mean cut off of 2.5, except for item 5 that had a negative response as its mean score of 2.344 which was below 2.50. Despite the one disagreed response, majority of the respondents agreed and were positive. Therefore, the result indicates that users perceived usefulness of FinTech platform influence financial technology usage which is supported by the grand mean of 3.42.

Table 3: Responses on Users' Perceived Confidence

No.	Item	Students' Mean	SD	Decision
9	I trust that FinTech platforms will securely handle and protect my financial information.	3.2519	0.53078	Agree
10	I have confidence in the reliability and stability of FinTech services for my financial transactions.	3.5013	0.67589	Agree
11	I trust that FinTech platforms will promptly address any issues or concerns I may have.	2.3851	0.79734	Disagree
12	I trust that FinTech platforms adhere to ethical standards and guidelines in their business practices.	3.0951	0.89885	Agree
Grand mean (\bar{x})		3.06		Agree

* The acceptance mean point for the items was 2.50, any mean (\bar{x}) that is 2.50 and above is agreed indicating a positive effect. Below 2.50 is disagreed which is regarded as a negative effect.

Source: Field Work (2024).

Table 3 above showed the distribution of the respondents based on their response to confidence of users on FinTech platform. Three questions had agreed and positive responses with the mean responses above the 2.50 cut off while one had negative or disagreed response with the mean response less than the cut off mean. Despite the disagreed response, majority of the respondents agreed and were positive. Therefore, the result indicates that confidence of users on platform influence usage of financial technology which is supported by the grand mean of 3.06.

Table 4: Responses on Digital Financial Literacy

No.	Item	Mean	SD	Decision
13	I am knowledgeable about the various features and functionalities of fintech apps.	3.2468	0.70402	Disagree
14	I am aware of the potential risks and security measures associated with using digital payment systems.	3.3085	0.64012	Agree
15	I know how to troubleshoot common issues related to digital financial transactions.	3.2931	0.71902	Agree
16	I am familiar with the terms and concepts related to digital financial services.	3.0694	0.75150	Agree
	Grand mean (\bar{x})	3.23		Agree

* The acceptance mean point for the items was 2.50, any mean (\bar{x}) that is 2.50 and above is agreed indicating a positive effect. Below 2.50 is disagreed which is regarded as a negative effect.

Source: Field Work (2024).

Table 4 above showed the distribution of the respondents based on their response on digital financial literacy with all four positive and agreed responses. Therefore, the result indicates that digital financial literacy influences financial inclusion which is supported by the grand mean of 3.23.

Table 5: Responses on Financial Inclusion

No.	Item	Mean	SD	Decision
17	FinTech services have expanded my access to financial products and services.	3.4165	0.53078	Agree
18	FinTech services have increased my ability to save and invest my money.	2.4499	0.67589	Disagree
19	FinTech adoption has made it easier for me to send and receive money.	3.5116	0.79734	Agree

20	FinTech services have improved my ability to access credit and loans.	3.3985	0.89885	Agree
	Grand mean (\bar{x})	3.44		Agree

* The acceptance mean point for the items was 2.50, any mean (\bar{x}) that is 2.50 and above is agreed indicating a positive effect. Below 2.50 is disagreed which is regarded as a negative effect.

Source: *Field Work (2024)*.

Table 5 above showed the distribution of the respondents based on their response to financial inclusion. Three questions had agreed and positive responses with the mean responses above the 2.50 cut off while one had negative or disagreed response with the mean response less than the cut off mean. Despite the disagreed response, majority of the respondents agreed and were positive. Therefore, the result indicates that FinTech is important for financial inclusion which is supported by the grand mean of 3.44.

Test of Hypotheses

The hypothesis testing results of the survey data estimation are reported in Table 6.

Table 6: Hypothesis Testing Results

Description	e	p	Decision
Ho ₁ : Perceived Security of FinTech platform has a significant positive impact on FinTech usage	0.348	0.000	Accepted
Ho ₂ : Perceived Usefulness of FinTech platform has a significant positive impact on FinTech usage	0.538	0.000	Accepted
Ho ₃ : Perceived Confidence in FinTech platform has a significant positive impact on FinTech usage	0.611	0.000	Accepted
Ho ₄ : FinTech usage has a significant positive impact on financial inclusion	0.227	0.000	Accepted
Ho ₅ : Digital financial literacy strengthens the positive impact of FinTech on financial inclusion.	0.264	0.000	Accepted

e = co-efficient; p = probability at 0.05 significant level

Results from the hypothesis testing and discussed thus:

First, the relationship between perceived financial technology platform and usage is found to be positive and significant at 5% significant level. The implication is that the more secured users perceive FinTech platform, the higher the chances of its usage. The result meets our *a priori* expectation and is consistent with prior studies such as Zhang et al. (2023), Amnas et al. (2024), and Putri et al. (2023) that found a positive influence of perceived security of platform on its usage by customers.

In addition, the coefficient of the variable usefulness is observed to be positive and significant. This indicates that the usage of financial technology is significantly influenced by how useful it is perceived by customers. The result meets our *a priori* expectation and is consistent with previous

studies such as Amnas et al. (2024) and Zhang et al. (2023) who found perceived quality of service and usefulness of technological application to significantly influence the level of financial technology usage.

As regards the impact of users' confidence on FinTech usage, the regression result showed a positive effect and statistically significant. The result gives enough evidence to accept the hypothesis that users' perceived confidence has a positive effect on level of usage of financial technology in Nigeria. This position meets our *a priori* expectation and agrees with studies such as Alrawad et al. (2023), and Roh et al. (2022).

In addition, the link between financial inclusion and financial technology usage is observed to be positive and significant. This indicates that financial inclusion is significantly influenced by financial technology adoption. The positive coefficient and the probability value lend credence to accept the hypothesis of a significant positive effect of financial technology on financial inclusion. The result meets our *a priori* expectation, and is in tandem with Amnas et al. (2024), Ozili et al. (2024), and Iwedi et. al. (2023).

Further, the mediating effect of digital financial literacy on the relationship between FinTech adoption and financial inclusion is observed to be positive and significant. The implication is that higher level of digital financial literacy strengthens the positive effect of financial technology on financial inclusion. This result meets our *a priori* expectation as we anticipated that improved awareness and knowledge about FinTech will increase its usage which will in turn enhance financial inclusion. Studies by Amnas et al. (2024), Rusliati et al. (2024), and Margijoyo et al. (2024) support this finding.

Conclusion

The study examined the determinants of financial technology usage, the relationship between financial technology on financial inclusion; and the mediating effect of digital financial literacy on this relationship. Findings of the study revealed that users' perceived security, usefulness, and confidence in FinTech platform have a significant positive effect on the level of usage of financial technology. Further, financial technology usage was found to have significant positive effect on financial inclusion, while the mediating role of digital financial literacy is found to be positive and significant suggesting that higher awareness about FinTech platforms improves the positive effect of financial technology adoption on financial inclusion. The study concludes that FinTech usage significantly influences financial inclusion in Nigeria.

References

- Alrawad, M., Abdalwali, L., Mohammed, A., & Ibrahim, A. (2023). Examining the influence of trust and perceived risk on customers' intention to use NFC mobile payment system. *Journal of Open Innovation: Technology, Market, and Complexity* 9, 100 - 114.
- Amnas, M. B., Murugesan, S., & Satyanarayana, P. (2024). FinTech and financial inclusion: exploring the mediating role of digital financial literacy and the moderating influence of perceived regulatory support. *Journal of Risk and Financial Management* 17, 108. <https://doi.org/10.3390/jrfm17030108>
- Bajunaied, K., Nazimah, H., & Suzilawat, K.. (2023). Behavioral intention to adopt FinTech services: An extension of unified theory of acceptance and use of technology. *Journal of Open Innovation: Technology, Market, and Complexity*. 9, 100- 125.
- EFINA (2023) EFINA Access to Financial Services in Nigeria 2021 Survey. Nigeria: new data from EFINA shows financial inclusion growth. Government UK. Available from <https://www.gov.uk/government/news/nigeria-new-data-from-efinashows-financial-inclusion-growth>
- Fitriani, F., & Santi, G. (2023). Does financial technology and financial literacy enhance financial inclusion? (Evidence from several countries). *East Asian Journal of Multidisciplinary Research* (EAJMR), 2(12), 4977-4992. <https://doi.org/10.55927/eajmr.v2i12.6905>
- George, A., & Sunny, P. (2023). Why do people continue using mobile wallets? An empirical analysis amid COVID-19 pandemic. *Journal of Financial Services Marketing* 28, 807–21
- Iwedi M., Owakah, N.F., Wofuru-Nyenke, O.K. (2023), Effect of financial technology on financial inclusion in Nigeria. *African Journal of Accounting and Financial Research* 3(1), 21- 36. <https://doi.org/10.52589/AJAFRA7LQZBE9>
- Jangir, K., Vikas, S., Sanjay, T., & Ramona, R. (2022). The moderating effect of perceived risk on users' continuance intention for FinTech Services. *Journal of Risk and Financial Management* 16, 21
- Kumar, G., Murty, A.B., Rajnish, R., & Ranjan, A. (2024). Impact of Digital Financial Literacy on Financial Inclusion – The Role Fintech Services. 2 nd International Conference on Women in Multifaceted Research (ICWMR - 2024) Organized by Gopal Narayan Singh University, Sasaram, India.
- Lee, C. C., Wang, C. W., & Ho, S.J. (2019). Financial inclusion, financial innovation, and firms' sales growth. *International Review of Economics & Finance*, 66, 189–205. <https://doi.org/10.1016/j.iref.2019.11.021>
- Margijoyo, P.R., Kusuma, R., & Siti, A. (2024). The influence of financial literacy and the use of financial technology on business performance through financial inclusion. *International Journal of Research in Business & Social Science* 13(5), 596-606. . <https://doi.org/10.20525/ijrbs.v13i5.3514>
- Nasir, A., Naeem, J., Dragan, P., & Sami, U. K.. (2023). Analysis of cybercrimes and security in FinTech industries using the novel concepts of interval-valued complex q-rung orthopair fuzzy relations. *Expert Systems with Applications* 224, 119 - 136.
- National Financial Inclusion Strategy (2020). Financial inclusion strategy. Central Bank of Nigeria

- Otuya, S., Ofeimun O. G., & Akpotor, A. V. (2022). Effect of information and communication technology on operational efficiency of Nigeria's banking sector. *Academic Journal of Accounting and Business Management*, 3(3), 59 -67
- Ozili, P.K., & Mhlanga, D. (2024). Information the COVID-19 pandemic: Global Evidence. *FinTech* 2024, 3, 66–82. <https://doi.org/10.3390/fintech3010005>
- Ozili, P.K. (2024). Vulnerable group theory of financial inclusion. *Perspectives on Global Development and Technology Journal*, 8(1) 121-133
- Prete, A., Anna, T., & Lo, W. (2022). Digital and financial literacy as determinants of digital payments and personal finance. *Economics Letters* 213, 110
- Putri, A. M., Wiryono, S. K., Damayanti, S. M., & Rahadi, R. A. (2024). Framework of digital financial literacy dimensions in Indonesia. *Kurdish Studies*, 12(1), 111-124
- Roh, T., Young, S. Y., Shufeng, X., & Byung, P. (2022). What makes consumers trust and adopt fintech? An empirical investigation in China. *Electronic Commerce Research*. 24(1), 3-35
- Rusliati E, Soegoto AS, & Martutiningrum D, (2024). Investigating the effect of financial literacy on financial inclusion: Mediating role of financial technology. *Journal of Infrastructure, Policy and Development*. 8(7), 51-93. <https://doi.org/10.24294/jipd.v8i7.5193>
- Sampat, B., Emmanuel, M., & Nguyen, P. N.. (2023). The dark side of FinTech in financial services: A qualitative enquiry into FinTech developers' perspective. *International Journal of Bank Marketing*, 42, 38–65
- Savitha, B., Iqbal, T. H., & Naveen, K. K. (2022). Continuance intentions to use FinTech peer-to-peer payments apps in India. *Heliyon* 8: e11654
- Shaikh, A., Richard, G., Heikki, K., & Robert, E. H. (2023). Mobile money as a driver of digital financial inclusion. *Technological Forecasting and Social Change*, 186, 122158
- World Bank Group. (2023). How FinTech is reaching the poor in Africa and Asia: A start-up perspective. Washington, DC: World Bank Group. International Finance Corporation
- Zhang, W., Saeed, S., Samina, R., Riaz, A., Mohd, F. H., & Zhi, L. (2023). Data security, customer trust and intention for adoption of Fintech services: An empirical analysis from commercial bank users in Pakistan. *SAGE Open*, 13(3), 215-224.: <https://doi.org/10.1177/21582440231181388>