



The Role of Fintech in Enhancing Financial Inclusion Through Point of Sale (POS) Business in Kano State –Nigeria

Nura Musa*

Nigeria Police Academy,
NIGERIA

*** Corresponding author:**

Nura Musa, Nigeria Police Academy, Nigeria. ✉ donnuray@gmail.com

Article Info

Article history:

Received: July 25, 2025

Revised: July 27, 2025

Accepted: July 28, 2025

Keywords:

*Fintech Usage,
Fintech Adoption,
Financial Inclusion,
MSMEs,
POS Business*

Abstract

Background of Study: This study explores how financial technology (Fintech) contributes to enhancing financial inclusion, particularly through the operation of Point of Sale (POS) businesses in Kano State, Nigeria. In a context where access to traditional banking remains limited, POS businesses provide a practical alternative to financial services.

Aims and Scope of Paper: The research focuses on evaluating the perceived benefits, the level of adoption, and the challenges associated with Fintech solutions among POS business owners in Kano State. It aims to understand the role Fintech plays in supporting financial inclusion in underserved regions.

Methods: The study utilizes a survey approach with data collected from 80 SME (POS) owners. Quantitative analysis was conducted to assess the relationships among Fintech usage, benefits, and challenges.

Result: The findings reveal that Fintech significantly enhances financial inclusion via POS businesses by facilitating efficient transactions and improving access to financial services. However, several challenges persist, including infrastructural deficiencies, gaps in digital literacy, and concerns about cybersecurity.

Conclusion: Despite notable barriers, Fintech remains a critical enabler of financial inclusion in Kano State. The study recommends targeted training for POS operators, improvement of digital infrastructure, and the development of tailored Fintech solutions to meet the specific needs of small businesses.

To cite this article: Musa, N. (2025). The Role of Fintech in Enhancing Financial Inclusion Through Point of Sale (POS) Business In Kano State –Nigeria. *International Journal of Sustainable Business, Management and Accounting*, 1(1), 27-35

This article is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/) ©2025 by author/s

INTRODUCTION

Background to the Study

Financial technology (Fintech) has revolutionized the delivery of financial services, especially in emerging economies. In Nigeria, Fintech has accelerated the expansion of Point of Sale (POS) businesses, which serve as vital tools for enabling cashless transactions in both urban and rural areas. As access to traditional banking remains limited in some rural areas, POS businesses powered by Fintech provide a practical solution for extending financial services. Fintech encompasses a broad range of innovations, from mobile banking and online lending to block chain technology and cryptocurrency (Arner et al., 2023). It aims to enhance financial inclusion by providing accessible, efficient, and cost-effective financial services to a broader population (Gomber et al., 2023).

In Nigeria, fintech has emerged as a pivotal force driving the expansion and modernization of the Point of Sale (POS) business, which is crucial for facilitating cashless transactions and financial accessibility in both urban and rural areas (Qazeem, 2024). The POS system's growth in Nigeria has been largely attributed to the adoption of fintech solutions, which have streamlined payment

processes and reduced the dependency on cash (Ozili, 2020). This transformation is particularly significant in rural areas, where traditional banking infrastructure is often limited, thereby enhancing the reach of financial services and promoting economic inclusion (Adeniran & Baruwa, 2020). Fintech innovations have particularly impacted the POS business by introducing advanced payment systems, improving transaction speeds, and reducing operational costs (Gomber et al., 2023). The adoption of fintech solutions in Nigeria has surged, driven by a youthful population, increasing smartphone penetration, and supportive regulatory frameworks (Arner et al., 2023). This surge has led to a significant increase in the number of POS terminals and transaction volumes, positioning Nigeria as one of the leading markets for digital financial services in Africa.

Fintech companies have played a crucial role in this transformation by actively working to bridge the financial inclusion gap. These companies have introduced innovative solutions tailored to the needs of both consumers and businesses, making financial services more accessible and affordable. In Kano, fintech firms have deployed extensive networks of POS terminals, ensuring that even the most remote areas have access to digital payment options. This effort aligns with national financial inclusion strategies aimed at reducing the number of unbanked individuals and promoting economic growth through enhanced financial access (Anthony-Orji et al., 2023). By examining the relationship between fintech usage of the POS business in Kano State, this study aims to highlight the transformative impact of financial technology on regional economic activities and financial inclusion efforts.

Statement of the Problem

Despite the notable growth in the POS business facilitated by fintech innovations, several challenges persist in Kano State. One significant issue is the limited infrastructure, which hampers the smooth operation and expansion of POS services. Reliable electricity and stable internet connectivity are critical for the functioning of POS systems, yet many areas in Kano experience frequent power outages and weak internet signals. This infrastructural deficiency not only disrupts transactions but also discourages potential users from adopting digital payment methods (Abba, 2021).

Cybersecurity concerns are another major challenge facing the POS industry in Kano. As digital payment systems become more prevalent, they also become more attractive targets for cybercriminals. Users and businesses are often wary of fraud, hacking, and data breaches, which can result in significant financial losses and undermine trust in digital financial systems. Ensuring robust cybersecurity measures and educating users about safe practices are essential to mitigating these risks and fostering confidence in POS transactions (Ogbaru & Al-Hassan, 2023). Regulatory issues also pose a hurdle for the growth of the POS sector. The regulatory environment in Nigeria can be complex and sometimes inconsistent, with varying interpretations and implementations of policies at different levels of government. For fintech companies operating in Kano, navigating these regulatory landscapes can be challenging, leading to compliance burdens and potential disruptions in service delivery. Clear, consistent, and supportive regulatory frameworks are crucial to encourage innovation while ensuring consumer protection and systemic stability (Central Bank of Nigeria, 2021).

Moreover, the varying levels of digital literacy among the population in Kano State present a barrier to the widespread adoption of POS services. While urban areas tend to have higher rates of digital literacy, rural regions often lag behind (Qi, 2023). Many individuals in these areas may not be familiar with using digital payment systems, leading to reluctance or resistance to adopting new technologies. Initiatives aimed at improving digital literacy and providing training on the use of POS systems are vital to bridging this gap and promoting inclusive financial practices (Okunnu & Adams, 2022). Additionally, while Fintech has improved transaction efficiency, the reliance on digital platforms raises concerns about data privacy and security (Festus, 2023). The increasing incidence of cyber fraud and other digital crimes necessitates robust security measures to protect both businesses and consumers. This study aims to address these issues by investigating the extent to which Fintech has impacted the growth of the POS business in Kano State, identifying both the benefits and the

challenges, and proposing solutions to enhance the effectiveness and security of these financial technologies (Abokyi, 2025).

Research Questions

1. What are the major challenges faced by POS businesses in Kano State when using Fintech solutions?
2. What are the perceived benefits of using Fintech solutions for POS businesses in Kano State?
3. To what extent are Fintech solutions being utilized by POS businesses in Kano State?

Research Objectives

1. To identify and analyze the major challenges faced by POS businesses in Kano State in adopting Fintech solutions.
2. To evaluate the benefits that POS businesses in Kano State derive from using Fintech solutions.
3. To assess the extent of Fintech adoption and usage among POS businesses in Kano State.

Hypotheses of the Study

- H₁: POS businesses in Kano State does not significant face challenges in adopting Fintech solutions.
H₂: The use of Fintech solutions has negative impact on the growth and profitability of POS businesses in Kano State.
H₃: There is a no high level of Fintech solution usage among POS businesses in Kano State.

Significance of the Study

The significance of this study impacts various stakeholders. This study will provide POS businesses with a comprehensive understanding of the benefits and challenges associated with fintech adoption. By identifying the key advantages, such as improved transaction efficiency, cost reduction, and enhanced customer satisfaction, businesses can better leverage fintech solutions to enhance their operations. Policymakers in Kano State and Nigeria at large will benefit from this study by gaining insights into the current state of fintech and its impact on the POS sector. The findings can inform the development of supportive regulatory frameworks that foster innovation while addressing the challenges identified, such as infrastructure deficiencies and cybersecurity threats.

Fintech companies will gain a deeper understanding of the specific needs and challenges faced by POS businesses in Kano State. This knowledge will enable them to tailor their products and services to better meet the demands of this market. This study contributes to the body of knowledge on fintech and its impact on the financial services sector in emerging markets. Researchers can use the findings as a basis for further studies, exploring various aspects of fintech adoption and its implications for financial inclusion, economic growth, and technological innovation. The study also provides a foundation for comparative analyses with other regions or countries, enriching the global discourse on fintech. Consumers in Kano State stand to benefit indirectly from this study. As businesses and policymakers address the identified challenges and leverage the benefits of fintech, consumers will experience more efficient, secure, and accessible financial services. This can lead to increased trust in digital payment systems, greater financial inclusion, and overall improved quality of life.

This study focuses on the role of fintech in driving financial inclusion through POS businesses in Kano State, Nigeria. It examines the benefits and challenges associated with fintech adoption in this sector, including improved transaction efficiency, cost reduction, cybersecurity concerns, regulatory issues, and digital literacy levels. By gathering data from POS businesses, fintech companies, policymakers, and consumers, the study aims to provide a comprehensive analysis of how fintech innovations are transforming the POS landscape in Kano and contributing to financial inclusion and economic development.

LITERATURE REVIEW

Empirical Review

Joachim (2022) studied what makes people in Tanzania use financial services, especially how people's actions play a role. The study used both number-based and interview-based research methods to meet its goal. The results showed that people's actions do affect whether they use financial services. First, looking at the financial lives of 30 households using a financial diary method showed that households have different financial experiences, which shows why financial services are important to them. Second, even though most households don't use financial services, they think positively about how financial services can help them save, stay secure, manage money, and improve their financial situation. Third models showed that people's attitudes toward financial services their sense of control over their actions, and what they think others expect of them all greatly affect whether they plan to use financial services. It was also noted that feeling in control of their actions strongly influenced whether they used financial services.

Ouma, Odongo, and Were studied if using mobile phones for financial services helps people save more in some sub-Saharan African countries. They found that having and using mobile phones for financial services makes people more likely to save money at home. Access to mobile financial services not only makes people more likely to save, but it also affects how much they save. This might be because it is easy and quick to make transactions with a mobile phone. Using mobile phones is likely to encourage both basic mobile phone savings stored on the phone and bank-integrated mobile savings (Hussaini & Dikko, 2025).

Amoah et al., (2024) studied how people in Ghana use financial services and what affects this use. The study used data from the Ghana Living Standards Survey (GLSS) and the Global Findex data to look at how people saved and borrowed money from 1991 to 2021. Additionally, the study used the Finscope Ghana 2010 data and a statistical method called Multinomial Logit regression to find out what makes people choose to save, borrow, and get insurance through formal or informal groups. A Heckman Probit regression model was also used for the analysis. The findings showed that the number of people who saved money stayed fairly steady from 1991 to 2006. But from 2006 to 2013, the number of savers grew a lot. The pattern of borrowing went up and down between 1991 and 2021. Over time, fewer people borrowed from informal groups, while more people borrowed from formal ones.

Theoretical Framework

The study uses the diffusion of innovations theory and the Technology Acceptance Model.

1. Diffusion of Innovations Theory

Everett M. Rogers introduced the Diffusion of Innovations Theory in 1962. It gives a full way to see how new ideas and technologies spread through cultures, including why they spread and how fast. This theory has been used a lot to study how people adopt new things in different areas, like technology, farming, education, and healthcare. It helps us understand what makes people accept and use new technologies. This makes it very useful for studying how financial technology affects how Point of Sale (POS) businesses in Kano State use fintech. The Diffusion of Innovations Theory lists five main things that affect how people adopt new ideas: the innovation itself, how it's communicated, how long it takes, the social system, and the types of people who adopt it (Rogers, 2003).

2. Technology Acceptance Model (TAM)

Fred Davis introduced the Technology Acceptance Model (TAM) in 1989. It is a very important model for understanding what makes people accept technology. The model tries to explain

how people start to accept and use technology by looking at how easy they think it is to use and how useful they think it is. TAM gives a strong way to study how people adopt different technologies, including fintech solutions in the POS business area in Kano State. The Technology Acceptance Model is based on the Theory of Reasoned Action (TRA). TRA says that what people do is based on what they plan to do, and their attitudes and what others think are key in deciding this (Davis, 2020).

METHOD

This section shows the research method used for this research. It focuses on research design, population of the study, sample technique and sample size, method of data collection, method of data analysis and the justification for the method used.

Research Design

For the purpose of this research, descriptive survey design will be used which involves one-time observation of independent and non-manipulated variables. This type of research is concerned with describing the responses obtain from the respondents through questionnaire as well as observation to obtain reliable data.

Participant

The participants consisted of selected owners and sales personnel of POS (Point of Sale) businesses operating within Kano Metropolis, Nigeria.

Population of the Study

It is a requirement of research to obtain data to answer the research problem. A population is the source from which this data can be obtained. The study aims to targeted some selected POS Business in Kano Metropolis. The population of the study will comprise of 100 POS Businesses in Kano Metropolis.

Sampling Technique and Sample Size

The study will use simple random sampling, a method where everyone has the same chance of being chosen. However, the number of people in the study was decided using a table created by Krijcie and Morgan in 1970. According to Krejcie and Morgan, having 82 people participate is enough for the study.

Sources of Data

The study is based on the primary sources of data. The primary sources are gotten from the POS businesses owner in Kano Metropolis comprising of owners or sales personnel. Field investigation and data collection will be carried out in the study area.

Method of Data Collection

The main tool for gathering information is the questionnaire. This tool included both structured questions, like multiple-choice questions that give people a set of answers to pick from, and unstructured questions. The unstructured questions are open-ended, letting people answer in their own words.

Data Analysis Techniques

The data from the completed questionnaires was analyzed using descriptive analysis. The data was checked to make sure it was consistent. Then, frequencies and percentages were used to

show how the answers were spread out. The results were shown in tables and charts. Also, inferential statistics like regression analysis and Pearson correlation were used to analyze the hypotheses.

RESULTS AND DISCUSSION

Result

H₁: POS businesses in Kano State does not significant face challenges in adopting Fintech solutions.

H₂: The use of Fintech solutions has negative impact on the growth and profitability of POS businesses in Kano State.

H₃: There is a no significant high level of Fintech solution usage among POS businesses in Kano State.

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.860 ^a	.772	.764	.22439	6.121

a. Predictors: (contact), Challenges, Benefit, Usage

b. Dependent Variables: POS Business

The result in table above indicates that the three variables i.e. fintech challenges, benefit and usage account for 76.4% ($r^2 = 0.772$) change on POS businesses in Kano State. It also indicates strong relationship between the variables ($r = 0.860$). The durbin-watson statistics of 6.121 indicates absence of auto serial correlation and fitness of the model.

Table 2. ANOVA^b

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	91.032	1	91.032	776.941	.000 ^a
Residual	17.341	148	.117		
Total	108.373	149			

a. Predictors: (contact), Challenges, Benefit, Usage

b. Dependent Variables POS Business

The strength of variation of the predictor values influences that fintech challenges, benefit and usage on POS businesses is at 0.00 significant levels. This shows that the overall model was significant.

Table 3. Coefficients ^c

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	T	
(Constant)	.629	.534		.211	.000
1 Challenges	.863	.872	.582	1.722	.001
Benefit	.724	.675	.762	3.239	.000
Usage	.946	.217	.631	4.872	.002

a. Dependent variable: EG

The table above shows that fintech affects POS Business (Beta= 0.863, P=0.001). It is on this basis that we accept hypotheses one which state that POS businesses in Kano State significant face challenges in adopting Fintech solutions. The table also shows a Beta value of 0.724 and a p-value of 0.000 again less than 5% level of significance against the benefit of fintech, therefore, we also accept Hypotheses two which state that The use of Fintech solutions does not has negative impact on the growth and profitability of POS businesses in Kano State. Against the fintech usage, it shows a Beta value of .946 and a p-value of 0.02 which is lesser than 5% level of significance; therefore, we accept hypothesis three which stated that there is significant high level of Fintech solution usage among POS businesses in Kano State.

Discussion

The findings of this study reveal a significant impact of the role of fintech in enhancing financial inclusion through POS businesses in Kano State, highlighting the challenges, benefits, and extent of usage among these businesses. Finding indicates that fintech challenges, benefits, and usage account for 76.4% of the changes observed in POS businesses, demonstrating a strong relationship between these variables. The result further shows that the predictors significantly influence POS businesses, with a p-value of 0.000, indicating the overall model's significance. The coefficient analysis supports the acceptance of all three hypotheses, confirming that POS businesses in Kano State face significant challenges in adopting Fintech solutions, while also benefiting from these solutions without a negative impact on growth and profitability. Additionally, the high level of Fintech solution usage among these businesses highlights the positive role of technology in enhancing their operations.

The findings strongly support the role of Fintech in enhancing business performance among POS operators in Kano. The high R^2 value indicates that technological factors are crucial for business sustainability, especially in cash-reliant economies (Ozili, 2020). The strong coefficient of Fintech usage demonstrates its centrality in transaction processing and customer service. This aligns with previous studies, such as Arner et al. (2023), which argue that Fintech is transforming financial access in developing economies (Singh & Alshammari, 2020). The increasing reliance on digital payment systems mirrors trends observed in other sub-Saharan African countries like Ghana and Kenya⁵. Fintech not only accelerates transaction time but also expands the customer base of micro and small businesses. Therefore, POS operations can be seen as vehicles for broader economic inclusion.

Despite the benefits, infrastructural and digital literacy gaps persist. Inconsistent electricity supply and weak internet connectivity affect the reliability of POS operations in many areas of Kano State. These issues align with Abba (2021), who documented similar infrastructure barriers in Northern Nigeria. Digital literacy is another constraint, especially in peri-urban and rural zones where education levels are lower. Many POS operators struggle to understand basic digital tools, reducing the efficiency of Fintech solutions. This supports the view of Okunnu and Adams (2022), who argue that digital inclusion must go hand in hand with user education. Without targeted training, the adoption of Fintech may exacerbate inequality instead of reducing it. Addressing these issues is critical to ensuring sustainable financial inclusion.

Cybersecurity concerns are also prevalent among POS operators, which is a growing issue in the digital finance landscape (Sharna, 2025). Operators and customers alike express concerns over fraud, hacking, and data breaches, which can result in financial loss and trust erosion. Ogbaru and Al-Hassan (2023) highlight how poor awareness and weak systems contribute to the vulnerability of small businesses in digital environments. This fear often deters full adoption of Fintech services, despite their potential benefits. It is therefore crucial for Fintech companies to implement and communicate robust security protocols. Government regulation and consumer protection mechanisms must also evolve to keep up with digital threats. Failure to address cybersecurity could hinder the scalability of digital financial inclusion in Nigeria.

The role of POS businesses as agents of inclusion aligns with national policy goals, such as Nigeria's Financial Inclusion Strategy. Fintech-powered POS operators extend financial services to previously unbanked populations. Their integration into local economies creates opportunities for saving, borrowing, and digital payments in informal sectors. However, this potential is only fully realized when combined with supportive infrastructure and a stable regulatory environment. The Central Bank of Nigeria (CBN) has recognized this need in recent publications but implementation remains uneven. The findings of this study provide local-level evidence to support scaling these strategies. Policymakers should consider these data when designing state-specific financial inclusion policies.

Finally, these findings validate the use of the Technology Acceptance Model and the Diffusion of Innovation Theory in this context. The results demonstrate that perceived usefulness and ease of use,

as proposed in TAM, influence Fintech adoption. Similarly, Rogers' adoption categories are relevant, with early adopters in urban areas leading the Fintech transformation, while laggards in rural regions remain cautious. Understanding these behavioral patterns can help stakeholders design better interventions. For instance, tailored messaging and community champions may encourage adoption in conservative user segments. Theoretical insights from this study can inform both local practices and global comparisons. This expands the relevance of TAM and DOI beyond Western and urban contexts. In short, Fintech adoption is not only technical, but also social and contextual.

Implications

This study provides clear evidence that Fintech significantly improves POS business operations in Kano State. Policymakers can use these findings to design inclusive regulations and digital infrastructure investments. Fintech developers are encouraged to create localized and accessible tools that match users' capabilities. The results also suggest the need for financial education and cybersecurity awareness to boost user trust.

Research Contribution

This research adds to the literature by applying TAM and Diffusion of Innovation theories in a Nigerian micro-business context. It provides rare data from Kano State, which is often underrepresented in Fintech studies. The study highlights the practical role of POS businesses in driving financial inclusion. Its approach offers a model for future regional-level studies on digital finance in emerging economies.

Limitations

The study is limited to POS businesses in Kano Metropolis, which may reduce generalizability. It lacks tests for the reliability and validity of the questionnaire used. The Durbin-Watson statistic reported was outside the normal range, suggesting a possible data issue. Also, qualitative insights were not included, which could have enriched the findings.

Suggestions

Future research should include more diverse regions and use mixed-method approaches. Instrument validity and reliability should be clearly tested and reported. Researchers should correct statistical errors like the Durbin-Watson anomaly. Fintech companies and government bodies should also invest in training, literacy programs, and infrastructure to support digital finance adoption.

CONCLUSION

The study's findings demonstrate the substantial influence of Fintech solutions on the operations of POS businesses in Kano State. The analysis confirms that Fintech challenges, benefits, and usage collectively account for a significant proportion of the variance in POS business outcomes, indicating a strong relationship between these factors. The presence of substantial challenges in adopting Fintech solutions suggests that while these technologies are beneficial, there are barriers that need to be addressed for smoother integration. Despite these challenges, Fintech solutions have not negatively impacted the growth and profitability of POS businesses, and there is a notable level of Fintech adoption among these businesses. This underscores the critical role of Fintech in driving operational efficiency and business growth, positioning it as a key enabler of economic activities in the region. The study concludes that while challenges exist, the overall positive impact of Fintech on POS businesses is undeniable, and its adoption is crucial for sustained business growth and competitiveness in the digital economy.

ACKNOWLEDGMENT

The authors gratefully acknowledge the cooperation of all participants, particularly the POS business operators in Kano State who shared their time and insights for this research. Appreciation is also extended to those who assisted during the data collection and processing stages. Constructive input from peer reviewers and institutional colleagues has been invaluable in refining the quality of this work. The authors take full responsibility for any remaining errors or omissions.

AUTHOR CONTRIBUTION STATEMENT

The research was collaboratively developed by all contributing authors. The conceptualization, methodology design, data collection, and analysis were carried out jointly. All authors were actively involved in the writing, review, and editing of the manuscript. Each author has read and approved the final version of the article and agrees to be accountable for all aspects of the work.

REFERENCES

- Abba, M. (2021). Challenges of POS business in Kano State. *Journal of Management and Innovation*, 9(3), 78–85. <https://doi.org/10.15640/jmi.v9n3a7>
- Abokyi, E. (2025). Financial inclusion and household welfare: insight from a developing country. *Development and Sustainability- n Economics and Finance*, 6(1), 1–18. <https://doi.org/10.1016/j.dsef.2025.100068>
- Adeniran, A. ., & Baruwa, O. (2020). The impact of financial technology on the Nigerian economy. *Cogent Economics & Finance*, 8(1), 1–16. <https://doi.org/10.1080/23322039.2020.1789645>
- Amoah, A., Tetteh, C. K., Osei-Bonsu, N., Pomeyie, P., Ahiabor, G., Hughes, G., Kwabenabu, I., & Otchere-Ankrah, B. (2024). Determinants of household saving behaviour in Ghana. *COGENT ECONOMICS & FINANCE*, 12(1), 1–19. <https://doi.org/10.1080/23322039.2024.2420220>
- Anthony-Orji, O., Jude, I. O., Orji, A., & Ogbuabor, J. E. (2023). Investigating the Financial Inclusion, Domestic Investment, and Financial Development Nexus in Nigeria. *Unisia*, 41(1), 1–16. <https://doi.org/10.20885/unisia.vol41.iss1.art1>
- Arner, D. W., Barberis, J. N., & Buckley, R. (2023). The Evolution of Fintech: A NewPost-Crisis Paradigm? *Georgetown Journal of International Law*, 47(3), 1–46. <https://doi.org/10.2139/ssrn.2676553>
- Davis, F. D. (2020). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quaterly*, 13(1), 319–340. <https://doi.org/10.2307/249008>
- Festus, B. G. (2023). Impact of Digital Finance on Banks' Credit Allocation in Nigeria. *Journal of Public Administration, Finance and Law*, 9(29), 69–80. <https://doi.org/10.47743/jopafll-2023-29-06>
- Gomber, P., Koch, & Siering, M. (2023). Digital finance and fintech: Current research and future research directions. *Journal of Business Economics*, 88(9–10), 1267–1313. <https://doi.org/10.1007/s11573-018-0900-0>
- Hussaini, U., & Dikko, M. U. (2025). Impact of Digital Financial Inclusion on Poverty Reduction in NorthWestern Nigeria. *Saudi Journal of Business and Management Studies*, 10(6), 255–266. <https://doi.org/10.36348/sjbms.2025.v10i06.003>
- Joachim, O. A. (2022). *Determinants of the use of financial services in Tanzania: The role of household*

- behavioural factors*. Doctoral thesis, University of Central Lancashire. <https://clock.uclan.ac.uk/id/eprint/20712/>
- Nigeria, C. B. of. (2021). *Enhancing financial inclusion in Nigeria: The way forward*. Central Bank of Nigeria. <https://www.cbn.gov.ng/FinInc/>
- Ogbaru, M. N., & Al-Hassan, R. (2023). Cybersecurity concerns in digital payment systems. *International Journal of Cybersecurity Research and Education*, 2(1), 12–24. <https://doi.org/10.4018/IJCRE.339191>
- Okunnu, I., & Adams, G. (2022). Digital literacy and financial inclusion in Nigeria: A case study of Kano State. *Journal of Information Technology Management*, 14(2), 31–45. <https://doi.org/10.22059/JITM.2022.888892>
- Ozili, P. . (2020). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review*, 20(1), 36–49. <https://doi.org/10.1016/j.bir.2019.12.002>
- Qazeem, B. A. (2024). The Role of Financial Technology in Enhancing Financial Inclusion in Nigeria. *FMDB Transactions on Sustainable Management Letters*, 2(4), 172–181. <https://doi.org/10.69888/FTSML.2024.000316>
- Qi, Y. (2023). Fintech and the Digital Transformation of Financial Services. *Highlights in Business Economics and Management*, 8(1), 322–327. <https://doi.org/10.54097/hbem.v8i.7225>
- Rogers, E. M. (2003). *Diffusion of innovations (5th ed.)*. Free Press. https://books.google.co.id/books?id=9U1K5LjUOwEC&printsec=frontcover&redir_esc=y#v=onepage&q&f=false
- Sharna, P. (2025). Cybersecurity Risks in Digital Banking: A Financial Perspective. *International Scientific Journal of Engineering and Management*, 4(6), 1–9. <https://doi.org/10.55041/ISJEM04102>
- Singh, H., & Alshammari, T. (2020). An Institutional Theory Perspective on Developing a Cyber Security Legal Framework: A Case of Saudi Arabia. *Beijing Law Review*, 11(3), 637–650. <https://doi.org/10.4236/blr.2020.113039>