DIGITAL LITERACY AND FINANCIAL INCLUSION: E-COMMERCE ADOPTION AND THE INFLUENCE OF SOCIOECONOMIC CONTEXT ON RURAL ENTREPRENEURSHIP

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Abstract
In the rapidly evolving digital age, financial inclusion and digital literacy are pillars of economic empowerment, particularly in rural communities. However, in Nigeria, rural entrepreneurs often struggle with both poor access to digital technologies and low levels of digital literacy; a situation that has negatively impacted the development of rural entrepreneurship and, consequently, the nation's economy. Focusing on two (2) communities in Edo State, Nigeria, this study examined digital literacy and financial inclusion among rural entrepreneurs. Using a survey research design and a mixed-method approach that incorporated qualitative, quantitative and focus group approaches, the study sampled 380 entrepreneurs from Ekpon and Igbanke communities in Edo State. Correlation and regression were applied to quantitative data. Qualitative and focus group data were analysed thematically using ATLAS to identify recurring patterns, themes, and narratives. The findings of the study revealed that while digital literacy and financial inclusion are moderately accessible to rural entrepreneurs, actual usage of e-commerce practice and tools is low. The study also revealed that rural business entrepreneurs were very open to digital literacy and ready to improve their skills by undergoing training. Above all, the study revealed a general deficiency in technical digital skills, particularly in record-keeping, online marketing, and creating digital business visibility. There are critical barriers to digital literacy, financial inclusion, and e-commerce adoption, comprising skill deficiencies, infrastructural challenges, trust issues, and inadequate institutional support. Addressing these challenges requires targeted training, improved infrastructure, enhanced security, and collaborative initiatives among stakeholders. The study therefore recommends, amongst others, collaborative efforts among government and key stakeholders to develop a programme for digital skill training, improved infrastructure, encouraging affordable access, and ensuring sustained engagement.

Keywords: Digital literacy, e-commerce, Edo State, financial inclusion

Introduction

Information and communication technology has become essential to our survival and to fostering our quality of life. However, there is a growing concern that certain groups, particularly those living in rural areas, are being left behind. In an era where equity and equality are promoted, social inclusion, encompassing various aspects, has become increasingly important; a key component of this is digital inclusion (Okocha & Dogo, 2023). The advent of the

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Global System for Mobile Communications (GSM) significantly enhanced connectivity between urban and rural populations in Nigeria, facilitating faster and more efficient communication across previously underserved communities (Aker & Mbiti, 2010). With the integration of digitalisation into mobile banking systems, financial transactions can now be conducted remotely via smartphones and other mobile devices. This shift has expanded opportunities for enhancing digital literacy and promoting financial inclusion among rural dwellers, including small-scale entrepreneurs. Scholars widely agree that the internet has transformed business processes by enabling individuals to communicate, bank, invest, purchase goods, and access business information from virtually any location with internet connectivity (UNCTAD, 2022; OECD, 2021). Consequently, entrepreneurs who serve as critical drivers of national economic development must possess adequate digital skills to remain competitive in an increasingly technology-driven environment.

Digital literacy and financial inclusion have therefore emerged as indispensable components of economic empowerment for rural entrepreneurs in Nigeria. Mobile phones, in particular, have demonstrated substantial potential in bridging the digital divide and improving access to financial services across Africa (GSMA, 2022; Jack & Suri, 2014). Despite these opportunities, the growth of rural entrepreneurship in Nigeria continues to be hindered by limited access to digital infrastructure and insufficient understanding of digital technologies. According to the World Bank (2020), rural entrepreneurs remain disproportionately excluded from digital tools and services due to high costs of digital devices, expensive data plans, and inadequate banking infrastructure. This persistent digital divide reinforces systemic marginalisation by widening socio-economic disparities between rural and urban regions. The lack of digital literacy further constrains rural entrepreneurs' ability to harness technology for innovation, market expansion, or participation in global value chains, thereby deepening existing inequalities (Olanrewaju et al., 2020).

Emerging countries face specific challenges in mobilising the transformative potential of digital technology to achieve financial inclusion (Adel, 2024). Financial inclusion challenges compound this problem. Many rural entrepreneurs lack access to formal banking services, digital payment platforms, and financial literacy programmes, relying instead on informal savings groups and unregulated credit networks that expose them to heightened financial risks and limited capital availability (Demirguc-Kunt et al., 2022). The absence of robust digital literacy and financial inclusion mechanisms suppresses entrepreneurship, reduces productivity, and limits job creation in rural areas that are vital to Nigeria's economic structure. These constraints contribute to persistent poverty, reduced competitiveness, and slow rural economic transformation.

Despite the rapid expansion of mobile technology and the increasing

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digitalisation of financial services in Nigeria, rural entrepreneurs remain largely excluded from the benefits of digital transformation (Yakubu, Onyeoma and Anyiwe, 2025). Although digital tools have the potential to enhance business operations, expand market reach, and promote financial inclusion, many rural entrepreneurs lack the necessary digital literacy, face prohibitive technology and internet costs, and remain disconnected from formal financial infrastructure. Evidence shows that digital literacy is a key predictor of willingness to use fintech and online platforms, especially in developing regions like Nigeria, which have low socioeconomic resources (Adel, 2024). This gap between technological advancement and practical adoption continues to constrain entrepreneurial growth, limit productivity, and widen socio-economic inequalities between rural and urban areas (Onyeoma and Ogagaoghene, 2025). Therefore, there is an urgent need to investigate the extent of digital literacy and financial inclusion among rural entrepreneurs and to identify context-specific barriers that hinder their effective digital participation.

Objectives of the Study

This study aimed to:

1. Assess the current level of digital literacy, financial inclusion and e-commerce platforms among rural entrepreneurs in Edo State
2. Evaluate the perceptions and attitudes of rural entrepreneurs towards digital literacy, and the impact these attitudes have on their willingness to embrace e-commerce for economic empowerment;
3. Determine the perceived benefits and drawbacks of financial inclusion and e-commerce adoption on rural entrepreneurs' overall business performance and sustainability;
4. Determine how local community leaders and influencers perceive the function of digital literacy and e-commerce in rural economic development; and
5. Ascertain the effect of the socioeconomic context of each local government area on the digital literacy and financial inclusion of rural entrepreneurs.

Literature Review

Digital Literacy

The term "digital literacy" describes the capacity to efficiently use digital equipment, connect to the internet, and explore digital platforms. According to Chen *et al.* (2021), people who possess strong digital literacy are better equipped to comprehend information that is delivered through technology. Consequently, in many fields, particularly in the business sector, digital literacy is critical for improving managerial success, productivity, and decision-making (Reddy et al., 2020). NCC, (2024) identifies digital skills gaps as a major barrier to sustainable digital entrepreneurship in rural Nigeria, emphasising the need for targeted capacity-building.

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Financial Inclusion

There are different definitions of financial inclusion in the literature, each with a distinct focus. A simple definition of financial inclusion, stated by Sahay *et al.* (2015), is access to and use of formal financial services by households and firms. The ability and desire to use financial services and derive significant benefits from them are prerequisites for financial inclusion. According to the IMF (2020), financial inclusion is a multifaceted concept encompassing various dimensions, including access to and use of financial services as well as other aspects such as affordability, usefulness, quality, and awareness of financial services and products. IMF 2023 highlights how expanding digital financial services in underserved Nigerian communities depends on basic digital literacy, influencing rural households' ability to participate in the formal financial system

E-commerce

E-commerce means electronic commerce. It is the buying and selling of goods and services, or the transmitting of funds or data, over the internet to reduce cost and improve the quality of goods and services while increasing the speed of delivery (Onyeoma, 2024). It also refers to using the internet and electronic media to transact in products and services. E-commerce is the practice of selling goods or services to customers directly through an online vendor's website. Value-generating relationships between businesses and individuals are created, altered, and redefined through the use of digital information processing and electronic communications in commercial transactions (Onyeoma, 2024; Grandon & Pearson, 2004). Some of the features of E-Commerce include cashless payment, availability, global reach, and efficient contact with partners and customers. Yakubu, Onyeoma and Anyiwe (2025) aver that digital literacy improves the adoption of mobile banking and digital payments, which are essential for rural poverty reduction.

Economic Empowerment and Growth through Digital Financial Integration

Digital literacy has become a vital component of social empowerment, economic progress, and the success of entrepreneurs, especially in rural regions. In areas with little official employment, entrepreneurship is a major force behind rural development by providing chances for self-employment. Digital tools have made it possible for rural business owners to reach out to suppliers, utilise government programmes, and grow their companies outside local markets (Mitra, 2021). A well-developed financial system has the potential to catalyse technological innovation and economic growth through the provision of financial services and resources to entrepreneurs who have the highest probability of successfully producing innovative products and processes (Onyeoma and Ogagaoghene, 2025). Academics have studied digital financial integration from different angles, looking at how it affects economic growth and policy frameworks. For instance, Smith *et al.*

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(2018) emphasised the favourable relationship between economic growth in emerging nations and digital financial inclusion, highlighting the function of digital technology in fostering entrepreneurship and increasing financial access. Dahlman *et al.* (2016) have described how the digital economy serves as a framework for inclusive development in addition to being a driver of growth and productivity.

Theoretical Framework

This study hinges on the technology adoption model (TAM).

Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) posits that technology acceptance is a three-stage process in which use behaviour is influenced by external factors that trigger cognitive responses (perceived usefulness and ease of use), which in turn form an effective response (attitude toward using technology/intention) (Davis, 1993). Perceived utility, behavioural intention, and simplicity of use all predict the behaviour, which is represented by TAM. The anticipation of favourable behavioural consequences and the conviction that behaviour does not require a lot of work are captured by perceived usefulness and simplicity of use (Davis, 1993). As Marikyan (2025) asserted, according to the model, if an application is user-friendly, it is more likely to be deemed beneficial by the user and to encourage the adoption of the technology.

Okocha and Dogo (2023) examined digital inclusion in rural areas: qualitative exploration of challenges faced by people from isolated communities in Southern Kaduna. The study utilised social inclusion and digital divide as the underpinning theories. It examined the unequal distribution of digital literacy, skills and participation, as well as the level of social inclusion along the parameters of investment in human capital, and addressing the skills gap to promote economic growth. Hence, the level of knowledge acquired by people in rural areas was examined. The study adopted the qualitative research design with a sample of 30 people purposively selected for a 6-group discussion as a method of data collection. Results from this research revealed a fair knowledge of the term digital technology and its use. However, it identified inadequate skills in using mobile phones and insecurity, amongst others, as the challenges hindering digital inclusion. The study recommended creating awareness on digital technologies at the grassroots levels, while government or nongovernmental organisations undertake training on the necessary skills needed to operate the digital devices.

Kwan (2023) analysed the relationships between financial development and economic growth for Nigeria, Ghana and Gambia and found that financial development had a positive influence on output growth. He, therefore, concluded that a sound financial system is essential in the course of economic development.

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Udel (2024) showed that digital literacy is a key predictor of willingness to use fintech and online platforms, especially in developing regions like rural Nigeria with low socioeconomic resources.

Methodology

The research employed a mixed-method research design, integrating qualitative, quantitative and focus group approaches. This study employed a multi-stage sampling strategy. In the first stage, Edo State was purposefully selected due to its diverse economic landscape and its representation of rural entrepreneurial activity in Nigeria. In the second stage, Ekpon and Igbanke communities were also purposefully selected based on their high concentration of rural entrepreneurs. According to the SMEDAN-NBS National MSME Survey (2021)**,** rural communities in Igueben and Orhionmwon LGAs, where Ekpon and Igbanke are located, record some of the highest densities of micro-entrepreneurs in Edo State, particularly in agriculture-related value chains, retail trade, and artisanal production. Finally, in the third stage, a random sampling process was used to select 380 entrepreneurs from within the two chosen communities to ensure a representative sample of participants. This sample size aligns with the recommendations of Israel (2012) and Krejcie and Morgan (1970) for populations above 10,000, providing sufficient power for quantitative inference while maintaining diversity across gender, enterprise type, and business size categories. Therefore, a sample size of 380 rural entrepreneurs (190 from each community) was used for the study.

The reliability of the data collection instrument was determined using Cronbach's alpha test. This was done by subjecting the data collected from the sample respondents to Cronbach's alpha testing using Statistical Product and Service Solutions (SPSS). The overall alpha value was 0.75; demonstrating high internal consistency. The research tools were also field-tested through a pilot test that were conducted in one of the communities that was not involved in the main study to ensure that the items are appropriate for the local context and the skills of interviewers. The qualitative research approach was implemented through in-depth interviews to facilitate a deeper exploration of individual experiences, perceptions, and attitudes related to digital literacy, financial inclusion, and e-commerce adoption and the efficacy of existing prevention programmes and policies. The focus group approach made use of the same ten (10) participants from each of the two communities used for the interview. The questionnaires were administered after obtaining informed consent from the entrepreneurs and village heads. Correlation and regression were applied to quantitative data. Qualitative and focus group data were analysed thematically using ATLAS to identify recurring patterns, themes, and narratives.

Results and Discussion

A total of 380 copies of the questionnaire were distributed to respondents in two rural communities -

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Ekpon and Igbanke, Edo state, Nigeria. Out of the 380 copies of questionnaire distributed, only 350 representing 92.1% were retrieved, and 74 (21.1%) found to be invalid or wrongly filled. The remaining 276 (78.9%) valid responses are analysed in this section and the chapter ends with a discussion of the study's finding.

Demographics of Respondents

The socio-demographic variables include the gender, age, entrepreneurial specialty, Business capital, Religion, LGA, and level of education of the respondents.

Table 1.1 Respondents Demographic Profile

S/N	Categories	Responses	
		Frequency	**%**
1.	**Gender**		
	Male	130	47.1
	Female	146	52.9
	Total	**276**	**100.0**
2.	**Age**		
	21-30yrs	3	1.1
	31-40yrs	144	52.2
	41-50yrs	109	39.5
	51-60yrs	17	6.2
	61yrs and above	3	1.1
	Total	**276**	**100.0**
3.	**Entrepreneurial Specialty**		
	Agriculture	36	13.0
	Automobile and Transport	18	6.5
	Telecom	26	9.4
	Commerce & Trading	89	32.2
	Medicine & Pharmacy	22	8.0
	Real estate	5	1.8
	Others	80	29.0
	Total	**276**	**100.0**
4.	**Business Capital**		
	Less than 100k	5	1.8
	101k - 200k	3	1.1
	201k - 300k	28	10.1
	401k - 500k	95	34.4
	501k - 999k	49	17.8
	Above 1M	96	34.8
	Total	**276**	**100.0**
5.	**Religion**		
	Christainity	221	80.1

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	Islam	49	17.8
	Pagan	5	1.8
	None	1	0.4
	Total	**276**	**100.0**
6.	**LGA/Town**		
	Epkon	132	47.8
	Igbanke	139	50.4
	Others	5	1.8
	Total	**276**	**100.0**
	Level of Education		
	No formal education	3	1.1
	Primary School	27	9.8
	Secondary	73	26.4
	NCE/OND/HND	124	44.9
	B.Sc/M.Sc	42	15.2
	PhD	7	2.5
	Total	**276**	**100.0**

Source: Authors' Field Work, 2025

Descriptive Analysis of Responses Answering the Research Questions

6. **Research Question One: What is the current level of digital literacy, financial inclusion and e-commerce usage among rural entrepreneurs in Edo state and what specific barriers impede their participation?**

This question seeks to ascertain the current level of digital literacy, financial inclusion and e-commerce adoption among rural entrepreneurs in Edo state.

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Table 1.2 Level of Digital Literacy, Financial Inclusion, and E-commerce

S/N	Statement	SA	A	UN	D	SD	Mean	Std-Dev
	Level of Digital Literacy, Financial Inclusion, and E-commerce							
	I have elementary knowledge of using digital tools (Smartphones, computers) for business	180 (65.2%)	71 (25.7%)	2 (0.7%)	23 (8.3%)	- (-)	4.48	0.88
	I can effectively use digital financial services (online payments, mobile banking)	155 (56.2%)	35 (12.7%)	1 (0.4%)	82 (29.7%)	3 (1.1%)	3.93	1.36
	I frequently use commerce platforms to sell or market my products	10 (3.6%)	123 (44.6%)	2 (0.7%)	99 (35.9%)	42 (15.2%)	2.86	1.24
	I feel confident operating the internet to search for business-related information	99 (35.9%)	51 (18.5%)	4 (1.4%)	88 (31.9%)	34 (12.3%)	3.34	1.53
	I believe digital literacy is vital for business sucess in today's world	78 (28.3%)	118 (42.8%)	12 (4.3%)	66 (23.9%)	2 (0.7%)	3.74	1.13
	Grand Mean	104.4 (37.83 %)	79.6 (28.84%)	4.2 (1.52%)	71.6 (25.94%)	16.2 (5.87%)	3.67	1.23

Source: Authors' Fieldwork, 2025.

The data presented in Table 1.2 revealed a moderate to high level of digital literacy and financial inclusion, but relatively low usage of e-commerce platforms. A significant majority (65.2%) of respondents strongly agreed that they have elementary knowledge of digital tools such as smartphones and computers for business purposes, with a mean of 4.48 and a low standard deviation of 0.88, indicating high digital familiarity among most rural entrepreneurs. Similarly, a combined 68.9% agreed or strongly agreed that they can effectively use digital financial services like online payments and mobile banking, with a mean of 3.93, which supports the assertion that financial inclusion is relatively well-established.

However, when it comes to the frequent use of e-commerce platforms to market or sell products, the adoption is significantly lower. Only 3.6% strongly agreed and 44.6% agreed with the statement,

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while a notable 35.9% disagreed and 15.2% strongly disagreed, resulting in a relatively low mean of 2.86. This reflects limited e-commerce engagement, possibly due to structural or knowledge-related barriers.

Furthermore, 54.4% of respondents reported feeling confident in using the internet to search for business-related information, with a mean score of 3.34. While this suggests a fair level of internet literacy, the relatively high standard deviation (1.53) implies significant variation in confidence levels across respondents. The thematic analyses further highlight this gap between e-commerce awareness and actual usage. Participants generally reported basic familiarity with digital tools but limited engagement with e-commerce. One entrepreneur noted, "I use my phone for calls and WhatsApp, but not for business." Another said, "I've heard of online selling, but I don't know how to do it." Financial inclusion was similarly basic, with a respondent stating, "I have a bank account, but I rarely use it." These results suggest that, rural entrepreneurs in Edo State generally possess basic digital and financial literacy and recognize its importance, but e-commerce utilisation remains low, indicating a need for more targeted support and infrastructural development in this area.

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Table 1.3 Specific barriers to digital literacy and financial inclusion

S/N	Statement	SA	A	UN	D	SD	Mean	Std-Dev
	Skill deficiency and Barriers to digital literacy and financial inclusion							
	I struggle with using digital tools for record-keeping and financial managment and to market my products online	170 (61.6%)	88 (31.9%)	- (-)	18 (6.5%)	- (-)	4.49	0.80
	I lack technical knowledge needed to create online business presence	205 (74.3%)	65 (23.6%)	- (-)	5 (1.8%)	1 (0.4%)	4.70	0.60
	The high cost of internet access (e.g Laptops, Smartphones) limits my ability to engage in e-commerce	155 (56.2%)	114 (41.3%)	3 (1.1%)	3 (1.1%)	1 (0.4%)	4.52	0.62
	Network challenges affects my e-commerce transactions	58 (21.0%)	179 (64.9%)	23 (8.3%)	13 (4.7%)	3 (1.1%)	4.00	0.76
	My customers easily use and accept e-banking channels for transactions with me	47 (17.0%)	8 (2.9%)	7 (2.5%)	173 (62.7%)	41 (14.9%)	2.45	1.28
	Grand Mean	127 (46.01 %)	90.8 (32.90%)	6.6 (2.39%)	42.4 (15.36%)	9.2 (3.33%)	4.03	0.81

Source: Authors' Fieldwork, 2025.

The data reveals significant digital skill deficiencies among rural entrepreneurs. Most respondents struggle with using digital tools for record-keeping, financial management, and online marketing (Mean = 4.49), and a very high proportion lack the technical know-how to create an online business presence (Mean = 4.70). From the thematic analysis, participants highlighted gaps in skills like online marketing and financial management. One entrepreneur shared, "I can't keep records on my phone; it's too complicated." Barriers included limited training opportunities, with a respondent noting, "There's no one to teach us these things." High costs and poor infrastructure were also cited, as one said, "Buying a smartphone and data is too expensive."

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It is, therefore, evident that rural entrepreneurs face notable digital skill gaps and infrastructural barriers, particularly in affordability and connectivity, which hinder their ability to fully participate in digital and financial systems.

Research Question Two: What are the perception and attitudes of rural entrepreneurs towards digital literacy, and how do these attitudes impacts their willingness to engage e-commerce for economic empowerment?

Table 1.4 Perception and Attitude towards digital Literacy

S/N	Statement	SA	A	UN	D	SD	Mean	Std-Dev
	Perception and Attitude towards digital Literacy							
	I believe digital skills will help better my business operations	151 (54.7%)	107 (38.8%)	- (-)	8 (2.9%)	10 (3.6%)	4.38	.92
	I am willing to attend training sessions to enhance my digital skills	169 (61.2%)	55 (19.9%)	5 (1.8%)	41 (14.9%)	6 (2.2%)	4.23	1.17
	I trust online mobile banking payment systems for financial transactions	11 (4.0%)	160 (58.0%)	18 (6.5%)	85 (30.8%)	2 (0.7%)	3.34	.98
	All my business activities are done through transfer using banking applications	11 (4.0%)	46 (16.7%)	12 (4.3%)	138 (50.0%)	69 (25.0%)	2.25	1.12
	Grand Mean	85.5 (30.98 %)	92 (33.33%)	8.75 (3.17%)	68 (24.64%)	21.75 (7.88%)	3.55	1.17

Source: Authors' Fieldwork, 2025

Findings show that rural entrepreneurs have a strong positive perception of digital literacy. Most respondents believe digital skills will improve their business operations (Mean = 4.38), and a majority expressed willingness to attend training to enhance these skills (Mean = 4.23). However, actual usage of banking apps for business transactions is low (Mean = 2.25). Thematic analysis aligns with this finding revealing that entrepreneurs have positive attitudes towards digital literacy but felt unprepared to engage in e-commerce. One participant said, "Learning digital skills could help my business, but I don't know where to start." Another added, "I want to try e-commerce, but I'm afraid of failing." These sentiments reflect a willingness to learn but a lack of

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confidence and support, which hinders e-commerce adoption. These results suggest that improving trust and usage habits could enhance e-commerce adoption for economic empowerment.

Research Question Three: What are the perceived benefits and drawbacks of financial inclusion and e-commerce adoption on rural entrepreneurs' overall business performance and sustainability?

Table 1.5 Perceived benefits and drawbacks of financial inclusion and e-commerce adoption

S/N	Statement	SA	A	UN	D	SD	Mean	Remark
	Perceived benefits and drawbacks of financial inclusion and e-commerce adoption							
	Digital financial inclusion has improved my business profitability	90 (32.6%)	86 (31.2%)	35 (12.7%)	38 (13.8%)	27 (9.8%)	3.63	1.32
	I believe that financial inclusion has made it easier for me to access loans and credit for my business	93 (33.7%)	66 (23.9%)	2 (0.7%)	81 (29.3%)	34 (12.3%)	3.37	1.50
	Adopting e-commerce has increased my customer reach and sales	9 (3.3%)	163 (59.1%)	16 (5.8%)	77 (27.9%)	11 (4.0%)	3.30	1.04
	I worry about security risks asssociated with using e-commerce platforms	46 (16.7%)	197 (71.4%)	3 (1.1%)	28 (10.1%)	2 (0.7%)	3.93	0.80
	Using digital payment systems exposes my business to financial risks	62 (22.5%)	133 (48.2%)	33 (12.0%)	44 (15.9%)	4 (1.4%)	3.74	1.03
	E-commerce platforms charges high fees that affects my profits	102 (37.0%)	49 (17.8%)	69 (25.0%)	35 (12.7%)	21 (7.6%)	3.64	1.30
	It is cheapter to adopt e-commerce and e-business models	31 (11.2%)	54 (19.6%)	53 (19.2%)	58 (21.0%)	80 (29.0%)	2.63	1.37
	Grand Mean	61.86 (22.41 %)	106.86 (38.30%)	30.14 (10.92%)	51.57 (18.68%)	25.57 (9.26%)	3.46	1.19

Source: Authors' Fieldwork, 2025

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Findings show that rural entrepreneurs perceive both advantages and concerns regarding financial inclusion and e-commerce. Many respondents agree that digital financial inclusion has improved business profitability (Mean = 3.63) and somewhat enhanced access to loans and credit (Mean = 3.37). Similarly, e-commerce is seen as increasing customer reach and sales to a moderate extent (Mean = 3.30). However, concerns about security risks (Mean = 3.93), exposure to financial risks (Mean = 3.74), and platform charges (Mean = 3.64) are notably high. Furthermore, a significant portion disagreed that e-commerce is cheaper to adopt (Mean = 2.63), indicating cost as a perceived drawback. Thematic analysis corroborates this finding. Entrepreneurs saw potential benefits like increased customer reach and profitability. One remarked, "Selling online could bring customers from far away." However, drawbacks included security risks and costs. A participant expressed, "I'm scared of losing money online," while another noted, "E-commerce fees are too high for my small business."

The result shows that while financial inclusion and e-commerce are perceived to improve profitability and market reach, rural entrepreneurs remain cautious due to high costs, limited access to credit, and perceived risks related to digital transactions.

Research Question Four: How do local community leaders and influencers perceive the role digital literacy and e-commerce in rural economic development?

Table 1.6 Perception of Local community Leaders and influencers on the role of digital literacy in rural economic development

S/N	Statement	SA	A	UN	D	SD	Mean	Remark
	Perception of Local community Leaders and influencers on the role of digital literacy in rural economic development							
	Local business leaders support rural entrepreneurs to use digital platforms	- (-)	35 (12.7%)	- (-)	125 (45.3%)	116 (42.0%)	1.83	0.95
	My community leaders fosters financial inclusion through eduaction and outreach	31 (11.2%)	8 (2.9%)	1 (0.4%)	52 (18.8%)	184 (66.7%)	1.73	1.32
	Grand Mean	15.5 (5.62%)	21.5 (7.79%)	0.5 (0.18%)	88.5 (32.07%)	150 (54.35%)	1.78	1.15

Source: Authors' Fieldwork, 2025.

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The findings indicate a generally low level of support and engagement from local community leaders and influencers concerning digital literacy and e-commerce initiatives for rural economic development. For instance, the statement that local business leaders support rural entrepreneurs in using digital platforms was largely disagreed with by respondents, with only 12.7% in agreement and a significant 87.3% expressing disagreement (Mean = 1.83). The grand mean of 1.78 further underscores the perception that local leaders are not significantly championing digital literacy or e-commerce as vehicles for rural economic growth. This suggests a critical gap in local advocacy, sensitization, and leadership-driven support that could otherwise influence the attitudes and behaviors of rural entrepreneurs.

Thematic analysis also showed that participants felt that local leaders were not actively promoting digital literacy or e-commerce. One entrepreneur said, "Our leaders don't talk about these things," while another noted, "They don't understand how digital tools can help us." This lack of local advocacy deprives entrepreneurs of critical guidance.

The result suggests that, while policy frameworks may exist at higher governmental levels, their actualization at the grassroots is hindered by insufficient engagement from local influencers. This calls for intentional involvement of community leaders through tailored capacity-building, orientation programmes, and incentive-based partnerships that can reposition them as catalysts of digital and economic transformation in rural areas.

Research Question Five: How does socioeconomic context of each local government area influence the digital literacy and financial inclusion of rural entrepreneurs?

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Table 1.7 Socio-economic influence on digital literacy and financial inclusion of rural entrepreneurs

S/N	Statement	SA	A	UN	D	SD	Mean	Std-Dev
	Socio-economic influence on digital literacy and financial inclusion of rural entrepreneurs							
	Rural entrepreneurs in my community have fewer opportunities for digital training than urban entrepreneurs	86 (31.2%)	135 (48.9%)	1 (0.4%)	26 (9.4%)	28 (10.1%)	4.20	1.28
	The availability of financial services in my area affects how I do business	85 (30.8%)	6 (2.2%)	2 (0.7%)	74 (26.8%)	109 (39.5%)	4.32	1.17
	Economic conditions in my community make it tough to adopt digital solutions	179 (64.9%)	58 (21.0%)	- (-)	25 (9.1%)	14 (5.1%)	3.82	1.26
	Government policies in my local government encourage digital literacy and financial inclusion	172 (62.3%)	54 (19.6%)	1 (0.4%)	31 (11.2%)	18 (6.5%)	2.58	1.71
	Grand Mean	130.5 (47.28 %)	63.25 (22.92%)	1 (0.36%)	39 (14.13%)	42.25 (15.31%)	3.73	1.36

Source: Authors' Fieldwork, 2025.

The responses in Table 1.7 reveal that socioeconomic context plays a significant role in shaping digital literacy and financial inclusion among rural entrepreneurs. A dominant perception is that rural entrepreneurs face unequal access to digital training opportunities compared to their urban counterparts, as evidenced by a high level of agreement (80.1%) with a mean score of 4.20. This suggests a structural disadvantage in capacity-building opportunities due to geographical location.

The influence of economic hardship is further emphasised, with 64.9% of respondents strongly agreeing that prevailing economic conditions make it difficult to adopt digital solutions (Mean = 3.82). An entrepreneur from Igbanke noted, "My business barely makes enough; I can't afford technology," while one from Ekpon said, "The network here is bad; it stops us from going online." This highlights how poverty, unemployment, and low purchasing power may suppress technology adoption in business practices. On the contrary,

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perceptions about supportive government policies are less positive. Although 62.3% of respondents agreed that their local governments support digital literacy and inclusion, the low mean score of 2.58 and high standard deviation (1.71) suggest inconsistencies and possibly misplaced optimism, as not all local government areas may have functional digital development policies or implementation capacity.

The grand mean of 3.73 reflects a moderate to high level of perceived influence of socioeconomic context, indicating that both resource availability and local policy environments significantly impact digital advancement and financial integration in rural enterprises.

Table 1.8: Themes and Sub-themes

Theme	Sub-theme	Explanation - Example
Digital Skill Gaps and Training Needs	Lack of technical skills	Struggling with digital tools for record-keeping, financial management, and marketing.
	Positive attitudes towards learning	Enthusiasm for training but lack of opportunities.
Infrastructural and Economic Barriers	High costs of digital access	Expensive devices and internet data limit adoption.
	Poor network connectivity	Unreliable internet hinders digital engagement.
	Economic hardships	Limited income restricts investment in technology.
Trust and Security Concerns	Low trust in digital financial services	Fear of losing money through online platforms.
	Fear of security risks	Concerns about fraud and scams in e-commerce.
Institutional Support and Policy Gaps	Lack of effective training programs	Insufficient or absent training initiatives.
	Inadequate follow-up support	No sustained assistance after initial training.
	Need for stakeholder collaboration	Desire for partnerships between government, banks, and e-commerce platforms.

Authors' Construction (2025)

Findings from both quantitative and qualitative analyses revealed that while digital literacy and financial inclusion are moderately present among rural entrepreneurs, actual adoption of e-commerce tools and practices remains low. Specifically, most respondents indicated they possessed elementary knowledge of

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digital tools and could navigate digital financial services such as mobile banking. However, the frequent use of digital platforms for marketing, online sales, or comprehensive business operations was low. This indicates a digital engagement gap where rural entrepreneurs acknowledge the importance of digital skills but have not fully transitioned into digitally integrated business models, aligning with the findings of Ezeani (2023); Okocha and Dogo (2023), where knowledge gaps and infrastructural limitations were identified as key factors limiting rural e-commerce in Nigeria.

The study found that rural entrepreneurs exhibited a highly positive disposition toward digital literacy and showed willingness to enhance their skills through training. Despite this positive outlook, the actual use of mobile apps for complete business transactions remains minimal, suggesting a gap between attitude and practice, corroborating the position of Okpalaibekwe and Anikeze (2024), who observed that while awareness of digital tools is high among micro entrepreneurs in rural Nigeria, usage remains passive. The gap is indicative of a complex interplay of psychological, logistical, and socio-economic barriers that training programs often fail to address. A significant psychological barrier could be due to perceived risk associated with new technologies and fear of failure. Costly and unreliable internet access in rural areas in Nigeria could also be responsible for the low actual usage; e-commerce platforms and payment gateways require stable and consistent internet connectivity which can be considered a luxury in rural areas. Furthermore, local markets for entrepreneurs in rural areas are largely based on personal relationships and cash basis which may hamper the actual usage of digital tools.

One of the most significant insights from the study is the widespread lack of technical digital skills, particularly in record-keeping, online marketing, and creating digital business visibility. In addition to skill gaps, barriers such as high cost of internet devices, poor network infrastructure, and limited customer readiness for digital payment systems further compound the problem. These findings are consistent with the works of (Oladipupo and Abdulazeez, 2024; Onyeoma and Ogagaoghene, 2025), which emphasized how digital illiteracy, affordability, and infrastructural deficits hinder Nigeria's rural economic digital transition.

Respondents expressed that these tools could potentially enhance profitability, access to credit, and customer reach, but identified security risks, high platform charges, and the cost of adoption as major drawbacks. This duality of perception reflects a cautious optimism among rural entrepreneurs. This aligns with the assertions of Kumar and Shobana (2025), who observed that digital transformation in rural India is often met with enthusiasm tempered by risk aversion.

The analyses showed that community leaders and influencers are not actively involved in promoting digital or

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financial inclusion. This lack of leadership engagement deprives rural entrepreneurs of critical local guidance and trust-based mobilization, which are essential in rural development efforts. As Arowolo and Ajayi (2021) argue, the success of rural policy initiatives depends significantly on the role of local stakeholders and opinion leaders in facilitating adoption.

Lastly, the socioeconomic context of each local government area was found to strongly influence access to training, financial infrastructure, and overall readiness for digital transition. Respondents from different LGAs reported varied experiences, suggesting that disparities in local economic conditions, infrastructure, and policy implementation play critical roles, therefore supporting Adetunji and Olowu (2023) assertion that uneven policy execution across Nigeria's LGAs contributes significantly to development gaps, especially in digital access and entrepreneurial support. These findings highlight both universal rural challenges and context-specific issues in Edo State.

Conclusion and Recommendations

The study presents an in-depth understanding of digital literacy and financial inclusion in rural Edo State. While there is strong awareness and interest, actual adoption remains low due to skill gaps, infrastructural challenges, and weak institutional support. The analysis revealed critical barriers to digital literacy, financial inclusion, and e-commerce adoption, including skill deficiencies, infrastructural challenges, trust issues, and inadequate institutional support. The study, however, established a willingness/openness of rural entrepreneurs to digital literacy.

Based on the finding that rural entrepreneurs possess only elementary digital knowledge and demonstrate low adoption of e-commerce for marketing, sales, and business operations, it is recommended that targeted and practical digital literacy programmes be designed for rural communities. These programmes should go beyond basic computer awareness to include training on online sales platforms, digital bookkeeping, social media marketing, and mobile app based business management. Establishing community digital learning hubs equipped with internet-enabled devices would provide continuous access to learning resources and hands-on practice. Such hubs should be supported by partnerships between the Edo State government, private technology firms, local NGOs, and higher institutions to ensure technical support and sustainability.

In response to the finding that rural entrepreneurs have a positive attitude toward digital tools but demonstrate minimal actual usage due to psychological, logistical, and socio-economic barriers, capacity-building efforts must incorporate behavioural-change communication and confidence-building strategies. Trainings should explicitly address fear of failure, perceived risks, and mistrust associated with digital transactions through supervised demonstrations and guided first-time use. Providing subsidies on smartphones, data bundles, and digital applications can further reduce the financial

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barriers hindering adoption. Improving ICT infrastructure by expanding broadband connectivity and ensuring reliable network coverage in rural LGAs will also help bridge the gap between willingness and actual practice.

Given the study's finding of widespread technical skill deficits, particularly in digital marketing, record keeping, and creating business visibility, skills development initiatives must be tailored to build these competencies. Peer-to-peer mentoring programmes using digitally proficient youths and local entrepreneurs as community digital champions can provide continuous support. Strengthening market readiness by promoting digital payment awareness among rural consumers will also enhance the practicality of adopting digital tools. Furthermore, financial institutions and e-commerce platforms should be encouraged to simplify onboarding processes, reduce transaction costs, and introduce secure, low-fee digital payment options that respond to the realities of rural small businesses.

In light of the finding that rural entrepreneurs perceive digital tools as potentially beneficial but express concerns about security risks, platform charges, and high adoption costs, government and private-sector stakeholders should incentivise digital service providers to make their platforms more affordable and secure for rural users. Regulatory frameworks should promote consumer protection education in rural communities, highlighting safe digital practices and fraud-prevention measures. Encouraging fintech companies and e-commerce platforms to adopt pro-poor pricing structures will help lower cost-related barriers while building trust and confidence in digital systems.

Regarding the finding that community leaders and local influencers are not sufficiently involved in digital or financial inclusion efforts, it is important to mobilise these leaders as advocates for digital transformation. Community leaders, traditional rulers, religious groups, and cooperative associations should be engaged in sensitisation campaigns to build trust and promote local ownership of digital initiatives. Their involvement can enhance credibility, encourage participation, and support behaviour change among rural entrepreneurs who rely heavily on community-based guidance and approval.

Finally, the study's finding that socio-economic variations across local government areas significantly influence access to digital training, financial infrastructure, and readiness for digital transition underscores the need for LGA-specific digital development strategies. Policymakers should design interventions that align with the distinct infrastructural and economic conditions of each locality rather than adopting a uniform approach. Comprehensive needs assessments across LGAs will help identify local priorities and operational gaps. Additionally, future research should extend beyond Edo State to multiple geopolitical zones to capture regional differences and provide nationally generalisable insights on rural digital entrepreneurship.

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