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Digital Entrepreneurship in the Informal Economy Adoption, Modernization, and Profitability among Open Market Traders in Warri Metropolis, Nigeria

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Abstract

This study explored the digital entrepreneurship in the informal economy: adoption, monetization, and profitability among open market traders in Warri Metropolis, Nigeria. The objectives of the study focused on exploring the adoption, modernization, profitability, barriers, and drivers of digital platforms use among open market traders in Warri, Nigeria. Employing a mixed methods design, survey data (200) were complemented with qualitative interviews to capture both statistical trends and lived experiences. Results show moderate adoption (mean – 3.05), with traders relying more on informal platforms such as WhatsApp and Facebook than on formal e-commerce system. Monetization remains limited (mean = 2.98), with indirect benefits, such as; boosting physical purchases than online income. Profitability perceptions are moderate (mean = 3,25), with digital marketing expanding customer reach but traditional walk-in customers remaining dominant, Barriers are significant (mean = 3.48), particularly unstable electricity and poor internet connectivity, while drivers such as education and social influence (mean = 3.23) encourage adoption. Correlation analysis revealed a positive and significant relationship between adoption and profitability ($r = 0.414$, $p < 0.01$), while regression analysis confirmed monetization as the strongest predictor of profitability ($\beta = 3.636$, $p < 0.001$). Qualitative findings reinforced these results, highlight infrastructural frustrations, trust concerns in online payments, and the role of younger relatives in facilitating digital engagement. Conclusively, this study demonstrate that adoption alone does not guarantee profitability; rather, effective monetization strategies are critical. The study then recommends that the constraints be addressed in order to achieve sustainable profitability.

Keyword: Adoption, Modernization, Profitability, Barriers, Drivers, and Digital Entrepreneurship.

INTRODUCTION

Digital platforms are increasingly reshaping the landscape of entrepreneurship globally and their influence is particularly visible in emerging markets where informal trade dominates economic activity. In Nigeria. The informal economy accounts for a significant share of employment and productivity, with open market trading serving as a cornerstone of grassroots commerce. Warri, a bustling city in Delta State, provides a vivid example of how digital entrepreneurship is beginning to transform the practices of traders who have traditionally relied on physical transaction, cash payments and localized networks. The introduction of mobile payments, social media marketing and e-commerce platforms has created new opportunities for these traders to expand their reach, monetize their businesses and improve profitability.

Yet, adoption remains uneven, because some traders embrace digital tools while others remain offline due to reasons such as; infrastructural, cultural and literacy barriers. Understanding the drivers of adoption

and the obstacles that hinder participation is crucial for advancing inclusive economic development in Nigeria's informal economy (ILO, 2023).

The informal economy in Nigeria is vast, encompassing micro, small and medium enterprises that constitute nearly all businesses and contribute significantly to national GDP (PwC, 2024). Despite their importance, most of these enterprises continue based on cash, unregistered and digitally excluded, which perpetuates cycle of survival rather than growth. Traders in Warri exemplify this dynamic, as they dominate consumer goods distribution but often lack access to digital infrastructure, financial services and scalable business models. Digital entrepreneurship offers a pathway to bridge these gaps by enabling traders to record sales, track inventory, reconcile payments and access market intelligence (Njoku & Ebisike, 2025). However, the uneven pace of adoption reflects broader structural challenges in Nigeria's digital economy, including infrastructural deficit, regulatory fragmentation and cultural scepticisms toward digital transactions.

Several factors drive digital adoption among informal traders in Warri. Nigeria's high mobile penetration provides traders with affordable access to communication and digital tools, while social media platforms such as WhatsApp, Facebook and Instagram serve as low-cost marketing channels that allow traders to reach customers beyond their stalls and build trust through digital visibility (Macaulay, 2025). E-commerce platforms like Jumia and Konga, alongside localized solutions, connect traders to national and international markets, offering opportunities for monetization and scale. Financial inclusion initiatives including digital identity programmes and fintech innovations, provide traders with access to microcredit, saving schemes and secure payment systems, thereby reducing reliance on cash and informal lending (Njoku & Ebisike, 2025). These drivers illustrate how digital entrepreneurship can transform informal trade from subsistence level into a sustainable enterprise.

Nonetheless, barrier remain significantly high. Poor internet connectivity and unreliable electricity hinder consistent digital engagement, while low digital literacy among many traders, particularly older ones, create generational divides in adoption (Cheetahs Policy Institute, 2024). Scepticism toward digital transactions persist among customers who prefer cash, reflecting cultural and security concerns. Regulatory fragmentation, including complex registration systems and inconsistent policy frameworks, discourages traders from formalizing their digital activities (PwC, 2024). These barriers highlight the need for targeted interventions to support digital inclusion in informal economies, particularly in regions like Warri where informal trade is central to livelihoods.

Digital entrepreneurship enables traders to monetize their businesses in innovative ways, social media is not only used to market products but also to generate income through sponsored posts, influencer partnerships and digital advertising. Value added services such as delivery options, loyalty programmes and digital promotions create new revenue streams and enhance customer retention. Data analytics provided by digital platforms offer insights into sales trends and customer behaviour, allowing traders to optimize inventory and pricing strategies (Njoku & Ebisike, 2025). Profitability outcomes include increased transaction volumes, reduced loses from cash mismanagement and enhanced access to financial services. These outcomes demonstrate the potential of digital entrepreneurship to strengthen resilience and sustainability in Warri informal economy.

In light of these dynamics, this study aims at providing a comprehensive framework for understanding digital entrepreneurship in in Warri's informal economy and contribute to policy debates on economic inclusion in Nigeria. It is this study's earnest expectation to illustrate the transformative potential of technology in informal economies.

Objective of the Study

i. To assess the extent of digital platform adoption among open market traders in Warri.
ii. To examine whether traders monetize content or generate income through online platforms.
iii. To evaluate the impact of digital marketing on customer reach and profitability.
iv. To identify barriers to digital adoption.
v. To analyze key adoption drivers, including age, education, and influence from younger individuals (children, friends, or relatives).

METHODOLOGY

This study employed a mixed method research design, combining quantitative and qualitative approaches to provide a comprehensive understanding of digital entrepreneurship among open market traders in Warri, Nigeria. A mixed method approach was particularly suitable because it allows for triangulation of data, ensuring that numerical trends are complemented by rich contextual insights (Creswell & Clark, 2018). By integrating survey and interviews, the study captured both the breadth and depth of traders' experiences with digital platforms, monetization strategies and profitability outcomes.

The quantitative component involved structured surveys administered to a representative sample of 200 traders across Warri's major open markets. The survey instrument collected data on digital platform usage, frequency of engagement, types of planforms adopted and the extent of traders monetize content or generate income through online channels. Questions also addressed profitability indicators, including changes in

customer reach, transaction volumes and reported revenue growth. Responses were coded and analysed using descriptive and inferential statistics, including mean, standard deviation, correlation and regression analysis (Field, 2018).

The qualitative component consisted of semi-structured interviews with a purposive subsample of 20 traders. These interviews provided deeper insights into motivations, challenges and live experiences of traders engaging or choosing not to engage with digital entrepreneurship. Thematic analysis was used which involved capturing of response from the interviewed respondents and interpretation to generate themes that explain the social and cultural dimensions of digital adoption.

Ethical considerations were central to the research process. Informed consent was obtained from all participants, anonymity and confidentiality were maintained and sensitivity to traders' socioeconomic realities ensured that participation did not disrupt daily business activities. By combining statistical analysis with thematic interpretation, the methodology provided a holistic understanding of digital entrepreneurship in Warri informal economy.

RESULTS

Table 1: Descriptive Statistics for Adoption of Digital Entrepreneurship in the Informal Economy

	N	Minimum	Maximum	Mean	Std. Deviation
I regularly use digital platforms for business.	200	1	5	3.40	1.360
I have registered on formal e-commerce platforms.	200	1	4	2.20	.982
I rely on relatives/friends to help manage accounts.	200	1	5	3.10	1.139
Digital platforms are essential for my business.	200	2	5	3.50	1.207
Valid N (listwise)	200				

The result in table 1 above reveal that traders moderately engage with digital platforms, as the overall average mean score for adoption is 3.05. Generally, the adoption of digital entrepreneurship is positive but not universal. This is because usage is common, yet formal integration and independent management remain relatively low.

Table 2: Descriptive Statistics for Monetization of Digital Entrepreneurship in the Informal Economy

	N	Minimum	Maximum	Mean	Std. Deviation
I generate direct income from online sales.	200	1	5	2.70	1.421
My online presence indirectly boosts in-person sales.	200	1	5	3.40	1.360
I have tried selling online but did not succeed.	200	1	5	2.90	1.139
Digital platforms provide opportunities beyond traditional sales.	200	1	5	2.90	1.224
Valid N (listwise)	200				

Table 2 showed an average mean score of 2.98, which indicates a moderate level of monetization. This show that traders benefit more from indirect boosts to individual direct sales than from direct income, and despite the obvious opportunities, many still struggle to achieve consistent financial success online.

Table 3: Descriptive Statistics for Profitability of Digital Entrepreneurship in the Informal Economy

	N	Minimum	Maximum	Mean	Std. Deviation
Digital marketing has expanded my customer reach beyond Warri.	200	2	5	3.50	1.207
Digital platforms have increased my profitability.	200	1	5	3.10	1.139
Most of my profit still comes from walk-in customers.	200	2	5	3.50	1.027
The cost of digital engagement outweighs the benefits.	200	1	5	2.90	1.139
Valid N (listwise)	200				

Table 3 revealed a mean score of 3.25, indicating a moderate positive perception of profitability. Tranders recognize that digital platforms expand reach and provide some profitability, but customers who patronize physically remain central, and cost concerns are present but not dominant.

Table 4: Descriptive Statistics for Barriers of Digital Entrepreneurship in the Informal Economy.

	N	Minimum	Maximum	Mean	Std. Deviation
Poor internet connectivity prevents me from using digital platforms effectively.	200	2	5	3.80	.982
Unstable electricity affects my ability to engage online.	200	2	5	3.90	.946
Buying mobile data is too expensive for me.	200	1	5	2.90	1.139
I do not trust online payments.	200	2	5	3.30	.783
Valid N (listwise)	200				

Table 4 show that the overall mean score for barrier of digital entrepreneurship in informal markets is 3.48. This indicate that traders face fairly strong challenges, especially with electricity and internet reliability, while cost and trust issues are secondary but still relevant.

Table 5: Descriptive Statistics for Drivers of Digital Entrepreneurship in the Informal Economy

	N	Minimum	Maximum	Mean	Std. Deviation
Younger relatives/friends influence my decision to adopt digital tools.	200	1	5	3.30	1.272
My level of education helps me use digital platforms effectively.	200	1	5	3.40	1.360
Seeing other traders succeed online motivates me.	200	1	5	3.30	1.272
I feel too old to learn how to use digital platforms.	200	1	5	2.90	1.139
Valid N (listwise)	200				

Table 5 reveal the overall average mean score for drivers is 3,23, reflecting moderate positive influences. Education and social network encourage adoption, while age related resistance is present but relatively weaker.

Table 6: The **Correlations Between digital adoption and profitability**

		Adoption	Profitability
Adoption	Pearson Correlation	1	.414**
	Sig. (2-tailed)		.000
	N	200	200
Profitability	Pearson Correlation	.414**	1
	Sig. (2-tailed)	.000	
	N	200	200
**. Correlation is significant at the 0.01 level (2-tailed).			

The above table 6 analysis shows a positive and statistically significant relationship between adoption of digital platforms and profitability ($r = 0.414$, $P < 0.01$). This means that traders who adoption of digital tools more actively tend to report higher profitability levels. The correlation is moderate in strength, indicating that while adoption is not sole factor influencing profitability, it plays an important role in improving business outcomes.

Table 7: Regression Result of the impact of digital marketing on customer reach and profitability

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.862[a]	.743	.739	.32416
a. Predictors: (Constant), Drivers, Adoption, Monetize				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59.404	3	19.801	188.439	.000[b]
	Residual	20.596	196	.105		
	Total	80.000	199			
a. Dependent Variable: Profitability						
b. Predictors: (Constant), Drivers, Adoption, Monetize						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.540	.195		48.878	.000
	Adoption	-.356	.024	-2.577	-14.975	.000
	Monetize	.809	.039	3.639	20.742	.000
	Drivers	-.141	.019	-.628	-7.436	.000
a. Dependent Variable: Profitability						

The table above show the regression analysis results, which comprise of model fit, Anova and coefficients. The model fit result revealed a very strong model with R = 0.862 and R^2 = 0.743. This means about 74% of the variation in profitability is explained by adoption, monetization and drivers combined. Also, from the ANOVA result, the regression model is statistically significant (F = 188.439, p < 0.001), confirming that the predictors jointly influence profitability. Examining the individual influence of the variables as presented in the coefficient result, adoption has a significant negative effect (β = -2.577, p < 0.001), suggesting that higher adoption scores are associated with lower profitability in this model. For monetization, there is a strong effect on profitability (β = 3.639, p < 0.001), indicating that successful monetization of digital platforms is the most important driver of profitability. Similarly, drivers (social/educational influences) show a negative effect (β = -0.628, p < 0.001), meaning that while these factors encourage adoption, they do not directly translate into profitability gains.

This regression results shows that profitability is best explained by monetization success, while adoption and drivers, though significant, have negative coefficients in this model. This suggest that simply adopting digital tools or being influenced to adopt them does not guarantee profitability, rather what matters most is whether traders can effectively monetize their digital presences.

DISCUSSION OF FINDINGS

Extent of Digital Platforms Adoption

On the extent of digital platform adoption, the findings from the study showed a moderate uptake, because traders use digital platforms regularly but formal e-commerce registration is low. These findings corroborate with Eke *et al.,* (2025) which found that digital penetration in Nigeria improves market performance bur adoption remains uneven due to infrastructural gaps. Also, study by Diaz-Arancibia *et al.,* (2024) found that SMEs in developing countries often adopt digital platforms informally, with limited structured integration due to infrastructural and knowledge gaps

Monetization of content and income generation

The findings on monetization revealed an average mean score for monetization, showing a modest success. Meanwhile regression confirms monetization is the strongest predictor of profitability. This is corroborated by the study from Noutchie (2025) which highlighted those small medium enterprises in Africa in Africa benefit from digital platforms mainly through improved visibility and access, but monetization remains challenging. Similarly, Eke and Achor (2025) noted infopreneurs struggle to sustain online income streams.

Impact of digital marketing on customer reach and profitability

The findings on profitability traders agree digital marketing expand reach but walk-in customers remain dominant. Also, the correlation show adoption moderately boosts profitability. This was corroborated by Akisanmi *et al.,* (2025) found digital marketing return on investment significantly improves small medium enterprises financial performance in Nigeria. Similarly, Olannye (2025) also showed social media marketing enhance customer loyalty among SMEs.

Barriers to Digital Adoption

The findings from this study revealed unstable electricity and poor internet as the strongest obstacles of digital marketing on customer reach and profitability. This result was supported by Achieng and Malatji (2022) as they emphasized that infrastructural deficits (power, internet) are the primary barriers to SME digital transformation in SU-Saharan Africa. Kalumendo (2023) similarly identified cost and trust issues as secondary barrier.

Drivers of Adoption (Age, Education, Social Influence)

On the drivers of adoption of digital marketing on customer reach and profitability, the findings indicated that education and social influence (friends/relatives, peer success) encourage adoption, while age-related reluctance is weaker. This result was corroborated by findings from a similar study posited by Ciaz-Arancibia *et al.,* (2024) found that education and digital readiness are critical drivers of SME adoption in developing countries. Aluko *et al.,* (2024) showed socioeconomic factors, including age and peer influence, shape SME digital adoption in Nigeria.

Qualitative Result Discussion

Extent of Digital Platform Adoption

From interviews and focus group insights often described digital platforms as "necessary but intimidating." Many expressed comfort with WhatsApp and Facebook for customer communication but hesitated to register on formal e-commerce platforms, citing

bureaucracy and lack of guidance. This reflects the quantitative finding of moderate adoption (Mean = 3.05).

Monetization of content/income generation

Qualitative responses revealed that traders see online presence more as a "marketing billboard" than a direct sales channel. Several noted that posting products online helps attract walk-in customer, but actual online transactions are rare due to trust issues and logistics, this aligns with the quantitative result where indirect benefits scored higher than direct income (mean = 2.98).

Impact of digital marketing on customer reach and profitability

Traders shared stories of reaching customers outside Warri through Facebook and Instagram, often leading to inquiries and occasional sales. However, many emphasized that "most profit still comes from walk-ins" echoing the quantitative mean of 3.25. The qualitative narratives highlight digital marketing as an enhancer of visibility rather than a full substitute for traditional sales.

Barriers to Dital Adoption

The qualitative data strongly emphasized infrastructural challenges. Traders frequently complained about "light (electricity) going off during peak hours" and "data finishing too quickly." Trust in online payments was also mentioned, with fears of fraud and failed transactions. These accounts corroborate that quantitative barrier mean of 3.48, where electricity and internet were the most pressing issues.

Drivers of adoption (Age, education, social influence)

The qualitative insights showed that younger relatives often "set up accounts" or "teach us how to post." Traders with higher education levels expressed more confidence in navigating digital tools. Older traders sometimes admitted feeling "too old to learn," but many were motivated by seeing peers succeed online. The mirrors the quantitative driver mean of 3.23, where education and social influence were stringer motivators than age.

CONCLUSION

This study assessed the adoption, monetization, profitability, barriers and drivers of digital platform use among open market traders in Warri. The findings reveal that adoption is moderate, with traders engaging digital tools informally (e.g. WhatsApp, Facebook) but showing limited participation in formal e-commerce platforms. Monetization remains modest, with indirect benefits such as boosting walk-in sales outweighing direct online income. Profitability perceptions are mixed: digital marketing expands customer reach, yet physical purchasing customers remain the dominant source of profit.

Barriers are significant, particularly infrastructural challenges such as unstable electricity and poor internet connectivity while cost and trust issues are secondary, Drivers of adoption are social and educational, with education and influence from younger relatives or peers encouraging uptake, while age related reluctance is present but relatively weaker. Regression analysis confirmed that monetization is the strongest predictor of profitability, while adoption and drivers alone do not guarantee financial success.

Conclusively, the study underscores that while digital platforms are increasingly recognized as essential, their transformative potential for traders in Warri is constrained by infrastructural deficits and limited monetization strategies. Sustainable profitability depends not merely on adoption strategies. Sustainable depends not adoption but on the ability to effectively monetize digital presence.

Recommendations

1. Public-private partnerships should be leveraged on to expand infrastructure to underserved markets.
2. training program should be designed to enhance traders' digital literacy, focusing on e-commerce registration, online payment systems.
3. Financial institutions and fintech companies should strengthen secure, user friendly online payment platforms to address trust concern.
4. Traders should be supported with practical guidance on converting digital visibility into direct income, including product listing optimization, digital advertising and logistics integration.
5. Local government should integrate digital adoption into SME development policies, offering subsidies for data cost and tax incentives for traders who adopt formal e-commerce platforms.

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