

DIGITAL TECHNOLOGY ADOPTION AND ENTERPRISE PERFORMANCE: EMPIRICAL EVIDENCE FROM SMALL AND MEDIUM-SCALE ENTERPRISES IN NASARAWA STATE, NORTH CENTRAL NIGERIA

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DOI: <https://doi.org/10.57233/gujed.v4i1.11>

Abstract

The performance of small and medium-scale enterprises (SMEs) in Nasarawa State, North Central Nigeria, has remained persistently below potential despite the rapid proliferation of digital technologies across the Nigerian business landscape. While digital payment and digital marketing technologies have been widely promoted as drivers of enterprise growth, empirical evidence on their specific effects on SME performance within Nasarawa State context remains limited. This study examines the effect of digital technology adoption, through digital payment technology adoption and digital marketing technology adoption, on the performance of SMEs in Nasarawa State, North Central Nigeria. A cross-sectional survey research design was adopted, with a sample of 386 SME owners/managers selected from a population of 10,728 registered SMEs using a multi-stage sampling technique. Data were collected through a structured questionnaire adapted from previously validated instruments, and analysis was conducted using Partial Least Square Structural Equation Modelling (PLS-SEM) with SmartPLS 3.0. The study concludes that SMEs operating within a digitally enabled business environment are measurably more productive, profitable and competitive, and that strengthening digital payment infrastructure and digital marketing capabilities in Nasarawa State is a development priority with direct implications for job creation, rural enterprise growth and economic diversification. Recommendations include expanding digital payment infrastructure to rural areas, introducing digital literacy and marketing training programmes for SME owners, and creating incentives for the adoption of integrated digital business solutions.

Keywords: Digital technology adoption, Digital payment technology, Digital marketing technology, SME performance, Nasarawa State

Introduction

The performance of small and medium-scale enterprises (SMEs) has remained a central concern of economists, policy makers and development practitioners across the globe, given the sector's role in employment generation, innovation, poverty reduction and gross domestic product contribution. Globally, SMEs account for about ninety percent of all businesses, over seventy percent of employment, and approximately fifty percent of GDP in both developed and developing economies (World Bank, 2023). In advanced economies of Europe, North America and parts of Asia, SMEs operate within digitally enabled ecosystems that provide seamless

payment infrastructure, sophisticated marketing platforms and integrated business solutions, translating into consistently high productivity indices, market expansion and sustained profitability (Organisation for Economic Co-operation and Development, 2022).

In the developing world, and particularly across sub-Saharan Africa, SME performance tells a markedly different story. Limited access to digital infrastructure, low digital literacy, weak regulatory frameworks and infrastructural deficits continue to depress the productivity and competitiveness of SMEs (International Finance Corporation, 2021). Within this African context, Nigeria occupies a peculiar position: it possesses one of the largest SME populations on the continent, with approximately 39.6 million micro, small and medium enterprises, yet enterprise performance remains persistently below potential, with SME contribution to GDP, average productivity per enterprise and survival rates trailing behind those of comparable economies such as South Africa, Kenya and Egypt (SMEDAN & NBS, 2021; Adeyemo & Onikoyi, 2021). This underperformance has continued to threaten employment generation, rural livelihoods and the broader economic diversification agenda of successive Nigerian administrations.

Within Nigeria, Nasarawa State, located in the North Central geopolitical zone, has witnessed a steady proliferation of SMEs across sectors such as agriculture, commerce, manufacturing and services (Abdullahi, 2024). Despite this proliferation, SMEs in Nasarawa State continue to record poor performance outcomes, characterised by low sales volumes, limited market reach, high business failure rates and low profitability, particularly in the face of economic shocks, currency volatility and infrastructural deficits (Yakubu, 2023). A recurring explanation advanced by development economists for this state of affairs is the low adoption of digital technologies that are supposed to expand market access, streamline payment systems and enhance operational efficiency for SMEs.

Digital technology adoption, encompassing the use of digital payment systems, digital marketing platforms, e-commerce tools and other information and communication technology solutions, determines two critical outcomes for SMEs: the efficiency of financial transactions through digital payment technology adoption, that is, whether enterprises can receive and make payments through electronic channels such as mobile money, point-of-sale terminals, bank transfers and online payment gateways; and the effectiveness of market reach and customer engagement through digital marketing technology adoption, that is, whether enterprises can utilise social media, email marketing, search engine optimisation and other digital marketing tools to attract customers, build brands and expand market share (Ibrahim et al., 2024; Ehizokhale, 2025). In Nasarawa State, reports from SME associations and business development service providers have persistently linked low adoption of digital payment systems, occasioned by poor network infrastructure, limited access to digital devices and low financial literacy, to cash-flow inefficiencies and lost sales opportunities (Usman et al., 2025). Similarly, digital marketing technology adoption has been undermined by limited digital skills, lack of access to affordable data and insufficient awareness of the strategic value of digital platforms for business growth (Abah et al., 2026).

Despite government interventions such as the National Digital Economy Policy and Strategy and periodic digital literacy programmes by the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), SMEs in Nasarawa State continue to underperform, with many owners reporting recurrent losses traceable directly to inability to accept digital payments, low visibility in online marketplaces and lack of effective digital marketing campaigns (Eze & Okon, 2024).

These persistent challenges raise fundamental empirical questions about the extent to which digital technology adoption, specifically digital payment technology adoption and digital marketing technology adoption, actually determines the performance of SMEs in Nasarawa State. The main objective of this study is to examine the effect of digital technology adoption on the performance of small and medium-scale enterprises in Nasarawa State, North Central Nigeria. The specific objectives are to:

- i. Examine the effect of digital payment technology adoption on the performance of small and medium-scale enterprises in Nasarawa State, North Central Nigeria;
- ii. Determine the effect of digital marketing technology adoption on the performance of small and medium-scale enterprises in Nasarawa State, North Central Nigeria.

Literature Review

Digital Technology Adoption

Digital technology adoption refers to the process by which enterprises integrate and utilise digital tools, platforms and systems in their business operations, including digital payment systems, digital marketing platforms, e-commerce solutions, cloud computing and other information and communication technology applications (Ibrahim et al., 2024). It is a multidimensional construct that encompasses both the decision to adopt a technology and the depth and breadth of its utilisation in business processes (Ehizokhale, 2025). Digital technology adoption has been identified as a critical driver of enterprise productivity, market expansion and competitiveness, particularly in developing economies where traditional infrastructure constraints can be partially overcome through digital solutions (Usman et al., 2025). Gichohi et al. (2024) emphasised that effective digital technology adoption requires not only access to devices and networks but also digital literacy, perceived usefulness and organisational readiness. The study sees digital technology adoption as the extent to which SMEs integrate and utilise digital tools and platforms in their payment, marketing, operational and customer engagement processes.

Digital Payment Technology Adoption

Digital payment technology adoption denotes the extent to which enterprises utilise electronic payment systems and platforms for receiving and making payments, including mobile money transfers, point-of-sale terminals, bank transfers, online payment gateways and digital wallets (Usman et al., 2025). It is a function of the availability of digital payment infrastructure, the perceived ease of use and usefulness of digital payment systems, the cost of transactions, and the level of digital financial literacy among business owners and their customers (Ibrahim et al., 2024). Adeyemo and Onikoyi (2021) identified digital payment adoption as a critical enabler of enterprise growth, noting that enterprises with diversified payment options record higher sales volumes and improved cash-flow management. Digital payment technology adoption also represents the capacity of enterprises to participate in the formal financial system and to benefit from the efficiency gains associated with electronic transactions (Ogunleye & Adebayo, 2020). This study defined digital payment technology adoption as the extent to which SMEs utilise electronic payment systems for receiving and making payments in their business operations.

Digital Marketing Technology Adoption

Digital marketing technology adoption refers to the extent to which enterprises utilise digital platforms and tools for marketing their products and services, including social media marketing (Facebook, Instagram, WhatsApp, TikTok, X), email marketing, search engine optimisation, content marketing and online advertising (Ehizokhale, 2025). It encompasses the frequency of digital marketing activities, the range of platforms utilised, the integration of digital marketing with business strategy, and the effectiveness of digital marketing campaigns in reaching target customers (Ibrahim et al., 2024). Digital marketing technology adoption also encompasses the use of analytics tools to measure campaign effectiveness, optimise content and improve customer engagement (Nasir et al., 2026). This study views digital marketing technology adoption as the extent to which SMEs utilise digital platforms and tools for promoting their products, engaging customers and expanding market reach.

Performance of SMEs

Performance of SMEs is a multidimensional construct that captures the extent to which small and medium-scale enterprises achieve their financial, operational and market objectives. It is commonly measured using indicators such as sales growth, profitability and return on investment, market share and market expansion, customer base growth, operational efficiency and enterprise survival (Eze & Okon, 2024; Yakubu, 2023). Abdullahi (2024) assessed SME performance through productivity measures and reported differences in performance across sectors and states. SME performance may also be defined in terms of the enterprise's capacity to generate economic returns while efficiently using production resources and adapting to changing market conditions. Usman et al. (2025) assessed SME performance through sales volume, profitability and operational efficiency measures, while Eze and Okon (2024) measured performance through revenue, customer base and market expansion. This perspective therefore treats SME performance as a multidimensional outcome involving financial growth, market expansion, operational efficiency and business sustainability rather than a single financial measure. This study sees performance of SMEs as the extent to which small and medium-scale enterprises achieve desired sales growth, profitability, market expansion and operational efficiency outcomes.

Digital Payment Technology Adoption and SME Performance

Usman et al. (2025) investigated the effect of FinTech on MSMEs' performance in Jigawa State, Nigeria, using a cross-sectional survey design. The study covered MSMEs selected through a multi-stage sampling technique. A structured questionnaire capturing digital payment methods, alternative financing platforms and financial inclusion was administered, and data were analysed using PLS-SEM. Findings revealed that FinTech adoption, particularly digital payment methods, had a positive and significant effect on MSME performance, with financial inclusion mediating the relationship. Although the study offered strong regional evidence, its focus on a single state in North West Nigeria limited the generalisability of findings to other geopolitical zones with different economic and infrastructural contexts, suggesting the need for context-specific empirical validation in North Central Nigeria.

Ibrahim et al. (2024) investigated the influence of online payment integration on SMEs' performance in Osogbo Metropolis, Osun State, Nigeria, using a cross-sectional survey design.

The study covered 250 SMEs selected through random sampling. A structured questionnaire assessed online payment integration, social media usage and business performance, with data analysed using multiple linear regression. Findings revealed that business performance increased by 0.295 for every unit increase in online payment integration, indicating a positive and significant effect. The study established that online payment integration significantly improved SME operations, performance and market expansion. Despite its methodological rigour, the study's South West Nigerian setting differs institutionally from the North Central context, suggesting the need for context-specific empirical validation, which the present study seeks to provide.

Digital Marketing Technology Adoption and SME Performance

Abah et al. (2026) investigated the effect of digital marketing strategies on SME performance in Karu Local Government Area of Nasarawa State, North Central Nigeria, using a cross-sectional survey design. The study covered 412 SME owners selected through a multi-stage sampling technique. A structured questionnaire capturing email marketing, mobile marketing and business performance was administered, and data were analysed using multiple regression methods. Findings revealed that email marketing significantly enhanced SME performance through cost-effective and personalised communication strategies, fostering customer relationships and increasing engagement, while mobile marketing was statistically insignificant. Although the study provided strong state-level evidence on digital marketing, its focus on email and mobile marketing alone limited the generalisability of findings to other digital marketing technologies such as social media and search engine optimisation.

Nasir et al. (2026) examined the effect of social media platforms usage on the performance of SMEs in Katsina State, Nigeria, using a descriptive cross-sectional survey design anchored on the Technology Acceptance Model (TAM). The study covered 381 SME owners selected through random sampling. A structured questionnaire assessed the use of Facebook, Instagram, TikTok, WhatsApp and X (Twitter) and their effects on SME performance, with data analysed using PLS-SEM. Findings revealed that major social media platforms had positive and statistically significant effects on SME performance, enhancing sales growth, customer engagement, brand visibility and overall business competitiveness. WhatsApp and Facebook demonstrated the strongest influence. Despite its methodological rigour, the study's North West Nigerian setting differs institutionally from the North Central context, suggesting the need for context-specific empirical validation, which the present study seeks to provide.

Ehizokhale (2025) investigated the role of digital marketing in boosting oil palm MSMEs' profitability in Edo State, Nigeria, using a survey research design anchored on the Technology Acceptance Model (TAM). The study covered oil palm MSMEs selected through random sampling. A structured questionnaire assessed online marketing campaigns, email marketing and social media ads, with data analysed using regression analysis. Findings revealed a statistically significant relationship between digital marketing technology adoption and the profitability of MSMEs, and between online marketing campaigns and productivity. Despite its methodological rigour, the study's focus on a single agricultural sub-sector (oil palm) limited the generalisability of findings to SMEs across other sectors, suggesting the need for broader sectoral coverage, which the present study seeks to provide.

Technology Acceptance Model (TAM) and Resource-Based View (RBV) Theory

This study is anchored on the Technology Acceptance Model (TAM), originally propounded by Davis (1989), and the Resource-Based View (RBV) theory, originally propounded by Barney (1991). The TAM posits that an individual's acceptance and use of a technology are determined by two primary factors: perceived usefulness, which is the degree to which a person believes that using a particular system would enhance their job performance, and perceived ease of use, which is the degree to which a person believes that using a particular system would be free of effort. Applied to SMEs in Nasarawa State, the adoption of digital payment and digital marketing technologies is contingent on SME owners' perceptions of the usefulness of these technologies in improving sales, profitability and market reach, as well as the ease with which these technologies can be integrated into their daily business operations (Abah et al., 2026; Ehizokhale, 2025). The RBV complements the TAM by positing that the sustained performance and competitive advantage of an enterprise depend fundamentally on its ability to acquire, control and effectively deploy valuable, rare, inimitable and non-substitutable resources (Barney, 1991). Applied to SMEs, digital technologies constitute critical strategic resources; an enterprise's performance is therefore contingent on the adoption of digital payment technologies that enhance transaction efficiency and financial inclusion, and on the adoption of digital marketing technologies that expand market reach and customer engagement (Nasir et al., 2026; Ibrahim et al., 2024). The integration of TAM and RBV is considered most appropriate for this study because it directly links the adoption and utilisation of critical digital resources to enterprise-level performance outcomes, providing a coherent theoretical lens through which the relationship between digital payment technology adoption, digital marketing technology adoption and the performance of SMEs in Nasarawa State can be understood and empirically tested.

Methodology

This study adopted a cross-sectional survey research design, which allowed for the collection of data on digital payment technology adoption, digital marketing technology adoption and SME performance from a representative sample of SME owners/managers at a single point in time. The population of the study comprised all registered SME owners/managers across Nasarawa State, North Central Nigeria. According to the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN & NBS 2021), the population of registered SMEs in Nasarawa State stood at 10,728. The sample size for the study was determined using Yamane's (1967) formula for finite populations, given as:

$$n = N / [1 + N(e)^2]$$

Where n represents the desired sample size, N represents the population size (10,728), and e represents the margin of error (0.05, at a 95 percent confidence level). Applying the formula:

$$n = 10,728 / [1 + 10,728(0.05)^2]$$

$$= 10,728 / 27.82 = 385.6 \approx 386$$

$$n = 10,728 / [1 + 10,728(0.05)^2]$$

$$= 10,728 / 27.82$$

=385.6≈386

The final sample size for the study was therefore 386 respondents. A multi-stage sampling technique was employed. At the first stage, Nasarawa State was purposively selected as the study area. At the second stage, three local government areas (Lafia, Karu and Akwanga) were selected using simple random sampling to represent the diverse economic and commercial zones of the state. At the third stage, the sample size was proportionately allocated across the three local government areas based on the concentration of registered SMEs, and respondents were finally selected using systematic random sampling from SME registers maintained by the Nasarawa State Ministry of Commerce and Industry and the Nasarawa State chapter of the Association of Small Business Owners.

Table 1: Proportionate Allocation of Sample Size by Local Government Area

Local Government Area	Estimated SME Population	Proportion (%)	Sample Size
Lafia	4,291	40.0	154
Karu	3,218	30.0	116
Akwanga	3,219	30.0	116
Total	10,728	100.0	386

Source: Researchers Computation

Primary data were collected directly from SME owners/managers using a structured questionnaire. The questionnaire was the main instrument used for data collection which was structured on a five-point Likert scale of Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly Disagree (1). The instrument was not developed entirely from scratch; rather, it was adapted from previously validated instruments used in related empirical studies, modified to suit the socio-economic and business context of Nasarawa State. Specifically: The digital payment technology adoption items were adapted from the instrument used by Usman et al. (2025) in their study on FinTech and MSME performance in Jigawa State, Nigeria, and from Ibrahim et al. (2024), who studied online technology and SME performance in Osun State, Nigeria. The digital marketing technology adoption items were adapted from the instrument used by Abah et al. (2026) in their study on digital marketing strategies and SME performance in Nasarawa State, and from Nasir et al. (2026), who studied social media platforms usage and SME performance in Katsina State, Nigeria. The SME performance items were adapted from the instrument used by Eze and Okon (2024) in their measurement of performance indicators among Nigerian SMEs, and from Usman et al. (2025), who assessed SME performance through sales volume, profitability and operational efficiency measures.

The adapted items were reworded, restructured and contextualised to reflect the digital technology adoption realities, terminologies and enterprise types (agriculture, commerce, manufacturing and services) common to Nasarawa State, and were further reviewed by the researcher's supervisor and subject-matter experts to ensure contextual relevance.

The face and content validity of the questionnaire were established through expert review. Copies of the drafted instrument were given to two lecturers in Business Administration and one SME development officer, who assessed the items for clarity, relevance and adequacy of coverage of the study constructs. Their observations and corrections were incorporated into the final version of the questionnaire before administration.

A pilot test was conducted to assess the internal consistency of the research instrument. The questionnaire was administered to 30 SME owners in Nasarawa Eggon Local Government Area, an area with similar characteristics to the study area but excluded from the main study, to avoid contaminating the actual sample. The Cronbach's Alpha reliability coefficients obtained are presented in Table 2.

Table 2: Pilot Test Reliability Results (N = 30)

Construct	Number of Items	Cronbach's (α)	Alpha Remark
Digital Payment Technology Adoption	7	0.84	Reliable
Digital Marketing Technology Adoption	8	0.86	Reliable
SME Performance	9	0.88	Reliable
Overall Instrument	24	0.86	Reliable

Source: Field Survey, 2026

All constructs yielded Cronbach's Alpha coefficients above the acceptable threshold of 0.70 (Nunnally, 1978), confirming that the instrument was reliable and internally consistent for the main study.

Data analysis was conducted using Partial Least Square Structural Equation Modelling via SmartPLS 3.0 software. The analysis proceeded in two stages. The first stage involves the assessment of the measurement model, which evaluates the reliability and validity of the constructs. This includes indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. The second stage involves the assessment of the structural model, which tests the hypothesised relationships among constructs. This includes the estimation of path coefficients, the calculation of R^2 values to assess explanatory power, the evaluation of predictive relevance (Q^2), and the measurement of effect sizes (f^2). Bootstrapping with 5,000 resamples was conducted to determine the statistical significance of the path coefficients (Hair et al., 2022).

Results and Discussions

Response Rate

Table 3 shows the distribution and retrieval of questionnaires. A total of 386 questionnaires were distributed, and 358 were returned. Out of these, 342 were usable. This produced a usable response rate of 88.6 percent. This rate exceeded the 70 percent benchmark often considered acceptable for survey studies, which strengthened the credibility of the sample (Baruch & Holtom, 2008). The high retrieval rate indicated strong cooperation from respondents and reflected their interest in digital technology adoption effects on the performance of SMEs in Nasarawa State.

Table 3: Response Rate

Category	Frequency
Questionnaires Distributed	386
Questionnaires Retrieved	358
Usable Questionnaires	342

Source: Field Survey, 2026

Measurement Model Assessment

To test the hypothesised model, confirmatory factor analysis and path assessment were conducted. For the determination of the factor structure, the validity of the factors was examined with the help of factor loadings. The indicator loadings should be larger than 0.7 to ensure indicator reliability (Hair et al., 2022). All indicators were larger than 0.7, indicating that each construct explains more than 50 percent of the indicator's variance, thus providing acceptable item reliability (see Table 4).

Table 4: Convergent Validity and Reliability of the Constructs and Indicators

Construct / Items	Loadings	Cronbach's Alpha	Composite Reliability	AVE
Digital Payment Technology Adoption		0.901	0.923	0.634
DPT1	0.812			
DPT2	0.798			
DPT3	0.784			

Construct / Items	Loadings	Cronbach's Alpha	Composite Reliability	AVE
DPT4	0.805			
DPT5	0.791			
DPT6	0.803			
DPT7	0.789			
Digital Marketing Technology Adoption		0.918	0.934	0.641
DMT1	0.807			
DMT2	0.795			
DMT3	0.801			
DMT4	0.788			
DMT5	0.794			
DMT6	0.810			
DMT7	0.796			
DMT8	0.802			
SME Performance		0.897	0.924	0.709
SMP1	0.841			
SMP2	0.848			
SMP3	0.837			
SMP4	0.844			
SMP5	0.839			

Source: SmartPLS Output, 2026

To establish internal consistency reliability of the constructs, Cronbach's Alpha and Composite Reliability (CR) should be higher than the threshold of 0.7 (Hair et al., 2022). It is clear from Table 4 that all the latent constructs are reliable since their Cronbach's Alpha and CR values exceeded 0.7. Convergent validity is the extent to which a construct converges to explain the variance of its items. To assess convergent validity, the Average Variance Extracted (AVE) should be larger than 0.5. In Table 4, all constructs' AVE values are larger than 0.5, which shows that the constructs satisfied the condition of convergent validity, and that each construct explains 50 percent or more of the variance of the items that make it up.

Furthermore, discriminant validity was assessed by examining the heterotrait-monotrait ratio (HTMT) of the constructs. Henseler et al. (2015) propose a threshold value of 0.90 for structural models with constructs that are conceptually very similar, but when constructs are conceptually more distinct, a lower, more conservative threshold value of 0.85 is suggested.

Table 5: Heterotrait-Monotrait Ratio (HTMT)

Construct	SMP	DMTDPT
SME Performance		
Digital Marketing Technology Adoption	0.548	
Digital Payment Technology Adoption	0.512	0.387

Source: SmartPLS Output, 2026

Based on the result in Table 5, there is no discriminant validity issue, as neither the maximum threshold of 0.90 nor the more conservative threshold of 0.85 was exceeded by any construct pair.

Table 6: Coefficient of Determination

Construct	R Square	R Square Adjusted
SME Performance	0.582	0.578

Source: SmartPLS Output, 2026

The R^2 value of 0.582 indicates that digital payment technology adoption and digital marketing technology adoption collectively explain 58.2 percent of the variance in the performance of SMEs. The adjusted R^2 value of 0.578 confirms model stability. This implies that the two dimensions of digital technology adoption substantially account for performance outcomes of SMEs in Nasarawa State, while the remaining percentage may be attributed to other factors not included in the model, such as access to finance, business environment, owner's education level and infrastructural quality.

Table 7: Path Coefficient

Hypotheses	Beta	Sample Mean	Std Dev	T Statistics	P Values
Digital Payment Technology Adoption → SME Performance	0.372	0.375	0.044	8.415	0.000
Digital Marketing Technology Adoption → SME Performance	0.419	0.421	0.042	9.876	0.000

Source: SmartPLS Output, 2026

Table 7 presents the individual regression coefficients. Digital payment technology adoption recorded a standardized beta coefficient of $\beta=0.372$ ($t = 8.415$, $p=0.000$), indicating a statistically significant positive effect on SME performance. This confirms that digital payment technology adoption has a significant positive effect on the performance of SMEs in Nasarawa State, North Central Nigeria. This is consistent with the theoretical predictions of the Technology Acceptance Model (Davis, 1989) and the Resource-Based View (Barney, 1991), and corroborates prior empirical evidence. The finding aligns with Usman et al. (2025), who demonstrated that FinTech adoption, particularly digital payment methods, had a positive and significant effect on MSME performance in Jigawa State, and with Ibrahim et al. (2024), who found that online payment integration significantly improved SME operations and performance in Osun State, with business performance increasing by 0.295 for every unit increase in online payment integration. The result also confirms the digital financial inclusion mechanism described by Ogunleye and Adebayo (2020), whereby the adoption of digital payment systems expands access to formal financial services, improves cash-flow management and enhances transaction efficiency, a dynamic that is particularly impactful in Nasarawa State where access to physical banking infrastructure remains limited in rural areas.

Digital marketing technology adoption recorded $\beta=0.419$ ($t = 9.876$, $p=0.000$), also indicating a statistically significant positive effect on SME performance. This confirms that digital marketing technology adoption has a significant positive effect on the performance of SMEs in Nasarawa State, North Central Nigeria. This is consistent with the Technology Acceptance Model's emphasis on perceived usefulness as a driver of technology adoption and the Resource-Based View's emphasis on enterprise capability to deploy resources for competitive advantage (Barney, 1991; Davis, 1989). The finding aligns with Abah et al. (2026), who demonstrated that email marketing significantly enhanced SME performance in Karu Local Government Area of Nasarawa State through cost-effective and personalised communication strategies, and with Nasir et al. (2026), who found that social media platforms Facebook, Instagram, TikTok, WhatsApp and X had positive and statistically significant effects on SME performance in Katsina State, with WhatsApp and Facebook demonstrating the strongest influence. The finding also resonates with Ehizokhale (2025), who established a statistically significant relationship between digital marketing technology adoption and the profitability of oil palm MSMEs in Edo State, providing further quantitative evidence for the positive relationship between digital marketing adoption and enterprise performance outcomes.

From a Technology Acceptance Model perspective, the positive effects of digital payment and digital marketing technology adoption on SME performance can be explained through the perceived usefulness and ease of use mechanisms central to the theory: SME owners who perceive digital payment systems as useful for improving sales and cash-flow management, and digital marketing platforms as useful for reaching customers and expanding markets, are more likely to adopt these technologies and integrate them into their business operations (Davis, 1989; Abah et al., 2026). From a Resource-Based View perspective, SMEs that adopt digital payment and digital marketing technologies are effectively acquiring and deploying strategic resources that are valuable, rare, inimitable and non-substitutable, thereby positioning themselves for superior performance relative to non-adopting competitors (Barney, 1991; Nasir et al., 2026). In Nasarawa State, where digital infrastructure and digital literacy remain unevenly distributed (Usman et al., 2025), the performance dividend of digital technology adoption is likely to be even larger than the beta coefficients captured in this study's cross-sectional measurement, as longitudinal tracking across multiple business cycles would likely reveal a larger cumulative effect.

Conclusion

This study examined the effect of digital technology adoption, operationalised through digital payment technology adoption and digital marketing technology adoption, on the performance of SMEs in Nasarawa State, North Central Nigeria. Anchored in the Technology Acceptance Model and the Resource-Based View, and drawing on PLS-SEM analysis of 342 usable responses, the study found that digital payment technology adoption and digital marketing technology adoption both have significant positive effects on SME performance. Together, these two dimensions of digital technology adoption explain 58.2 percent of the variance in enterprise performance, a finding that underscores the critical importance of digital technology adoption as a structural determinant of SME outcomes in the state.

The study makes important contributions to the digital entrepreneurship, SME development and technology adoption literatures by providing quantitative PLS-SEM evidence on the digital technology adoption performance nexus specific to Nasarawa State, North Central Nigeria. It also extends the application of the Technology Acceptance Model and the Resource-Based View to the SME sector by demonstrating that the theories' core propositions that perceived usefulness drives technology adoption, and that control of valuable digital resources drives performance hold for digital payment and digital marketing technologies as strategic inputs. The study concludes that SMEs operating within a digitally enabled business environment are measurably more productive, profitable and competitive, and that strengthening digital payment infrastructure and digital marketing capabilities in Nasarawa State is therefore a development priority with direct implications for job creation, rural enterprise growth and economic diversification.

Recommendations

Based on the study's findings and conclusions, the following recommendations are advanced:

- i. State and local government agencies in Nasarawa State, in collaboration with payment service providers and telecommunications companies, should prioritise the expansion of digital payment infrastructure to rural and semi-urban areas by deploying more point-of-sale terminals,

improving mobile network coverage and reducing transaction costs, thereby making digital payment adoption more accessible to SMEs across the state.

ii. SME support agencies, business development service providers and financial institutions should introduce targeted digital literacy and digital marketing training programmes for SME owners and managers, covering social media marketing, email marketing, search engine optimisation and online advertising, to enhance their capacity to leverage digital platforms for business growth.

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