WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

DIGITAL TRANSFORMATION AND ORGANISATIONAL PERFORMANCE OF SMALL AND MEDIUM-SCALE ENTERPRISES IN NIGERIA

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ABSTRACT :

This study explored the relationship between the selected dimensions of digital transformation and the outcomes of the organisation in small and medium scale businesses (SMEs) in Nigeria. The aim of the study was to look at the relationship between digital infrastructure and organisational performance, the relationship between digital process integration and organisational resilience and the relationship between digital skills development and organisational innovation capabilities. The study employed the quantitative survey research design and the data provided was 180 usable responses from SMEs in Abia, Anambra, Ebonyi, Enugu and Imo States. There was a 100% response rate as all 180 questionnaires were reported as retrieved and usable. The hypotheses were tested using Pearson product-moment correlations, and the characteristics of the respondents and their scores on the constructs were summarised through descriptive statistics. The scores were 4.18 for digital infrastructure implementation, 4.28 for digital process integration, 4.17 for digital skills development, 4.28 for innovation capability, 4.22 for organisational resilience and 4.23 for organisational performance. Positive and statistically significant correlations were found between each of the following: infrastructure implementation and organisational performance ($r = .980$, $p < .001$); process integration and organisational resilience ($r = .975$, $p < .001$); and skills development and innovation capability ($r = .962$, $p < .001$). The three null hypotheses were all rejected at 5% level of significance. The study results indicate that there are strong associations between the dimensions of digital transformation and the outcomes of digital transformation among the SMEs surveyed. These results did not indicate a cause and effect relationship, and the extremely high scores were confirmed with the original respondent-level data and scoring process.

Keywords: digital transformation, SMEs, digital infrastructure, organisational performance, resilience, innovation capability.

Introduction

Digital technologies have transformed the way businesses communicate with customers, as well as how they handle transactions, coordinate employees, manage information and develop products and services. Digital transformation is not just about purchasing the technology, it's about making the technology part of the way that business gets done, and building the skills around that. Sagala and Őri (2024) list several enablers that make digital transformation successful in SMEs, whereas Awad and Martín-Rojas (2024) tie digital transformation to organisational learning, innovation and resilience. SMEs are involved in entrepreneurship, employment and local economic activity. Relationship between entrepreneurship and economic development is discussed by Adelekan and Tijani (2017) and Doran, McCarthy and O'Connor (2018). SMEs are found in various sectors of the economy, such as retail, services, manufacturing and agro-processing, in the South-East region of Nigeria, and their productivity and adaptability are significant in ensuring business continuity and livelihoods. Ugwu (2021) and Irechukwu et al. (2023) offer background information on SME development and performance in the region.

Digital infrastructure is comprised of payment systems, the internet, devices, software, and online platforms. They can be used to facilitate transactions, to keep records, to communicate, and to access markets, but they will be effective only when they're implemented correctly and integrated into ongoing activities. Edim et al. (2025) discuss Digital transformation and Nigerian SMEs performance; Ojukwu et al. (2025) look at digital optimisation and operational effectiveness. Digital process integration could help with coordination and respond to disruptions, and digital skills development could help workers use digital technology to capitalize on opportunities and enhance products or services. Romero and Mammadov (2025) conceptualise SME digital transformation as an innovation process.

Previous research has analyzed digital orientation and innovation and performance, respectively, from various angles. Escoz Barragan and Becker (2025), in digital orientation of SMEs, and Surahman et al. (2023), focusing on digital transformation and innovation in the performance of SMEs in the COVID-19 era, discuss these issues.These issues are discussed in Escoz Barragan and Becker (2025) and Surahman et al. (2023), who also talk about digital transformation and innovation in the COVID-19 period in the performance of SMEs. The present study thus looked at three specific

relationships between SMEs in the five South-East States.

While SMEs have more and more access to digital payment, social media, e-commerce and business software, the provision of these technologies does not necessarily mean that they are used in consistent manner or that they are linked to better results. However, enterprises still have limitations in infrastructure reliability, staff capabilities, process integration and reacting to market fluctuations. Applications of context-specific evidence are helpful in understanding the linkages between the specific dimensions of digital transformation and specific outcomes across Nigerian SMEs. The study focused on three key areas - infrastructure implementation and performance, process integration and resilience, and skills development and innovation capability.

The study sought to investigate the relationship between digital transformation and selected organisational outcomes of SMEs in Nigeria. It was aimed:

1. Examining the relationship between digital infrastructure implementation and organisational performance of SMEs in Nigeria.
2. Ascertaining the relationship between digital process integration and organisation resilience of SMEs in Nigeria.
3. Assessing the relationship between digital skills development and innovation capability of SMEs in Nigeria.

Conceptual Review

Digital transformation is the process of implementing and leveraging digital technologies in a manner that impacts business processes, customer engagement, information management and innovation. Sagala and Őri (2024) mention several elements for achieving transformation success, and Kahveci (2025) talks about enablers and interconnections in the digital transformation of SMEs. These viewpoints help to consider infrastructure, integration and employee capability as interrelated but distinct elements.

Digital infrastructure are the technical underpinnings of electronic transactions, communication and information access. It can help to boost efficiency and reach. It can help to reach more markets, but its contribution depends on reliability and the ability to fit the business. Edim et al. (2025) and Ojukwu et al. (2025) discuss digital transformation and its impact on the performance and operational effectiveness of SMEs. The first hypothesis was tested by investigating if the infrastructure's implementation was correlated with the organisational performance reported.The first hypothesis examined whether the enhanced implementation of infrastructure is correlated with the enhanced implementation of organizational performance.

Process integration is when the digital tool becomes part of the daily business process and information management, and not just another stand-alone application. This integration can help to coordinate and respond. The Resilience aspect is related to the ability to sustain, restore or modify operations under varying conditions. The second hypothesis is put forward in the light of the concept of transformation and organisational learning and resilience as discussed by Awad and Martín-Rojas (2024).

Digital skills involve the ability to use and manipulate digital tools for business purposes. Innovation capability is the ability to recognise opportunities and to enhance products, services or methods of delivery. Romero and Mammadov (2025) define SME transformation as an innovation process, and Surahman et al. (2023) explore the concept of digital transformation and innovation to the performance of SMEs. The third hypothesis examined the relationship between the reported skills development and the innovation capability.

Theoretical Framework: Resource-Based View

The study was based on Resource-Based View (RBV) as proposed by Barney (1991). RBV accounts for organisational differences, in part, by the resources and capabilities that enterprises have and use. Digital infrastructure can be seen as a technological resource, organisation integration as an organisational capability and employee digital skills as a human capability. It is recommended that technology can be more helpful when incorporated into routines and skills, as suggested in the framework. It offered a conceptual framework for the study but the correlation analysis did not involve all the factors of the RBV and the mechanisms of the relationships were not tested.

Empirical Review

Edim et al. (2025) investigated the effect of digital transformation on the performance of small and medium scale businesses (SMEs) in Nigeria. They pointed to the need for digital technologies, such as cloud computing, artificial intelligence and big data, to transform the way businesses operate with a focus on value creation and sustainable growth. The authors also came up with resource constraints, lack of digital skills and poor infrastructure and direction as some of the challenges that can hinder effective digital transformation. These findings are relevant for an empirical analysis of the implementation of digital infrastructure and organisation performance, as access to digital technologies is a crucial building block in achieving better performance of operational processes and business results. Like that, Ojukwu et al. (2025) explored the concepts of digital transformation and optimisation for enhancing SME growth and efficiency. Their research highlighted the opportunities that digital technologies and optimisation methods have to offer in the field of business process optimisation to boost productivity and minimise inefficiencies. All of this research indicates that when digital infrastructure is used in the normal course of business, it generates more value. In the present study however, the study question was extended to investigate the relationship between digital infrastructure implementation and organisational performance of SMEs in South-East Nigeria, selected states.

Awad and Martín-Rojas (2024) examined the effect of digital transformation on organisational resilience in terms of organisational learning and innovation. Drawing on empirical evidence obtained from SMEs in Andalusia, Spain, their results showed that digital technologies helped to facilitate learning and innovation in the organisation, thus increasing the ability of the firms to adapt to market changes and address new challenges. This evidence indicates that digital transformation has the potential to add to resilience by enhancing an organisation's ability to gain knowledge, adapt processes and prepare for uncertainty. This is because digital process integration could be a way for SMEs to coordinate activities, share information and react better to operational disruptions, which are all important to this study. However, the ability to be resilient is not guaranteed from the use of technology, as it can also rely on managerial skills, staff's adaptability to the technology and the extent to which digital systems are established in the

organisation's routines.

Likewise, Romero and Mammadov (2025) defined digital transformation of SMEs as an innovation process that has three components: technological, human-capital and organizational or relational. They found that internal digital skills, external sources of technological knowledge, a clearly defined digital transformation strategy and the spread of digital responsibilities outside of the business owner/manager were among the many factors that foster digital innovation. This view expands the definition of digital transformation from the technological aspect to the complementary part played by the competencies of employees and the organisation's arrangements. It thus creates a solid foundation to explore the role of digital skills development in facilitating the innovation capability. Employees who have the knowledge and confidence to use digital means could be more likely to spot process opportunities, create innovative products or services and respond innovatively to customers' needs. The study also suggests that enabling organisational environment and transformational strategy are more likely to foster digital skills, leading to innovation.

In related work, Surahman et al. (2023) studied the digital transformation and innovation with regard to SME performance during COVID-19. This research context is important because the Pandemic highlighted the need for digital technologies to sustain business activity, adapt the way in which businesses operate and to find alternative methods of servicing customers. The relevance to the present study is that it relates to the topic of digital adaptation, innovation and business continuity in the face of uncertainty. The pandemic, however, is a unique operating context and results from this period need to be taken into account while keeping in mind the special market and business conditions that SMEs faced. The current study thus takes organizational resilience as a separate outcome which is not necessarily to be surmised from the presence of digital adaptation or innovation.

Additionally, Sagala and Őri (2024) investigated the conditions for successful digital transformation in SMEs and highlighted the factors that can support enterprises in making digital transformation meaningful in their organisations. Their work is relevant to the present study because successful transformation goes beyond having digital tools available, it also concerns the appropriate organisational capabilities, the way the technology is implemented and aligning technology with the business goals. Similarly, Escoz Barragan and Becker (2025) studied the digital orientation of SMEs, helping to shed light on the entrepreneurs' orientation to digital technologies and a digital dimension in their decision-making processes. The change in orientation towards digitalisation could have an impact on the readiness of an organisation for investing in infrastructure, incorporating digital processes, and training employees' digital skills. However, digital orientation, digital adoption and digital skills development are different aspects but are not synonymous and cannot be used interchangeably.

All of the reviewed studies make important links between digital transformation, operational effectiveness, organisational learning, resilience and innovation. Other studies, however, suggest that the results of a digital transformation relies on the interplay between technological resources and employee skills and organisational structures. One of the main challenges that warrant further research is the linkage between specific aspect of the digital transformation and specific organisational outcomes in the Nigerian SME context. Hence, the present study aims to explore three relationships: digital infrastructure implementation and organisational performance; digital process integration and organisational resilience; and digital skills development and innovation capability. The study aims to look into these relationships between the SMEs in the selected urban centers in South-East Nigeria to offer contextual evidence to support the benefits that are to be derived from the various aspects of digital transformation on the organizational level.

Gap in the Literature

The literature reviewed covered the topic of digital transformation, innovation, as well as resilience and performance in a number of different ways. Three pairs of the variables were specifically chosen in this study for the SMEs in the five South-East states. A cross sectional self-report design allowed for the evaluation of association but not the causal direction and the exclusion of the effects of other factors.

RESEARCH METHODOLOGY

Research Design

A quantitative, cross sectional, survey approach was used for this study. Responses to these questions were summarised using descriptive statistics and tested using Pearson product-moment correlation, the three hypotheses being tested. Due to the design used, results were interpreted as associations and not causal effects, as variables were measured at one time.

Area, Population and Sample

The study was conducted in Abia, Anambra, Ebonyi, Enugu and Imo States where SMEs were studied. The population for the study were SMEs in selected Urban centres of South-East Nigeria. There were 180 cases in the final data set. The data provided consisted of owners/proprietors, managers, supervisors, administrative/technical staff and others. No unsupported population total was claimed as unsupported materials were not supplied, including an unsupported population register or a complete sampling frame.

Sampling Technique

The approved methodology included purposive selection of eligible SMEs, and stratification (where possible) to enhance representation of SMEs by enterprise-size and industry. This was the last data for more than one sector and five states. The materials supplied were inadequate to give the researcher the confidence that sample was a probability sample representative of all SMEs in Nigeria.

Instrument and Measurement

A structured questionnaire with questions related to enterprise background, Likert scale questions regarding the implementation of digital infrastructure, digital process integration, digital skills development, innovation capability, organisational resilience and organisational performance were used to gather data. All items on the main constructs were on a five-point scale ranging from strongly disagree to strongly agree. A questionnaire has not been included in this report.

Validity and Reliability

The agreed plan included expert review of the plan and a pilot of the plan with 20 SMEs using Cronbach's alpha as a measure of internal consistency. The data provided for outputs, however, did not contain any records of expert review, pilot results or alpha coefficients. This report thus does not assert that a certain level of reliability was actually met through the conduct of the experiment.

Data Analysis

The numbers indicated frequencies and percentages of the characteristics of the respondents and the responses on the items. Means and standard deviations were used to summarise the six composite variables. The hypotheses were tested by using Pearson correlation at 0.05 level of significance. The values of SPSS that were reported as .000 were reported as $p < .001$ because the value displayed did not indicate that the probability was actually 0. A correlation confidence interval and diagnostics were not included in the output supplied.

Ethical Considerations

The instructions to the questionnaire stated that the questionnaire was voluntary, anonymous and for academic research. There were no direct personal identifiers to be supplied by the respondents. Ethics approval documentation was not provided along with the material.

DATA PRESENTATION, ANALYSIS AND DISCUSSION

Table 1: Questionnaire Retrieval

Status	Frequency	Percentage
Distributed	180	100%
Retrieved	180	100%
Usable	180	100%
Not retrieved	0	0%
Unusable	0	0%

Source: Field Survey, 2026

The distribution of 180 questionnaires was 100% with all questionnaires reported as retrieved and usable. In the SPSS output provided no data were missing for each of the six composite variables, and 180 observations were valid.

Table 2: Respondent and Enterprise Profile

Variable	Category	n	%
Position	Owner/proprietor	52	29
	Manager	48	27
	Supervisor	35	19
	Administrative/technical staff	32	18
	Other	13	7
Sector	Manufacturing	29	16
	Retail/wholesale	61	34
	Services	53	30
	Agriculture/agro-processing	24	13
	Other	13	7
State	Abia	40	22
	Anambra	39	22
	Ebonyi	32	18
	Enugu	35	19
	Imo	34	19
Years operating	Less than 3	38	21
	3–5	52	29
	6–10	45	25
	11–15	27	15
	>15	18	10
Employees	1–9	67	37
	10–49	72	40
	50–199	31	17
	200+	4	2
	Prefer not to say	6	4
Enterprise category	Micro	39	22
	Small	87	48
	Medium	48	27
	Not sure	6	3

Digital-use duration	Not yet adopted	12	7
	Less than 1 year	21	12
	1–3 years	57	31
	4–6 years	48	27
	>6 years	42	23

Source: Field Survey, 2026

Owners/proprietors had the largest number of positions (29%) followed by managers (27%). The two largest number of companies were in retail/wholesale (34%) and services (30%). Each of the five states had 18% to 22% of the respondents. The highest number of employees (40%) was found in enterprises that have 10–49 employees, while the highest number of reported enterprise categories (48%) was in the small enterprises. Most of the digital-use-duration group (31%) were using digital technologies for 1-3 years; 23% used digital technologies for over 6 years and 7% reported there was no digital technology usage.

Table 3: Digital Technologies Reported

Technology	Respondents	%
Digital payments/POS/mobile banking	106	59
Social media	92	51
E-commerce	51	28
Accounting/business software	63	35
Cloud services	38	21
Inventory systems	44	24
Data analytics	21	12
Other	9	5

Source: Field Survey, 2026

The most often reported digital payment/POS/mobile banking tools were digital payments/POS/mobile banking (59%), social media (51%) and accounting/business software (35%). The top four e-commerce reporting were e-commerce (28%), inventory systems (24%), cloud services (21%), and data analytics (12%). Percentages were not expected to total 100% as the respondents were able to check more than one technology.

Table 4: Descriptive Statistics for Major Variables

Variable	Mean	Std. deviation
Digital infrastructure implementation	4.1833	1.10598
Digital process integration	4.2833	0.97037
Digital skills development	4.1667	1.14580
Innovation capability	4.2833	1.02087
Organisational resilience	4.2167	1.06899
Organisational performance	4.2333	1.07329

Source: Field Survey, 2026

The descriptive statistics for major scores showed that all six scores were above 4.00 (out of 5) reflecting mostly positive responses. The highest mean (4.2833) was for digital process integration and innovation capability. The lowest mean score (4.1667) and highest standard deviation (1.14580) was seen in 'Digital skills development', indicating that the respondents had a slightly wider range of opinions. These were not performance measures but perceived performance by the respondents.

Table 5: Distribution of Responses to the Major Study Constructs

Construct	SD %	D %	Undecided %	Agree %	Strongly agree %	Agree + strongly agree
Infrastructure implementation	5	7	3	35	50	85%
Process integration	3	5	2	40	50	90%
Skills development	7	5	3	35	50	85%
Innovation capability	3	7	2	35	53	88%
Organisational resilience	5	5	3	37	50	87%
Organisational performance	5	5	3	35	52	87%

Source: Field Survey Data, 2026.

The results of the Major Study Constructs indicate that the majority responded with agree and strongly agree with 85% of the responses being agree and strongly agree for infrastructure implementation, 90% for process integration, 85% for skills development, 88% for innovation capability, 87% for resilience and 87% for performance. The percentage of "strongly agree" answers to the six constructs was the highest.

4.4 Hypothesis Testing

Each null hypothesis was tested by using the Pearson product-moment correlation. The SPSS output indicated significance as .000 and this is presented as $p < .001$.

4.4.1 Hypothesis One

H_0 There is no statistically significant relationship between digital infrastructure implementation and organisational performance.

H_1 There is statistically significant relationship between digital infrastructure implementation and organisational performance.

Table 6: Correlation Between Digital Infrastructure Implementation and Organisational Performance

Paired variables	N	r	P	Decision
Infrastructure implementation and organisational performance	180	.980	< .001	Reject H_{01}

Source: SPSS Output from Field Survey Data, 2026.

Table 6 shows a positive correlation between the implementation of digital infrastructure and organisational performance.Based on the data obtained in the table 6, it is seen that the digital infrastructure implementation has a positive correlation with the organisational performance. Respondents reporting stronger infrastructure implementation tended to report stronger organisational performance.

4.4.2 Hypothesis Two

H_0 There is no statistically significant relationship between digital process integration and organisational resilience.

H_1 There is statistically significant relationship between digital process integration and organisationazl resilience.

Table 7: Correlation Between Digital Process Integration and Organisational Resilience

Paired variables	N	r	p	Decision
Process integration and organisational resilience	180	.975	< .001	Reject H_{02}

Source: SPSS Output from Field Survey Data, 2026.

A very high positive correlation (r = .975) was observed between digital process integration and organisation resilience ($p < .001$). H_{02} was rejected. Those respondents indicating higher levels of integrated digital processes were more likely to indicate responsiveness, continuity and adaptability. The cross sectional data were not sufficient to show which variable came before the other.

4.4.3 Hypothesis Three

H_0 stated that there is no statistically significant relationship between digital skills development and innovation capability.

H_1 stated that there is statistically significant relationship between digital skills development and innovation capability.

Table 8: Correlation Between Digital Skills Development and Innovation Capability

Paired variables	N	R	p	Decision
Skills development and innovation capability	180	.962	< .001	Reject H_{03}

Source: SPSS Output from Field Survey Data, 2026.

The coefficient r = .962 was very high and positive, and the result was statistically significant ($p < .001$) between the relationship of digital skills development and innovation. H_{03} was rejected. Those who reported high levels of digital skills and high levels of support tended to report high levels of use of digital tools to enhance products and services, and to identify opportunities to enhance and/or delivery methods.

Table 9: Summary of Hypothesis Testing

Hypothesis	Relationship	R	p-value	Decision
H_{01}	Infrastructure–performance	.980	< .001	Rejected
H_{02}	Integration–resilience	.975	< .001	Rejected
H_{03}	Skills–innovation	.962	< .001	Rejected

Source: Researcher's Compilation from SPSS Results, 2026.

Discussion of Findings

The association of infrastructure to performance was found to be similar to the relevance of digital transformation to the performance and effectiveness of the SMEs stated by Edim et al. (2025) and Ojukwu et al. (2025). The top two technologies mentioned in the sample were digital payments and social media. However, due to the self-report nature of both constructs, the findings do not constitute an independent verification of the financial and/or operational impact.

The process integration-resilience association was conceptually consistent with the one established by Awad and Martín-Rojas (2024), who associate digital transformation with organisational learning and resilience. Businesses might benefit from integrated systems to help synchronise information and deal with disruption. The study however, did not track the businesses during an actual disaster, nor did it track over time how they recovered; the result was based on respondents' perceptions.

The conceptual consistency of the skills-innovation association was with Romero and Mammadov (2025) and Surahman et al. (2023), who were engaged in digital transformation and innovation. This indicated a strong linkage between perceived digital competence and perceived innovation capability and perceived support. Another area for future research would be to explore what aspects of the skill or training practice was most impactful.

The first two coefficients were very high for the relationships between different survey constructs. Original respondent-level file should be reviewed for proper coding of items, construction of composite scores, and duplication of respondents and potential overlap of measures. The information provided

in the output did not contain raw data, reliability coefficients or diagnostics to evaluate these possibilities. The reported results are as provided but conclusions are subject to caution.

Summary of Findings

Three intra-relationships were studied among the SMEs in the five South-East Nigerian states. It employed a quantitative approach of cross sectional survey and examined 180 questionnaires that were usable. The overall infrastructure implementation, process integration, skills development, innovation capability, resilience and organisational performance were rated fairly across the board in descriptive analysis. The most common technologies mentioned were digital payments/POS/mobile banking and social media. Positive statistically significant relationships were found between infrastructure implementation and performance ($r = .980$, $p < .001$), process integration and resilience ($r = .975$, $p < .001$), and skills development and innovation capability ($r = .962$, $p < .001$) based on Pearson correlation.

Conclusion

The findings from the study showed that the three dimensions of digital transformation had very strong and positive relationships with their corresponding organisational outcomes in the sample of SMEs. The results highlighted the importance of technological infrastructure, integration of workflows and employee proficiency in digital tools for the topic of digital transformation. The study was cross-sectional and self-reported and no causal relationship could be inferred nor necessarily is generalisation to all SMEs in Nigeria warranted. The extremely high correlation scores need to be confirmed with the original data and scoring system.

Recommendations

1. SMEs should evaluate digital payment systems, internet connectivity, devices and business software for their reliability and suitability given business needs.
2. Managers should consider digital tools as part of the normal work flow and as a component of information management and communication with customers as a whole rather than individual tools.
3. SMEs should offer opportunities to staff to develop their digital skills, and high-quality digital training and guidance to employees.
4. Business support agencies and policy makers should think about programmes that include access to the appropriate technology, process redesign and skills development.
5. For SMEs, there are clear indicators to be monitored, including operational efficiency, sales, customer reach, recovery time in the case of disruption and introduction of new and improved products and services.
6. Original data for the respondents should be reviewed for coding, score construction, multiple scores for the same data, and reliability statistics and correlation diagnostics, prior to final submission or publication.

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