

Examining the Relationship Between Digital Transformation and Business Environment Constraints in Nigeria

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ABSTRACT: *The study examines the relationship between digital transformation and Business Environment constraints in Nigeria. More specifically, this study examines the effects of digital technology adoption, e-commerce adoption, FinTech, and digital infrastructure capability on constraints within the business environment. The quantitative survey research design was adopted, and the data were obtained through a structured questionnaire from 300 participants in different business organizations. Descriptive statistics, correlation analysis, and multiple regression analysis were performed to analyze the data. The results show that digital transformation has positive and significant impacts on the business environment constraints in Nigeria ($R^2 = 0.878$, $F = 529.229$, $p < 0.05$). E-commerce adoption had the greatest impact on the business environment constraints in Nigeria ($\beta = 0.394$). The other variables include FinTech ($\beta = 0.330$), digital infrastructure capability ($\beta = 0.186$), and digital technology adoption ($\beta = 0.160$). It is recommended that policymakers consider developing digital infrastructure and encouraging FinTech innovation to improve business performance in Nigeria.*

Keywords: *Business Environment, Digital Infrastructure, Digital Transformation, E-Commerce, Fintech, Nigeria*

I. Introduction

The evolution of digital technologies is transforming business landscapes worldwide, changing operations, competition, and value-creation processes. Digital transformation refers to the integration of digital technologies into business activities, organizational processes, and service delivery systems in ways that fundamentally alter how firms create, deliver, and capture value. It encompasses the adoption of digital tools to improve efficiency, foster innovation, enhance customer engagement, and strengthen strategic competitiveness. In developing countries like Nigeria, digital transformation has emerged as a tool for improving efficiency and enhancing innovation and business expansion (Bharadwaj et al., 2013; Vial, 2019; Kraus et al., 2021; Verhoef et al., 2021). Digital technologies like mobile devices, cloud technologies, and data analytics help firms to optimize processes and improve decision-making (Nambisan et al., 2017).

Despite these opportunities, businesses in Nigeria continue to face significant environmental constraints, including inadequate infrastructure, regulatory bottlenecks, and limited financing options, which hinder enterprise growth and productivity (Ajakaiye & Fakiyesi, 2009). Although the adoption of digital technologies has the potential to reduce these constraints by improving operational efficiency and lowering transaction costs, the benefits have not been fully realized due to high implementation costs, inadequate digital literacy, and unreliable electricity supply (Adeleke et al., 2021). This creates a critical policy and business challenge: while digital transformation is expected to improve the business environment, structural constraints may simultaneously limit its effectiveness.

The magnitude of this challenge is considerable in Nigeria's business environment. Nigeria remains one of Africa's largest economies with over 40 million micro, small, and medium enterprises (MSMEs), which contribute significantly to employment generation and economic growth (Adeleke et al., 2021). However, a large proportion of these businesses continue to operate under severe environmental constraints such as poor power supply, high operating costs, weak digital infrastructure, and regulatory inefficiencies. These challenges increase business costs, reduce competitiveness, and limit firms' capacity to leverage digital opportunities effectively. Consequently, many businesses struggle to achieve optimal productivity despite increasing investment in digital transformation initiatives (Adeleke et al., 2021).

One important dimension of digital transformation is digital adoption, which reflects the extent to which firms integrate digital tools into their operations. Another key dimension is e-commerce, which facilitates online transactions, expands market access, and enhances customer engagement. While the integration of e-commerce technology has helped companies expand markets and engage customers more effectively, these benefits are constrained by logistical inefficiencies, cybersecurity concerns, and limited internet accessibility, thereby reducing the effectiveness of digital transformation initiatives in Nigeria (Olatokun & Bankole, 2011; Afolayan et al., 2015).

In addition, the development of FinTech has significantly improved financial inclusion and digital payments in Nigeria, which has been ranked among the most developed FinTech ecosystems in Africa (EFInA, 2022). However, regulatory uncertainties and technological limitations continue to restrict the ability of FinTech firms to contribute fully to business efficiency and economic growth (Lee & Shin, 2018). This suggests that digital financial innovations may enhance business performance, but their impact depends on the broader institutional environment in which firms operate.

Digital infrastructure is another foundational pillar of digital transformation because it provides the connectivity and technological backbone required for digital business operations. However, the capacity of Nigeria's digital infrastructure remains low due to erratic electricity supply, poor broadband penetration, and limited access to relevant technologies (NCC, 2023; United Nations, 2022). These deficiencies constrain the ability of firms to fully leverage digital technologies for productivity and competitiveness.

The severity of these business environment constraints extends beyond individual firms to the broader economy. Persistent infrastructure deficiencies, unstable policy environments, and technological limitations discourage business expansion, reduce innovation capacity, and weaken investor confidence. For many firms, especially SMEs, these constraints result in increased transaction costs, delayed service delivery, operational inefficiencies, and reduced profitability. This creates a paradox where digital transformation offers substantial opportunities for business growth, yet environmental constraints continue to undermine the realization of these benefits (Adeleke et al., 2021).

The central problem addressed in this study is that, despite growing investment in digital transformation, Nigerian businesses still face persistent environmental constraints, and the extent to which digital transformation mitigates or intensifies these constraints remains insufficiently understood. While there is increased focus on digital transformation in Nigeria, most existing studies have examined the individual implications of digital adoption, e-commerce, FinTech, and infrastructure development separately, with limited studies investigating how these dimensions collectively shape business environment constraints in Nigeria (Muriithi, 2017).

More importantly, existing studies largely emphasize the positive outcomes of digital transformation, such as innovation, operational efficiency, and improved customer engagement, while paying limited attention to how digital transformation interacts with prevailing business environment constraints in developing economies such as Nigeria. Most prior studies have examined digital adoption, e-commerce, FinTech, and digital infrastructure independently, with limited attention to their combined and interactive effects on business environment constraints. Consequently, there is insufficient empirical evidence on whether digital transformation significantly reduces these constraints or whether persistent structural bottlenecks weaken its effectiveness. This creates an important research gap in the literature, particularly in Nigeria, where multiple structural constraints, including infrastructure deficits, regulatory inefficiencies, and financing limitations, interact simultaneously to shape business performance.

This paper, therefore, investigates the relationship between these components of digital transformation and business environment constraints in Nigeria. By integrating digital adoption, e-commerce, FinTech, and digital infrastructure into a single analytical framework, the study provides a more comprehensive empirical assessment of how digital transformation influences business environment constraints in Nigeria.

1.1 Statement of the Problem

Despite the widespread adoption of digital technologies across the world, companies operating in Nigeria still experience persistent structural business challenges, including poor infrastructure, inefficient regulatory systems, limited financing options, and high transaction costs. These constraints undermine the efficiency, competitiveness, and growth of businesses in the country. This constitutes the general problem confronting firms in Nigeria: a difficult business environment that continues to limit enterprise productivity and expansion despite ongoing technological advancements (Okafor, 2024; Ngwu et al., 2024). In practical terms, these challenges contribute to reduced business survival rates, low operational efficiency, high cost of doing business, and weak competitiveness of Nigerian firms in both domestic and global markets. The severity of these constraints makes improving the business environment a major economic and policy priority in Nigeria (Hasyim & Bakri, 2024; Ridzwan et al., 2024; Oluremi & Maku, 2024).

Digital transformation has been identified as a potential means of addressing these challenges by improving operational efficiency, reducing transaction costs, and expanding market access. Technologies such as e-commerce, FinTech, and digital infrastructure are increasingly viewed as important enablers of business resilience and competitiveness (Gamage et al., 2020; Joshua et al., 2024). However, the specific research problem is that there is limited empirical evidence on whether, and to what extent, digital transformation actually reduces business environment constraints in Nigeria. Although these technologies are being adopted across sectors, their practical effectiveness in addressing structural business challenges in the country remains insufficiently understood.

Empirical literature has examined digital transformation in developing economies. However, existing studies do not provide sufficient evidence regarding its effects on business environment constraints in Nigeria. Prior studies have produced mixed and inconsistent findings, particularly in areas such as the impact of digital adoption on firm efficiency, the effectiveness of e-commerce in reducing market barriers, and the role of FinTech in improving access to finance in developing countries (Joshua et al., 2024). Furthermore, most studies have examined these dimensions independently rather than collectively, thereby limiting understanding of their combined effects. More importantly, there is limited Nigeria-specific quantitative evidence that integrates digital technology adoption, e-commerce, FinTech, and digital infrastructure into a unified analytical framework to explain their collective influence on business environment constraints. This creates a significant empirical gap because the interaction among these dimensions may produce outcomes that cannot be adequately explained when examined in isolation.

The lack of empirical evidence on this subject has important practical implications. In the absence of clear evidence on the relationship between digital transformation and business constraints, firms may struggle to allocate resources efficiently toward digital investments. Similarly, policymakers may be unable to design effective digital and economic policies aimed at addressing structural challenges in Nigeria. This makes the study necessary, as evidence-based insights are required to support strategic decision-making at both the firm and policy levels.

Accordingly, the objective of this study is to empirically examine how digital transformation influences business environment constraints in Nigeria.

1.2 Research Objective

1. To examine the effect of digital technology adoption on business environment constraints in Nigeria.
2. To evaluate the influence of e-commerce integration on business environment constraints in Nigeria.
3. To determine the effect of FinTech utilization on business environment constraints in Nigeria.
4. To examine the effect of digital infrastructure capability on business environment constraints in Nigeria.

1.3 Research Questions

1. What is the effect of digital technology adoption on business environment constraints in Nigeria?
2. How does e-commerce integration influence business environment constraints in Nigeria?
3. What effect does FinTech utilization have on business environment constraints in Nigeria?
4. How does digital infrastructure capability affect business environment constraints in Nigeria?

1.4 Research Hypothesis

H₀₁: Digital technology adoption has no significant effect on business environment constraints in Nigeria.

H₀₂: E-commerce integration has no significant effect on business environment constraints in Nigeria.

H₀₃: FinTech utilization has no significant effect on business environment constraints in Nigeria.

H₀₄: Digital infrastructure capability has no significant effect on business environment constraints in Nigeria.

II. Literature Review

2.1 Conceptual Overview

2.1.1 Digital Transformation

Digital transformation refers to the application of digital technologies to reshape business activities, operational systems, and value creation processes. It involves the use of technological innovations to improve efficiency, support innovation, and enhance organizational competitiveness (Schilirò, 2024; Odogwu et al., 2024; Kraus et al., 2021). This process has become increasingly important in modern economies as firms rely on digital tools to respond to changing market demands and improve performance. In developing economies such as Nigeria, digital transformation is increasingly recognized as a strategic mechanism for addressing institutional inefficiencies and strengthening business operations, although the level of adoption varies across sectors (Vial, 2019; Bharadwaj et al., 2013).

2.1.2 Business Environment Constraints

Business environment constraints refer to the structural and institutional challenges that hinder the establishment, growth, and performance of firms (Aterido et al., 2011; Giovanis & Özdamar, 2025; Dada et al., 2025). In Nigeria, these constraints often manifest through infrastructural deficiencies, regulatory bottlenecks, inadequate access to finance, and technological limitations. Such conditions create additional operational burdens for firms and reduce their ability to compete effectively. According to Adeleke et al. (2021) and Obisi & Gbadamosi (2016), many businesses in Nigeria, particularly small and medium-sized enterprises, operate under difficult conditions that limit productivity and expansion. Common examples include unstable electricity supply, weak internet services, and the high cost associated with adopting new technologies.

2.1.3 Digital Technology Adoption

Digital technology adoption describes the extent to which firms incorporate digital tools into their daily operations and strategic processes (Faruque et al., 2024; Díaz-Arancibia et al., 2024; Faiz et al., 2024). It includes the use of software systems, mobile technologies, and digital platforms to improve communication, automate tasks, and support managerial decisions. The adoption of such technologies has been associated with increased efficiency and lower transaction costs for businesses. However, in Nigeria, the process is often constrained by financial limitations, inadequate technical skills, and organizational resistance to change (Vial, 2019; Adeleke et al., 2021). As a result, digital technology adoption remains an important factor in understanding how firms can address prevailing business environment constraints.

2.1.4 E-commerce Integration

E-commerce integration involves the incorporation of online systems into business transactions, enabling firms to buy, sell, and interact with customers through digital platforms. This has expanded market opportunities by allowing businesses to reach customers beyond physical boundaries. For many firms, e-commerce provides a means of increasing sales efficiency and improving customer engagement. Nevertheless, in Nigeria, the effectiveness of e-commerce is limited by operational challenges such as weak logistics systems, cybersecurity concerns, and low consumer trust in online transactions (Olatokun & Bankole, 2011). These issues reduce the extent to which e-commerce can fully alleviate business constraints.

2.1.5 FinTech Utilization

FinTech utilization refers to the use of digital financial technologies to facilitate financial transactions, payments, lending, and broader access to financial services. It has become an important dimension of digital transformation because of its role in improving financial inclusion and reducing transaction inefficiencies. In many developing economies, FinTech services have expanded opportunities for firms to access financial resources and conduct transactions more efficiently. In Nigeria, however, the full benefits of FinTech are affected by regulatory challenges, infrastructure limitations, and trust-related concerns among users (Enhancing Financial Innovation & Access [EFInA], 2022). These limitations may reduce its capacity to significantly ease business environment constraints.

2.1.6 Digital Infrastructure Capability

Digital infrastructure capability refers to the availability and adequacy of technological systems that support digital business operations. It includes internet connectivity, telecommunications systems, electricity supply, and access to digital devices that enable firms to adopt and use modern technologies effectively. Strong digital infrastructure is essential for businesses seeking to benefit from digital transformation. However, in Nigeria, digital infrastructure remains underdeveloped in many areas, thereby limiting the ability of firms to fully integrate digital systems into their operations. Poor internet access, unstable electricity, and high operational costs continue to constrain digital transformation and business performance (Nigerian Communications Commission [NCC], 2023).

2.2 Theoretical Framework

2.2.1 The Technology–Organization–Environment (TOE)

The Technology–Organization–Environment (TOE) model explains the factors that determine whether technological innovations are adopted and used within organizations and their processes. According to the TOE model, three contexts matter in innovation adoption and use: technological context, organizational context, and environmental context (Tornatzky & Fleischer, 1990). Technological context refers to digital technology availability and features; organizational context, firm size, resources, and capabilities; while environmental context entails other influences such as competition and regulations.

However, the TOE model is very useful to conduct this research in Nigeria since it explains digital transformation in relation to the business environment. In this case, digital technology adoption, e-commerce implementation, and use of FinTech represent the technological contexts, whereas digital infrastructure capacity is part of both technological and environmental contexts, which shape the operations of firms. Therefore, the TOE framework is very relevant to explore the effects of digital transformation in relation to business environment constraints in Nigeria.

2.2.2 Resource-Based View (RBV) Theory

The Resource-Based View (RBV) theory explains that the success of a firm largely depends on the resources and capabilities it possesses and how effectively such resources are utilized. The theory was developed by Jay Barney in 1991, although earlier contributions to the idea were made by Birger Wernerfelt in 1984. The central argument of the theory is that firms achieve sustained performance and competitive advantage when they possess resources that are valuable and difficult for competitors to imitate (Barney, 1991).

RBV considers resources such as technology, knowledge, organizational processes, and managerial capabilities as important assets that can shape firm outcomes. In the modern business environment, digital resources have become especially important because they enable firms to improve efficiency, innovate, and respond to changing market conditions. As a result, digital tools and capabilities are increasingly regarded as strategic resources that can influence organizational performance.

The relevance of the RBV theory to this study is that it provides an explanation of how firms in Nigeria can use digital transformation to address business environment constraints. Digital technology adoption, e-commerce integration, FinTech utilization, and digital infrastructure capability represent resources that may strengthen business operations and reduce the negative effects of infrastructural, financial, and regulatory challenges. Therefore, the theory supports the view that firms with stronger digital capabilities are more likely to adapt successfully to the constraints within the Nigerian business environment.

2.3 Empirical Review

Empirical literature shows that digital technology adoption contributes to operational efficiencies and firms' capacity to respond to environmental constraints. Gregory Vial (2019) asserts that digital transformation makes it possible to optimize processes and create value. However, in developing countries, it becomes less effective due to certain infrastructural and institutional constraints like insufficient skills and technology infrastructure (World Bank, 2023; International Telecommunication Union, 2023). It means that although digital technology adoption helps to overcome business constraints, it is dependent on the surrounding environment.

E-commerce implementation contributes to increased accessibility, reduction of transaction costs, and better customer relations (Laudon & Traver, 2022). Empirical literature shows that e-commerce makes firms more flexible in overcoming geographical and operational barriers, especially in developing countries (Manyika et al., 2016). Nevertheless, there is empirical evidence that in Nigeria, it is constrained by some logistical issues, low consumer confidence, and poor digital

payment systems (World Bank, 2021). Therefore, e-commerce has a high potential, but its effectiveness depends on the surrounding environment.

There is empirical evidence that FinTech helps achieve financial inclusion and minimize transaction costs (Demirgüç-Kunt et al., 2018; World Bank, 2021). It increases the capacity of digital financial service provision and supports business activities. According to empirical findings, FinTech has helped expand digital payment systems in Nigeria, thereby supporting businesses (Central Bank of Nigeria, 2022; Ozili, 2018). Although there is progress in Nigeria, regulatory issues, cybersecurity threats, and a lack of digital skills hinder the full development of FinTech.

Digital infrastructure is crucial for implementing digital transformation initiatives. Internet connectivity, broadband networks, and ICTs are vital components to adopt digital technologies (ITU, 2023). However, infrastructural deficits are common problems in developing countries, and they include poor connectivity, high cost of data, and power supply problems (World Bank, 2023). Despite improvements in internet connectivity in Nigeria, infrastructural problems have become barriers to digital transformation in the country (NCC, 2023).

III. Methodology

This study adopted a quantitative survey design to examine the relationship between digital transformation and business environment constraints in Nigeria. The design is appropriate because it enables the collection of standardized primary data from respondents and facilitates the statistical testing of relationships among the study variables. Data were collected through a structured questionnaire administered electronically using Google Forms. The instrument measured respondents' perceptions of digital technology adoption, e-commerce integration, FinTech utilization, digital infrastructure capability, and business environment constraints using a five-point Likert scale.

The target population comprised business decision-makers and operational personnel in Nigerian firms who are directly involved in the use or management of digital technologies. Specifically, the unit of analysis consisted of business owners, managers, senior employees, and ICT personnel in small and medium-sized enterprises across selected sectors, including retail, services, and manufacturing. This category of respondents was considered appropriate because they possess practical knowledge of digital transformation practices and the business constraints affecting firms in Nigeria.

To improve the specificity of the study population, the research focused on SMEs operating within three economically significant states in Nigeria, namely Lagos State, Abuja (FCT), and Rivers State. These locations were selected because they represent major commercial hubs with relatively high levels of business activity, digital technology adoption, and concentration of SMEs. Furthermore, the study was restricted to firms operating within the retail, service, and manufacturing sectors due to their increasing reliance on digital technologies for operations, customer engagement, and market expansion. This delimitation ensures that the study population is more clearly defined and relevant to the research objectives.

Given the absence of a comprehensive sampling frame for digitally active firms in Nigeria, the population was treated as indeterminate. Consequently, the sample size of 300 respondents was determined using the Cochran (1963) formula for an unknown population, which is widely applied in survey research involving large or undefined populations. This sample size was considered adequate for multivariate statistical analysis and for ensuring reliable estimation of the study parameters.

A purposive sampling technique was adopted to select respondents with demonstrable knowledge and practical experience in digital business operations and transformation initiatives within their organizations. This sampling approach was considered more appropriate because the study specifically required participants who are actively involved in technology adoption, digital operations, and business decision-making. Purposive sampling enabled the researcher to deliberately target respondents with relevant expertise, thereby improving the quality and relevance of the data collected.

In addition, within the selected firms, respondents were drawn from relevant functional categories such as business owners, operations managers, ICT officers, and senior employees involved in digital processes. This ensured that participants possessed adequate knowledge of both digital transformation practices and business environment constraints affecting their firms.

The use of an online survey instrument further enhanced access to respondents across the selected states and sectors, ensuring efficient data collection from geographically dispersed participants.

Primary data obtained from the questionnaire were subjected to validity and reliability assessment. Content validity was ensured by aligning questionnaire items with the study objectives and constructs identified in the literature. Reliability was assessed using Cronbach's alpha, and all construct values ranged from 0.773 to 0.902, exceeding the acceptable threshold of 0.70.

To analyze the data, descriptive and inferential statistical techniques were employed using SPSS. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize respondents' characteristics and study variables. Pearson correlation analysis was applied to assess the relationships among variables, while multiple linear regression was used to estimate the effects of digital transformation dimensions on business environment constraints.

The model is specified as:

$$BEC = \beta_0 + \beta_1 DTA + \beta_2 ECOM + \beta_3 FINTECH + \beta_4 DIC + \mu$$

Where BEC represents business environment constraints; DTA is digital technology adoption; ECOM denotes e-commerce integration; FINTECH represents FinTech utilization; and DIC refers to digital infrastructure capability. A 5 percent significance level was adopted for hypothesis testing. Ethical considerations were observed throughout the study by ensuring voluntary participation, informed consent, respondent anonymity, and confidentiality of all information provided. Data collected were used strictly for academic purposes, and participants retained the right to withdraw from the study at any stage without penalty.

IV. Results and Discussion

4.1 Descriptive Statistics

Table 1: Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	170	56.7
	Female	130	43.3
	Total	300	100.0
Age	18-25	49	16.3
	26-35	88	29.3
	36-45	80	26.7
	46 and above	83	27.7
	Total	300	100.0
Position	Owner	57	19.0
	Manager	58	19.3
	IT Staff	2	0.7
	Employee	154	51.3
	Other	29	9.7
	Total	300	100.0
Business Type	Retail	33	11.0
	Manufacturing	4	1.3
	Service	175	58.3
	Other	88	29.3
	Total	300	100.0

Source: Field Survey (2026)

Table 1 presents the descriptive statistics of the respondents' demographics as well as the key study variables. From the demographic distribution table, it can be seen that the majority of respondents are males (56.7%) while only 43.3% are females. On the same note, the distribution in terms of age shows that more than half of the respondents are economically active. That is, 29.3% are aged 26-35, 27.7% 46 years and above, 26.7% aged 36-45, and 16.3% aged 18-25.

Considering the position of respondents in the business, more than half (51.3%) were employees, with others being managers (19.3%) and business owners (19.0%). In addition, other positions constituted a small share (9.7%) while IT staff formed the smallest percentage (0.7%), as shown in Table 1.

Concerning the type of business, most (58.3%) of the respondents' businesses fell into the category of service providers, with others representing other types of business (29.3%), retailing (11.0%), and manufacturing (1.3%), as shown in Table 1.

Table 2: Descriptive Statistics of Study Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Digital Technology Adoption	300	1.00	5.00	4.3473	0.73135
Ecommerce	300	1.00	5.00	4.2793	0.73896
FinTech	300	1.00	5.00	4.3667	0.86752
Digital Infrastructure	300	1.00	5.00	4.3560	0.68010
Business Environment Constraints	300	1.00	5.00	4.3293	0.67883

Source: Field Survey (2026)

From Table 2 above, we find the descriptive statistics of the research variables. The findings show that the mean scores are quite high across all constructs. The mean score for digital technology adoption is 4.35 (SD = 0.73), which shows that there is a high level of adoption of digital technology in business in Nigeria.

Similarly, e-commerce integration also showed a high level of agreement among respondents, recording a mean of 4.28 (SD = 0.74). FinTech utilization also had a mean of 4.37 (SD = 0.87), implying that the businesses under study use digital financial technologies.

Finally, the digital infrastructure capability construct recorded a mean of 4.36 (SD = 0.68), implying that respondents perceived their businesses to have relatively high digital capabilities. Similarly, the business environment constraints construct had a mean of 4.33 (SD = 0.68), showing that respondents acknowledged the existence of business environment constraints while considering the role of digital transformation.

In summary, from the results obtained, the relatively high mean scores (above the mid-point of 3.0) imply that the constructs were strongly agreed on by the respondents.

4.2 Reliability Analysis

Table 3: Reliability Analysis (Cronbach's Alpha)

Variable	Number of Items	Cronbach's Alpha
Digital Technology Adoption	5	0.791
E-commerce Integration	5	0.805
FinTech Utilization	5	0.902
Digital Infrastructure Capability	5	0.796
Business Environment Constraints	5	0.773

Source: Field Survey (2026)

To establish the reliability of the study variables, Cronbach's Alpha method was used. From Table 3 above, all study constructs achieved high reliability levels, with the reliability values between 0.773 and 0.902.

Specifically, digital technology adoption ($\alpha = 0.791$), e-commerce integration ($\alpha = 0.805$), FinTech utilization ($\alpha = 0.902$), digital infrastructure capability ($\alpha = 0.796$), and business environment constraints ($\alpha = 0.773$) all had high reliability.

From the results, therefore, we find that the measurement scales of the study variables are reliable enough.

4.3 Correlation Analysis

Table 4: Correlation Matrix of Study Variables

Variable	DTA	ECOM	FINTECH	DIC	BEC
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Digital Technology Adoption (DTA)	1	0.630**	0.561**	0.699**	0.724**
E-commerce (ECOM)	0.630**	1	0.724**	0.638**	0.853**
FinTech (FINTECH)	0.561**	0.724**	1	0.737**	0.842**
Digital Infrastructure (DIC)	0.699**	0.638**	0.737**	1	0.793**
Business Environment Constraints (BEC)	0.724**	0.853**	0.842**	0.793**	1

Note: $p < 0.01$

Source: Field Survey (2026)

The correlation analysis provided in Table 4 describes the relationships between study variables. According to the results of the test, all four independent variables – digital technology adoption, e-commerce integration, FinTech utilization, and digital infrastructure capability – have a significant positive association with the dependent variable at the 0.01 significance level.

In particular, digital technology adoption demonstrates a high correlation with business environment constraints ($r = 0.724$, $p < 0.01$). On top of that, e-commerce integration has the strongest correlation with the dependent variable ($r = 0.853$, $p < 0.01$). The third-strongest relationship is noted with FinTech utilization ($r = 0.842$, $p < 0.01$) and digital infrastructure capability ($r = 0.793$, $p < 0.01$).

Moreover, the independent variables correlate positively with each other, indicating the complementary nature of digital transformation components. In general, these results show that the higher the level of digital transformation, the lower the business environment constraints. However, correlation analysis cannot be considered causal; hence, regression analysis will be used to determine the predictive ability of the independent variables.

4.4.1 Model Summary

Table 5: Model Summary

Model	R	R Square	Adjusted R-Square	Std. Error of the Estimate
1	.937 ^a	0.878	0.876	0.23905
a. Predictors: (Constant), Digital Infrastructure, E-commerce, Digital Technology Adoption, FinTech				

Source: Field Survey (2026)

According to the results of the regression model presented in Table 5, the independent variables explain business environment constraints in Nigeria well. Thus, the produced R value of 0.937 and an R^2 value of 0.878 mean that independent variables contribute to 87.8% variation in the dependent variable. Adjusted R^2 equaling 0.876 also suggests the robustness of the model since it was calculated after adjusting the number of predictors.

4.4.2 ANOVA (Model Significance)

Table 6: ANOVA Results

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	120.976	4	30.244	529.229	.000 ^b
	Residual	16.801	294	0.057		
	Total	137.777	298			
a. Dependent Variable: Business Environment Constraints						
b. Predictors: (Constant), Digital Infrastructure, E-commerce, Digital Technology Adoption, FinTech						

Source: Field Survey (2026)

The analysis of variance presented in Table 6 proves that the overall regression model has statistical significance ($F = 529.229$, $p < 0.05$). That is to say that independent variables taken together significantly impact variations in business environment constraints in Nigeria, thus proving the model's appropriateness for hypothesis testing.

4.4.3 Coefficients and Hypothesis Testing

Table 7 presents the regression coefficients showing the effect of digital transformation dimensions on business environment constraints in Nigeria. It is important to note that the Business Environment Constraints (BEC) variable was coded such that higher values represent lower perceived business constraints and a more favourable business environment. Consequently, positive regression coefficients indicate that improvements in digital transformation dimensions are associated with reductions in business constraints and improvements in the business environment.

Table 7: Coefficients of Regression Analysis

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
(Constant)	0.192	0.097		1.981	0.048
Digital Technology Adoption	0.149	0.028	0.160	5.288	0.000
E-commerce	0.363	0.030	0.394	12.299	0.000
FinTech	0.258	0.027	0.330	9.530	0.000
Digital Infrastructure	0.186	0.035	0.186	5.317	0.000

Source: Field Survey (2026)

Based on the regression results presented in Table 7, digital technology adoption has a positive and statistically significant effect on business environment constraints ($\beta = 0.160$, $t = 5.288$, $p < 0.05$). This indicates that increased digital technology adoption contributes significantly to reducing business constraints and improving the business environment in Nigeria. Therefore, H_{01} is rejected.

Similarly, e-commerce integration has a positive and statistically significant effect on business environment constraints ($\beta = 0.394$, $t = 12.299$, $p < 0.05$). This suggests that greater integration of e-commerce significantly reduces market barriers, enhances market access, and improves business operations. Since e-commerce recorded the highest coefficient among all predictors, it represents the strongest contributor to reducing business environment constraints. Therefore, H_{02} is rejected.

FinTech utilization also has a positive and statistically significant effect on business environment constraints ($\beta = 0.330$, $t = 9.530$, $p < 0.05$). This implies that increased adoption of FinTech solutions improves financial access, enhances payment efficiency, and reduces transaction-related challenges for businesses. Consequently, H_{03} is rejected.

Furthermore, digital infrastructure capability has a positive and statistically significant effect on business environment constraints ($\beta = 0.186$, $t = 5.317$, $p < 0.05$). This indicates that improved digital infrastructure enhances connectivity, supports digital business operations, and reduces structural business challenges. Therefore, H_{04} is rejected.

Overall, the findings indicate that all dimensions of digital transformation positively and significantly influence business environment constraints in Nigeria. This implies that digital transformation contributes meaningfully to reducing business constraints and improving the business environment, with e-commerce integration exerting the strongest effect.

4.5 Discussion of Findings

The findings of this study reveal that digital transformation dimensions, digital technology adoption, e-commerce integration, FinTech utilization, and digital infrastructure capability have significant relationships with business environment constraints in Nigeria.

It is important to reiterate that higher values of the dependent variable (BEC) indicate reduced business constraints and a more favourable business environment. Therefore, the positive relationships observed in this study imply that improvements in digital transformation contribute significantly to reducing business environment challenges in Nigeria.

The correlation analysis revealed strong positive relationships between all selected variables and business environment constraints, suggesting that increased adoption of digital technologies is associated with improvements in the business

environment. This finding aligns with Nir Kshetri (2021), who argued that digital technologies improve operational efficiency, facilitate business transactions, and enhance access to wider markets, especially in developing economies.

The regression analysis further showed that the independent variables jointly explained 87.8% of the variation in business environment constraints. This high explanatory power suggests that digital transformation plays a substantial role in shaping business conditions in Nigeria. The finding supports the position of the World Bank (2021), which emphasized that digital adoption promotes structural improvements in business environments through enhanced productivity, efficiency, and transparency.

Among the four predictors, e-commerce integration had the strongest effect on business environment constraints. This suggests that e-commerce contributes significantly to reducing market barriers, improving market access, and enhancing operational efficiency. This finding is consistent with the position of the Organisation for Economic Co-operation and Development (2020), which identified e-commerce as a major driver of business growth and competitiveness in modern economies.

FinTech utilization was also found to significantly improve business environment conditions. This finding supports the work of Arner et al. (2020), who argued that FinTech improves financial inclusion, simplifies access to financial services, and enhances transaction efficiency. In developing countries such as Nigeria, where access to traditional financial systems remains limited, FinTech serves as a critical enabler of business growth and operational efficiency.

Similarly, digital infrastructure capability significantly improves business environment conditions. This finding confirms the study by Canton (2021), which emphasized that reliable digital infrastructure is fundamental to successful digital transformation. Without adequate infrastructure, the full benefits of digital technologies cannot be realized.

Lastly, digital technology adoption was found to significantly improve business environment conditions. This finding supports Vial (2019), who described digital transformation as a strategic process that improves business operations, enhances productivity, and creates value for organizations.

Overall, the findings of this study confirm both theoretical and empirical evidence that digital transformation plays a critical role in improving business environments in developing economies. Specifically, digital transformation reduces structural business constraints and enhances business performance in Nigeria. The study therefore underscores the need for government and policymakers to strengthen digital infrastructure, promote e-commerce adoption, and support FinTech innovations as strategic pathways for improving the Nigerian business environment.

V. Conclusion, Recommendations, and Suggestions for Further Studies

5.1 Conclusion

In this research, the influence of digital transformation on business environment constraints in Nigeria was studied based on some dimensions, including digital technology adoption, e-commerce integration, FinTech, and digital infrastructure capability. As a result, the research established that all the dimensions of digital transformation were positively and statistically significant on the variables.

Based on the regression results, it is clear that there is a joint relationship between the digital transformation variables and variations in business environment constraints, suggesting that digitization plays a significant role in improving business performance by addressing business environment constraints. Moreover, among all the variables tested, e-commerce had the greatest impact on the business environment.

Thus, this paper can be concluded to indicate that digital transformation in developing countries such as Nigeria has been instrumental in improving the business environment by helping to address structural challenges.

5.2 Recommendations

From the analysis of this study, it is important to recommend that the government and other stakeholders pay attention to improving digital infrastructure, such as internet connection and ICT, to promote digital transformation in business organizations within Nigeria. Moreover, it is recommended that the adoption of an e-commerce platform should be promoted to ensure better business performance in business organizations. It is also essential to promote FinTech using suitable policies to foster financial inclusion and easier access to credit, especially for SMEs. Capacity building measures should also be put in place to enhance the digital literacy skills among the owners and workers of the business organizations.

5.3 Suggestions for Further Studies

Future studies can consider other variables, such as government policy, cybersecurity, and organizational readiness, to give a holistic view of digital transformation. Comparative studies within different regions or industries in Nigeria can also be carried out.

5.4 Limitations of the Study

This study is limited by its reliance on self-reported questionnaire data, which may be subject to respondent bias.

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